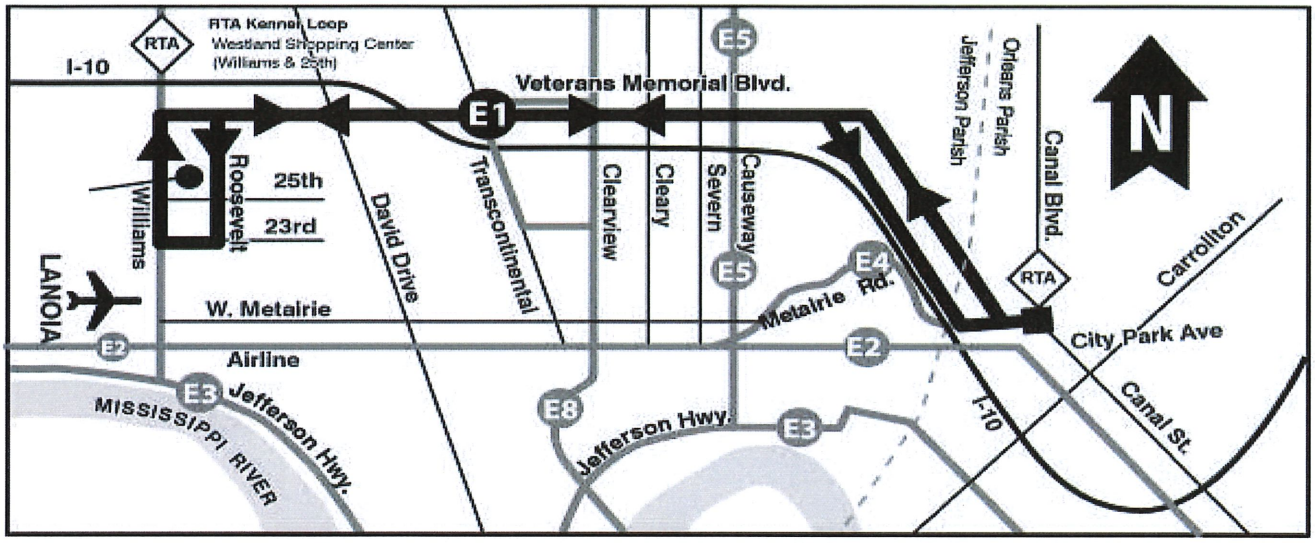
Transit Signal Priority System

Veterans Memorial Blvd Transit Route (E1)

System Engineering Analysis

RPC Task A-1.18: FY-18 UPWP

Project # 18-003 — April 2018



Prepared for:

RPC REGIONAL PLANNING COMMISSION
FOR JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JOHN THE BAPTIST, ST. TAMMANY AND TANGIPAHOA PARISHES
Serving the New Orleans Metropolitan Region

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In Association with:

Jefferson Transit — City of New Orleans — City of Kenner — Louisiana Department of Transportation — Jefferson Parish — U.S. Department of Transportaion Federal Highway Administration

1 – Acronyms and Abbreviations

ATMS – Advanced Transportation Management System
COP – Concept of Operations
CMS – Central Management Software
DOTD – Department of Transportation and Development
DPW – Department of Public Works
DTOE – District Traffic Operations Engineer
GPS – Global Positioning System
IT – Information Technology
ITS – Intelligent Transportation Systems
JeT – Jefferson Parish Transit
RA – Regional Architecture
RFP – Request for Proposal
RTMC – Regional Transportation Management Center
RPC – Regional Planning Commission
SEA – Systems Engineering Analysis
TAC – Technical Advisory Committee
TMC – Traffic Management Center
TSP – Transit Signal Priority
VD – Vehicle Detectors

2 – Concept of Operations (COP)

2.1 Transit Signal Priority Objectives

The purpose of this project is to develop improvements to the existing transit system to meet the challenges of increased demand for public transit in Jefferson Parish, Louisiana. The implementation of a Transit Signal Priority (TSP) system will aid Jefferson Parish Transit (JeT) in meeting the overall goal of improving 'on-time' performance. Meeting this goal will also aid JeT in meeting the following goals:

- Increase transit rider patronage
- Decrease fuel consumption and maintenance costs
- Decrease carbon emissions
- Reduce traffic congestion

2.2 Transit Signal Priority System

The system will provide TSP that operates based on set performance criteria that allows the signal system to provide transit priority while minimizing the delay on the surrounding traffic and does not interrupt the coordination of the signal system. The four basic steps for providing transit priority at traffic signals are:

- *Detection:* Approaching bus is detected at some point upstream of the intersection.
- *Priority Request:* Detection notifies the TSP system of request for priority. The system processes the request and determines if priority will be granted. If granted, the traffic signal controller initiates action based on predetermined criteria to provide priority.
- *Intersection Clearance:* Traffic signal is notified when the bus clears the intersection.
- *Return to Normal Phasing:* Once the bus clears the intersection, the traffic signal returns to normal operation.

2.3.2 Detection

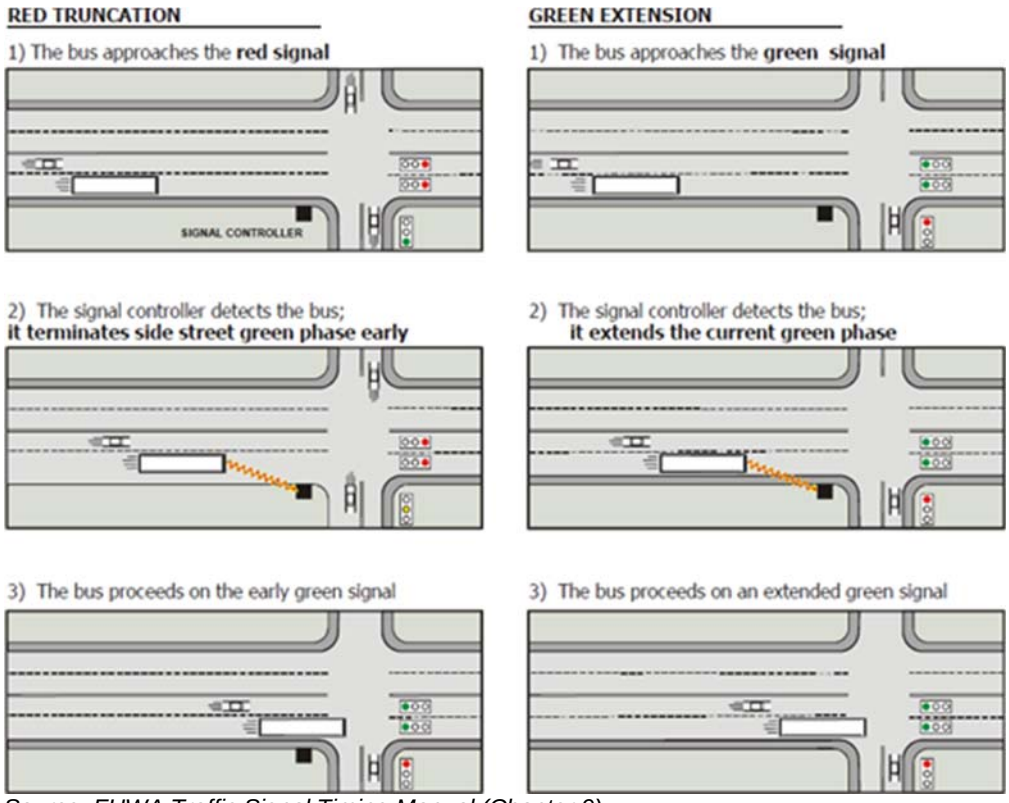
The system shall operate with detection that monitors the transit's location through an area. This allows the system to more accurately predict the transit's arrival at the intersection.

2.3.3 Priority Request

As the transit vehicle approaches the traffic signal the vehicle will submit a priority request. The priority request is then filtered through a decision matrix to determine if priority will be granted. The decision matrix determines if a transit priority request will be granted or denied each time a request is transmitted. This is determined based on the transit schedule. If the transit is on schedule the request is denied. If the transit is too far behind

schedule the request will be granted and will be forwarded to the traffic signal. The signal controller will then adjust the signal timing in one of two ways:

Figure 2.1
Signal Timing Adjustments for Transit Priority



Source: FHWA Traffic Signal Timing Manual (Chapter 9)

2.3.4 Intersection Clearance

Intersection clearance notification is required so the system knows when the transit vehicle has cleared the intersection.

2.3.5 Return to Normal Phasing

Once the traffic signal has been notified that the transit vehicle has cleared the intersection the controller returns to normal phasing. The return to normal phasing is determined by preset criteria.

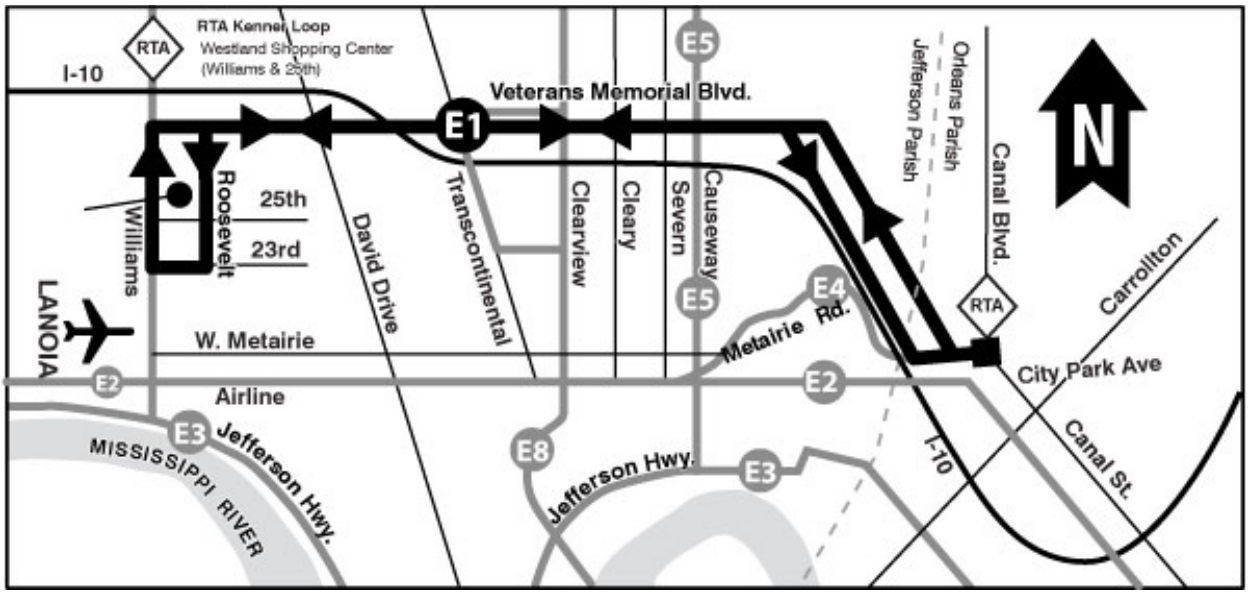
The following will outline existing operations and define required operational elements and functions to provide a TSP system that will achieve the goals of each stakeholder.

2.3 Existing Operations

2.3.1 Route Data

Route E1 (Veterans Blvd) was chosen to be assessed as part of this systems engineering analysis (AES).

Figure 2.2
Route E1 (Veterans Blvd)



*Source: JeT Website

This route was chosen as it currently has high pedestrian volumes and continuously underperforms with regards to the current transit performance measures. The project limits are Veterans Blvd between Williams Blvd in Jefferson Parish and West End Drive in Orleans Parish. The bus schedule for the route is attached.

A bus stop inventory was performed which identifies the locations and type of bus stops along the route. This bus route has a high number of near side bus stops along Veterans Blvd. JeT has expressed a willingness to relocate bus stops if adequate space is available and safety concerns can be addressed. The bus stop inventory included in the appendix identifies stops which could potentially be relocated.

The existing signal system contains thirty-five (35) traffic signals:

- Owned by LADOTD – 5 (1 maintained by City of New Orleans)
- Owned by City of Kenner – 2
- Owned by Jefferson Parish – 28

The existing signalized intersections and bus stop locations within the study area are illustrated in Figures 2.3 through 2.10. The traffic signals are labeled based on the brand of signal controller and the bus stops are labeled based on the type of stop provided.

The existing signal system along Veterans Blvd is coordinated. A retiming project was recently completed to modify timings and coordination parameters between Massachusetts Ave and Lake Avenue. Traffic volumes along the corridor were collected as part of the retiming project. Figures illustrating the traffic volumes are included in the appendix.

2.3.2 JeT Operations Overview

JeT operations and maintenance for the east bank of Jefferson Parish currently operate from their location on David Drive in Metairie. For incident management and/or maintenance issues each transit vehicle is equipped with a mobile radio system. This system is strictly voice calls and is used on an as needed basis. The transit vehicle driver radios to the dispatcher when an issue occurs.

The system vendor for schedule tracking is Transdev. The Transdev Shadow System utilizes GPS to track bus locations. This information is used to develop on-time performance measures based on the schedules developed by JeT. Prior to this report, the on-time range was within 10 minutes of the scheduled arrival time for the subject route. Based on information provided, in 2016 and 2017 the on-time performance was approximately 90% and 84%, respectively. The on-time range has since been changed to 5 minutes.

2.3.3 Jefferson Parish Traffic Operations Overview

Jefferson Parish owns and maintains twenty-eight (28) of the traffic signals within the study area. Twenty-three (23) of the signals operate with Kentronic Controllers and five (5) operate with Econolite Controllers.

Modifications to traffic signals must be approved by Jefferson Parish Traffic Operations. Their maintenance division handles minor repairs and signal controller parameter adjustments.

2.3.4 City of Kenner Operations Overview

The City of Kenner owns two (2) of the traffic signals within the study area.

- Wal Mart Driveway
- Roosevelt Drive

Both signals operate with Kentronic Controllers. Maintenance on these signals are performed in house with assistance from Jefferson Parish.

2.3.5 LADOTD Operations Overview

LADOTD owns five (5) of the traffic signals within the study area.

- Fleur De Lis
- I-10 WB Ramps
- Best Buy/ I-10 EB Exit Ramp
- Downs/ I-10 EN Entrance Ramp
- Williams Blvd

Each of the signals operate with Trafficware Controllers. Modifications to the traffic signals must be approved by LADOTD prior to implementation District 02 Traffic Operations maintains all but one of the signals. Veterans Blvd at Fleur De Lis Street is maintained by the City of New Orleans under an existing city-state agreement.

2.3.6 Regional Transportation Management Center (RTMC)

The LADOTD New Orleans RTMC currently monitors traffic conditions and controls permanent dynamic messaging signs (DMS) and closed-circuit television (CCTV) cameras in the area. The District Traffic Operations Engineer's (DOTE) office is located in the RTMC.

Legend:

Traffic Signals		Bus Stop	
TR	TRAFFICWARE	BE	BENCH
KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

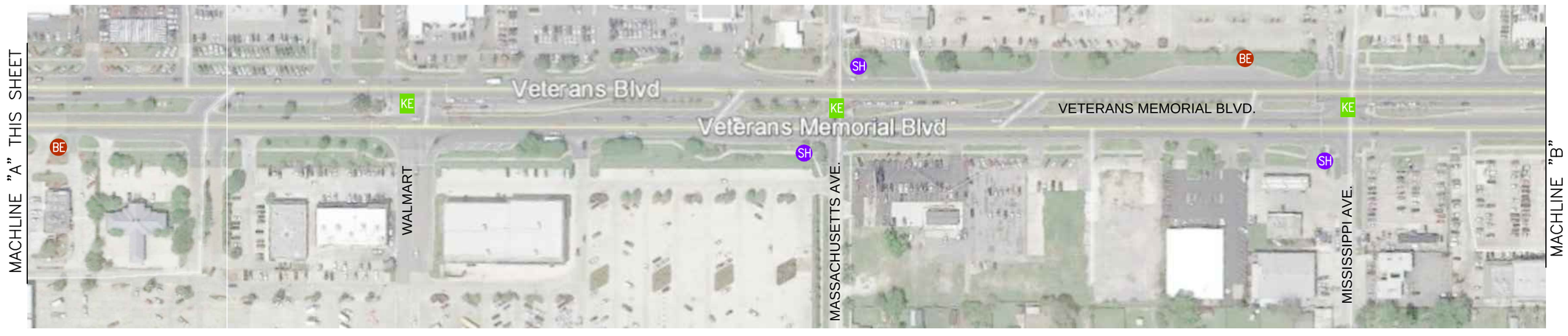


Figure 2.3

EXISTING SIGNALS AND BUS STOPS

VETERANS BLVD SYSTEMS ENGINEERING REPORT

NOTE TO SCALE
FOR PLANNING PURPOSED ONLY

URBAN SYSTEMS inc.

2000 Tulane Avenue, Suite 200
New Orleans, Louisiana 70112
504.523.5511 504.523.5522 f

Legend:

Traffic Signals		Bus Stop	
TR	TRAFFICWARE	BE	BENCH
KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

Figure 2.4

EXISTING SIGNALS AND BUS STOPS

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Figure 2.5

EXISTING SIGNALS AND BUS STOPS

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Legend:

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KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

Figure 2.6

EXISTING SIGNALS AND BUS STOPS

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Legend:

Traffic Signals		Bus Stop	
TR	TRAFFICWARE	BE	BENCH
KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

Figure 2.7

EXISTING SIGNALS AND BUS STOPS

VETERANS BLVD SYSTEMS ENGINEERING REPORT

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Legend:

Traffic Signals		Bus Stop	
TR	TRAFFICWARE	BE	BENCH
KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

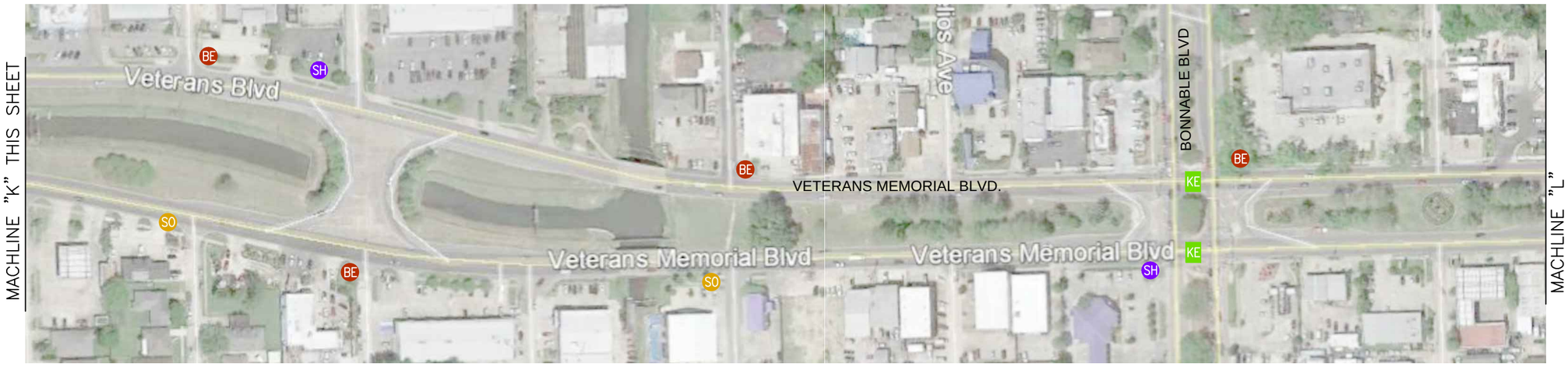

Figure 2.8

EXISTING SIGNALS AND BUS STOPS

VETERANS BLVD SYSTEMS ENGINEERING REPORT

NOTE TO SCALE
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Legend:

Traffic Signals		Bus Stop	
TR	TRAFFICWARE	BE	BENCH
KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

Figure 2.9

EXISTING SIGNALS AND BUS STOPS

VETERANS BLVD SYSTEMS ENGINEERING REPORT

NOTE TO SCALE
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Legend:

Traffic Signals		Bus Stop	
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KE	KENTRONICS	SH	SHELTER
EC	ECONOLITE	SO	SIGN ONLY

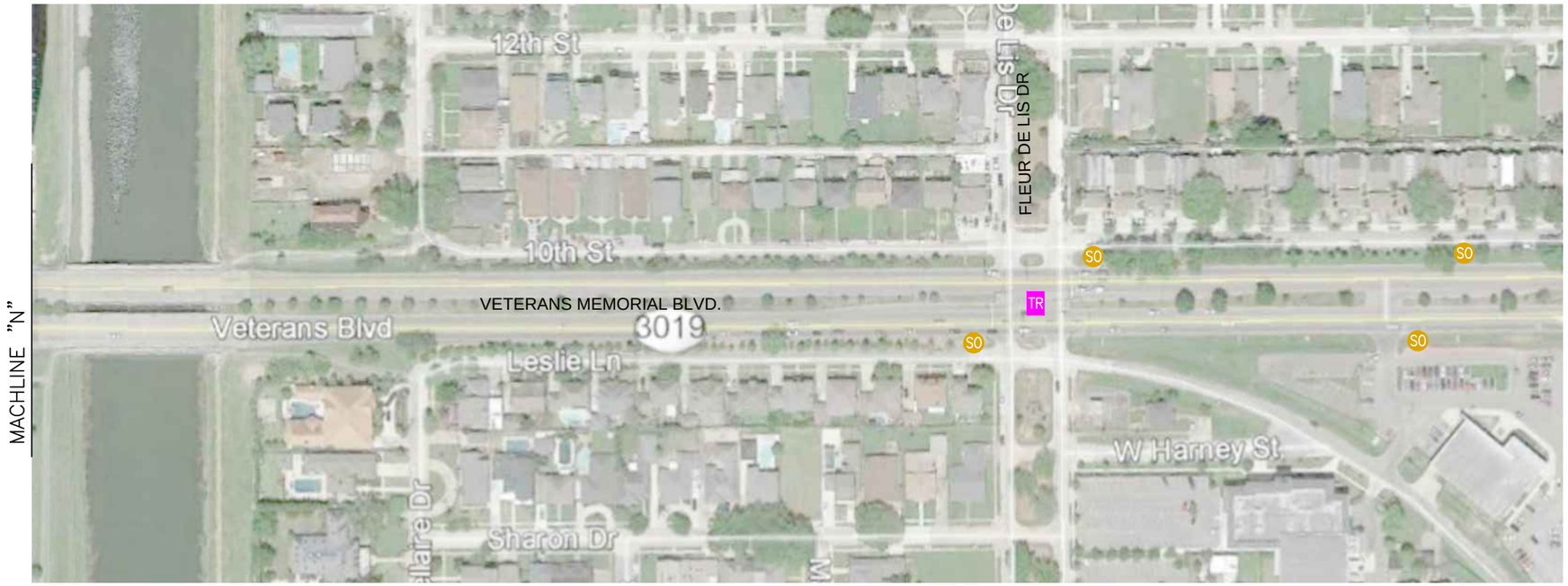

Figure 2.10

EXISTING SIGNALS AND BUS STOPS

VETERANS BLVD SYSTEMS ENGINEERING REPORT

NOTE TO SCALE
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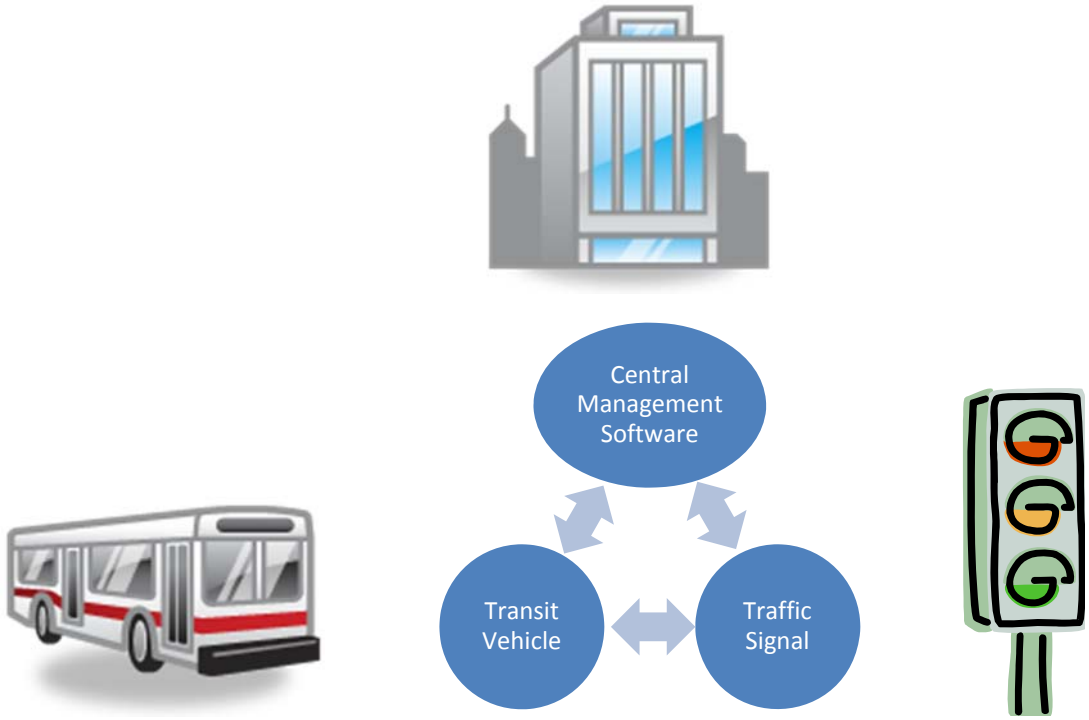
2.4 Proposed System Operations Plan

Enhancements to the existing system as part of this project will include installation of equipment on transit vehicles, equipment at traffic signals, and providing communication between each system component.

The proposed project shall provide a low-priority transit preemption system along the subject routes to meet the needs of JeT. This system must have the capability to include high-priority preemption for emergency vehicles and may be expanded to include additional traffic signal systems in the future.

2.4.1 System Operations Elements

The proposed transit priority system consists of three major elements: transit vehicle, traffic signal system and central management software (CMS).



Transit Vehicle

Each transit vehicle, owned by Jefferson Parish, will communicate solely with the detection system located at each the traffic signal. The vehicle will transmit necessary vehicle information and priority request.

Traffic Signal System

The traffic signal system, owned by Jefferson Parish, the City of Kenner and LADOTD (maintained by the City of New Orleans), shall detect and control priority request at each

individual intersection. The traffic signal equipment shall relay priority requests to the CMS to be processed to determine if priority will be granted. Granted priority requests will be received by the traffic signal and priority will be provided.

Central Management Software

The central management software shall receive transit priority requests from the traffic signal system and process the request through a decision matrix to determine the need for signal preemption. Preemption will be granted or denied based on the provided transit vehicles information. The system shall log priority request information in the central database for use by the stakeholders.

The CMS should be cloud based with user web access and should not include software or infrastructure to be maintained by the stakeholders.

Authorized stakeholders will have the ability to access the CMS to view assorted reports including maintenance, performance and usage.

2.5 Stakeholder Roles and Responsibilities

The stakeholders involved are JeT, Jefferson Parish Traffic, City of Kenner, City of New Orleans, RPC, and Louisiana Department of Transportation and Development (LADOTD). Their existing and expected roles and responsibilities as related to this project are illustrated in Table 2.1. The roles and responsibilities listed are not fully inclusive of all the roles and responsibilities of the stakeholders.

Table 2.1
Organization Chart

Stakeholder	Roles	Responsibilities	Responsible Persons
LADOTD: District 02 Traffic Operations	• Traffic Signal Owner	• Coordinate signal operation • Regulate signal design • Approval required for permit issuance	Bao Le
LADOTD: Permitting	• Permit Issuance	• Issue permits for work performed on DOTD owned signals once approved	Darlene LaMarca
RPC	• Coordinator	• Coordinates and manages regional planning projects	Jeff Roesel
Jefferson Parish Traffic Operations	• Traffic Signal Operations	• Coordinate signal operation • Regulate signal design and determines phasing/timing • Review and approve new signals and modifications	Susan Treadway
Jefferson Parish: Maintenance Division	• Traffic Signal Maintenance	• Perform routine and emergency maintenance on traffic signal equipment	Dawn Deleo
Kenner Engineering	• Traffic Signal Owner	• Coordinate signal operation	Tom Schreiner
JeT: Management	• Management & Transit Vehicle Owner	• Coordinates transit route, schedules, etc. • Maintains system operations	Orlandez Pierre
JeT: Technical Operations	• Transit Vehicle Operations	• Maintains operation of transit infrastructure	Eric Weissborn
JeT: Maintenance	• Transit Vehicle Maintenance	• Performs routine and emergency maintenance on transit as needed	Brian Thompson
City of New Orleans DPW: Traffic Division	• Traffic Signal Operations	• Regulate signal design and determines phasing/timing • Review and approve new signals and modifications	Allen Yrle
City of New Orleans DPW: Maintenance	• Traffic Signal Maintenance	• Perform routine and emergency maintenance on traffic signal equipment	Joe Butler

2.6 Environmental Factors

Veterans Blvd is owned by Jefferson Parish but becomes a state route once it crosses into Orleans Parish. The project is expected to be completed within existing right of way.

The main environmental concern when dealing with wireless communication such as GPS is interference in the urban environment including, but not limited to, closely spaced, tall buildings and tree overhangs.

3 – Physical Architecture

3.1 Inventory Elements

The architecture elements and descriptions as associated with this project are included in Table 3.1. Each element identified for this project are as identified in the New Orleans Regional ITS Architecture (February 2016).

Table 3.1
Inventory Elements

Element	Status	Description
DOTD District 02 Traffic Operations	Existing	This element represents traffic operations or traffic engineering within the district office that is responsible for traffic management activities within its jurisdiction. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic, management related activities. This also includes communicating with Traffic Management Center (TMCs) and other departments like maintenance for roadway maintenance activities. District 02 traffic operations are housed within the DOTD Regional Transportation Management Center (RTMC) facility.
DOTD District 02 Traffic Signal System	Existing	Field communications, field controllers, field masters, and vehicle detection on state highways that are operated and maintained by the LADOTD.
Jefferson Transit (JeT)	Existing	This element is responsible for the operations and maintenance of buses on fixed schedule routes and on-demand paratransit services throughout Jefferson Parish.
Jefferson Parish Traffic Operations	Existing	This element represents traffic operations or traffic engineering for the parish and is responsible for traffic management activities. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic management related activities. This also includes communicating with TMCs and other departments, such as maintenance, for roadway maintenance activities.
Jefferson Parish Traffic Signal System	Existing	This element represents traffic signals operated and maintained by Jefferson Parish.
Kenner Engineering	Existing	This element represents the engineering office.
Regional Transportation Management Center	Existing	The Regional Transportation Management Center (RTMC) is a facility that houses both the DOTD D02 Traffic ITS/TMC Operations and the NORPC, which allows the co-located agencies to fully plan and operate the ITS. This element represents the traffic/transportation operations center that is responsible for traffic management activities throughout New Orleans area. The typical activities include traffic monitoring, traffic data collection, operation of ITS elements (CCTV, DMS, etc.),detection and verification of incidents, traffic signal monitoring, and other traffic management related activities. This also includes communicating with other agencies, districts, TMCs, and DOTD departments such as maintenance for roadway maintenance activities.
New Orleans Traffic Operations	Existing	This element represents traffic operations or traffic engineering for the city that is responsible for traffic management activities. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic management related activities. This also includes communicating with Traffic Management Centers (TMCs) and other departments like maintenance for roadway maintenance activities.
New Orleans Traffic Signal System	Existing	This element represents traffic signals operated and maintained by the City of New Orleans.

Source: New Orleans Regional ITS Architecture – February 2016

3.2 Inventory Interfaces

The following architecture flow diagrams illustrate the sub-systems and architecture flows as they pertain to the project. Each sub-system shown is an existing element. Existing and proposed architecture flows as related to this project are shown. Some elements and flows are repeated.

Figure 3.1a
Architecture Flows

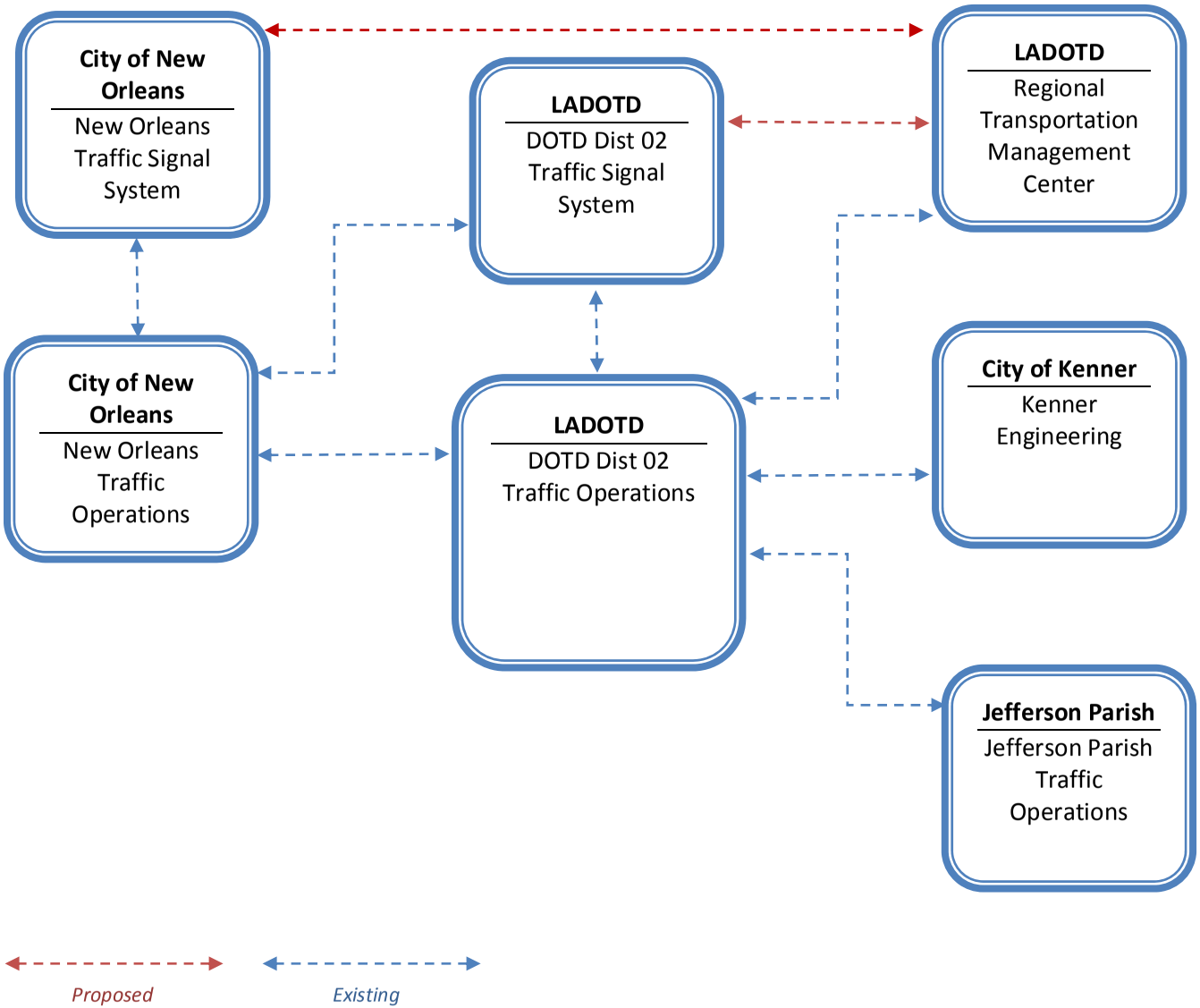
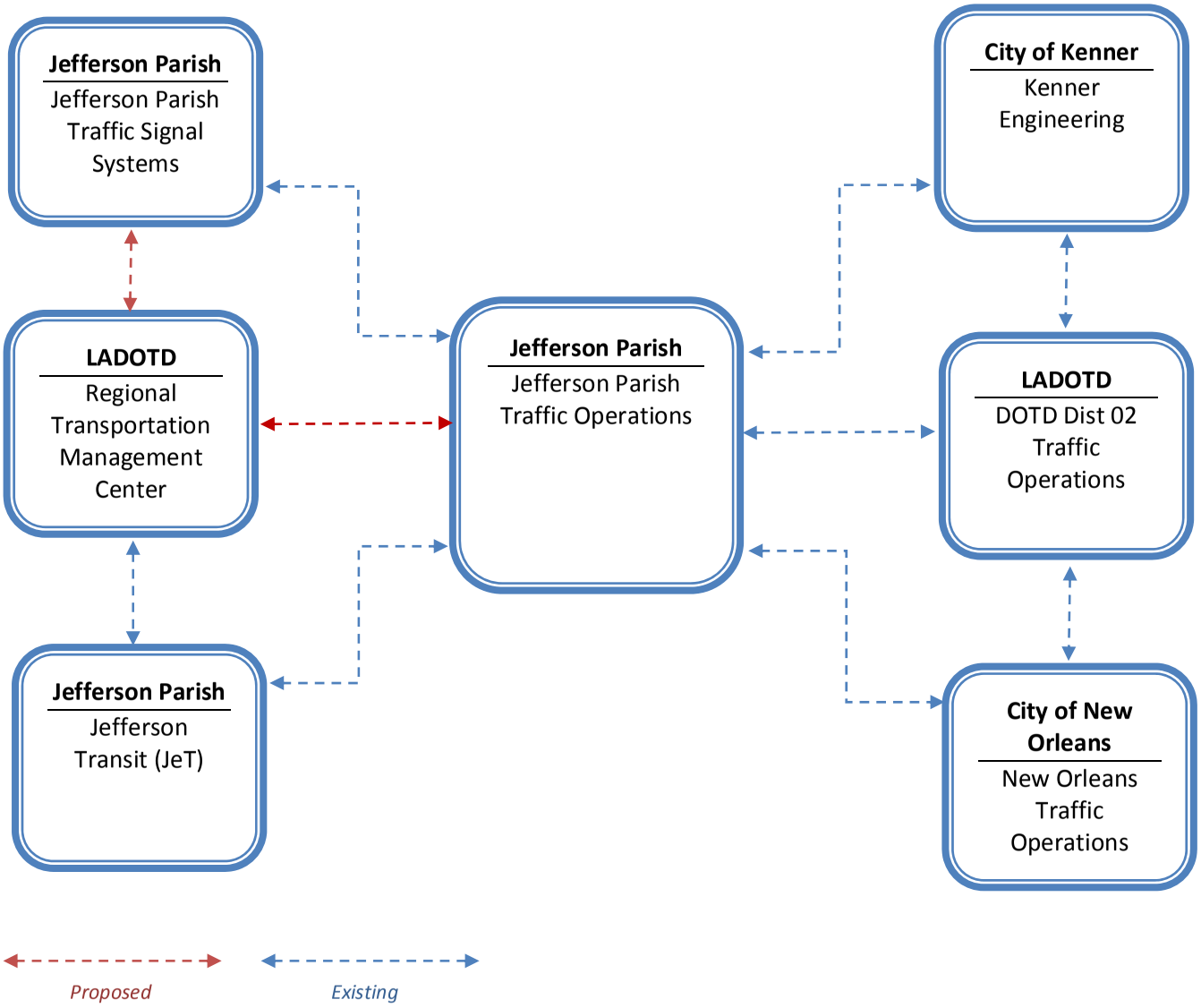


Figure 3.1b
Architecture Flows



3.3 Agreements

Existing and/or planned agreements between stakeholders associated with this project are shown in Table 3.2. Each agreement for this project are as identified in the New Orleans Regional ITS Architecture (February 2016).

Table 3.2
Agreements

Title	Status	Description
Traffic Signal Maintenance – LADOTD/ City of New Orleans	Existing	Agreement between LADOTD and City of New Orleans for providing maintenance and operations of traffic signals at state intersections within the city limits. Maintenance and operations include: payments for electricity, inspections, replacements of inoperative light bulbs and fuses, and straightening of signal heads and signs.

Source: New Orleans Regional ITS Architecture – February 2016

Additionally, a maintenance contract will need to be established between the TSP provider and LADOTD for maintaining, repairing and/or reinstalling the preemption equipment located within the five (5) LADOTD signal cabinets.

4 – Requirements Plan

4.1 Central Management Software (CMS)

The CMS shall control the signal priority systems using predetermined criteria and settings as part of the vendor software. The following criteria are required, but not limited to:

1. The system shall be cloud based and shall not require the installation or maintenance of equipment or software by the stakeholders.
2. The system shall receive transit priority requests from the detection system and process the request through a decision matrix to determine the need for signal preemption. Preemption will be granted or denied based on the transit vehicles current location and whether or not it is on schedule.

3. The system shall have the ability to log priority request information in a database.
    - Each priority call shall be logged by date, time, intersection, direction and vehicle.
    - System shall have the ability to detect unauthorized users.

4. The system shall have the ability to implement multiple emergency evacuation plans.

- Transit vehicles will be upgraded to preemption mode to aid in hastily evacuating an area.
- Emergency vehicles shall retain priority over transit vehicles.

5. The system shall be highly scalable.
    - The system shall have the capability to be expanded to include additional intersections and vehicles on a large scale.

6. The system shall have the ability to provide the user with assorted reports including maintenance, performance and usage.

7. The system shall provide remote cabinet monitoring for approved stakeholders.

4.2 Signal Controller Preemption Equipment

The Signal Controller Preemption Equipment shall detect and control priority request at each individual intersection through the traffic signal controller. The following criteria are required for the signal controller equipment:

1. The system shall communicate vehicle information with the CMS and provide priority request information.
    - Equipment shall receive vehicle priority request and relay the request to the CMS enabling automated operation.

2. The system shall provide preemption while minimizing the disruption to the surrounding traffic when a priority request is granted by the CMS.
    - Activation of the preemption shall be granted based on the estimated time of arrival as determined by the location of the transit vehicle in relation to the traffic signal and its speed.
    - Upon confirmation that the vehicle has cleared the intersection the system shall reinstate normal signal operation.
    - Priority shall be given to transit vehicles by means of signal phasing and timing adjustments such as extension of the green phase or providing an early green phase.

4.3 Transit Vehicle Preemption Equipment

1. The system shall communicate with traffic signal controller preemption equipment. The following criteria are required for the transit vehicle equipment:
    - Equipment shall send vehicle data and priority request to the traffic signal equipment for processing.
    - Vehicle information shall include, but not be limited to, individual identifier, location, speed and priority request.

2. The system shall have the ability to terminate priority requests when the transit is loading/unloading at near side stops.

- Equipment shall deactivate priority request transitions when the transit doors are open and shall reactivate upon door closure.

3. The system shall not interfere with existing transit operating systems.

4.4 Communications Links

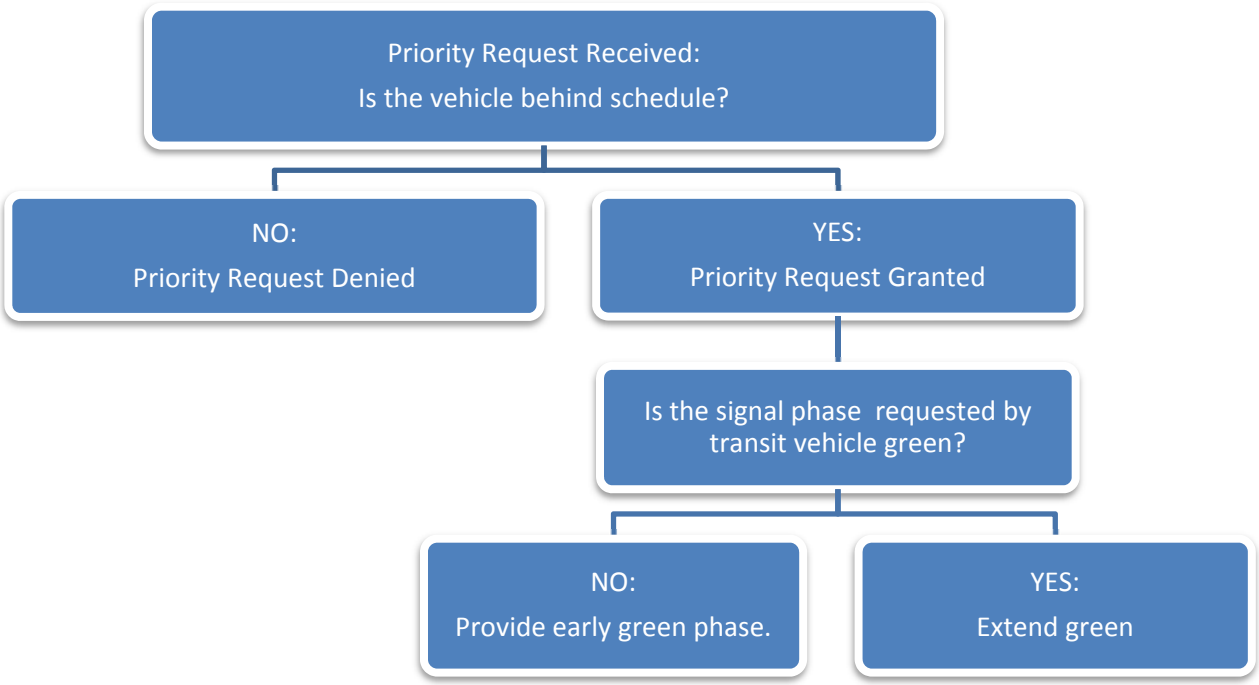
1. The system shall provide accurate and reliable communication between the transit vehicles, traffic signals and the CMS. The following criteria are required for the communications links:
    - Communications shall be able to withstand day to day weather conditions without interruption of service.
    - Communications shall be compatible with standard traffic signal equipment.
    - Communications shall not interfere with existing transit and/or signal operating systems.

5 – Design Considerations

5.1 Operating Parameters/Decision Matrix

The operating parameters/decision matrix will be a series of decisions made by the CMS based on information provided by the transit vehicle and traffic signal detection equipment that determines whether the transit vehicle will be granted priority and if so, what type of priority. The following is a basic example of a potential decision matrix.

Figure 5.1
Decision Matrix



The operating parameters such as the thresholds defining "behind schedule", requirements for providing an early green, requirements for providing an extended green or other transit preemptions such as a transit only phase will be determined during design of the system.

5.2 Preemption Equipment Technologies

Equipment shall be compatible with Trafficware and Econolite traffic signal controller equipment and with existing JeT system equipment and shall not interfere with traffic signal or transit vehicle operating systems.

Each identified intersection along the subject routes and transit vehicle utilized on these routes shall be equipped with proper detection and preemption technologies. Access to the CMS shall be provided for authorized personal of DOTD, Jefferson Parish, City of Kenner, City of New Orleans and JeT.

5.3 Communication Technologies

The communication technology shall be compatible with and not interfere with existing traffic signal or transit vehicle operating systems.

The technology shall provide a consistent, reliable line of communication between the subject intersections and the CMS.

5.4 Constraints

Based on the information collected, the following intersection signal controllers and/or cabinets need to be upgraded due to out of date equipment and/or equipment condition.

Veterans Blvd at:

- Cleary Ave
- Houma Blvd
- Clearview Mall DW
- Clearview Pkwy
- 4848 (Harvard)
- Transcontinental Drive
- Green Acres Rd
- Bissonett Drive
- Lisa Drive
- David Drive
- Chapelle DW
- Mississippi Ave
- Massachusetts Ave
- Wal-Mart DW
- Roosevelt St

The following Jefferson Parish traffic signal controllers/cabinets are expected to be upgraded as part of other projects.

Veterans Blvd at:

- Elmeer Ave
- Aurora Ave
- Bonnabel Blvd
- Whitney DW
- Labarre Drive
- Causeway Blvd
- Lakeside DW
- Severn Ave
- Edenborne Ave
- Division St

Coordination with the signal owners will be required to confirm the status of the upgrades.

6 - Verification and Validation Plan

A Field Unit Verification/ Validation Performance Plan must be performed as part of this project. The Field Unit Verification Plan should demonstrate system performance to the specifications guaranteed by the equipment provider and insure that the installation of the equipment is completed per manufacturer specifications. The Validation Performance Plan must demonstrate that the system meets user expectations and ensure that any performance issues are addressed.

Each transit unit and signal controller unit must be tested to ensure proper operation per the requirements set forth in this SEA. The TSP system provider will coordinate with the referenced stakeholders to refine testing requirements and reporting format.

7 – Procurement

Potential procurement options and which agency would be better suited to advertise the project were discussed with the TAC. Based on input from the stakeholders it was determined that a Request for Proposals (RFP) through LADOTD is the preferred option. A RFP allows for the procurement of services not based on price alone. It is a qualitative based selection that can be based on multiple factors, including price. It also provides for the opportunity to revise proposals.

A Draft RFP document was prepared and is included in the appendix. The Draft RFP includes existing conditions, project requirements, and technical specifications for the project. Additional documents should be added to the RFP based on LADOTD requirements including, but not limited to, notice to contractors, insurance requirements, front end documents, DBE participation requirements (if any), required contract provisions, and minimum wage determinations.

APPENDIX

Veterans Transit Priority
Bus Stop Inventory - Kenner to New Orleans (Eastbound)

Location	Type	Closest Signalized Intersection	Distance (feet)	Near/Far Side of Signal	Possible Candidate for Relocation
Georgia	bench	Vets at Williams	370	far	no
Indiana	bench	Vets at Williams	1145	mid block	no
Kansas	bench	Vets at Roosevelt	500	near	no
Roosevelt	bench	Vets at Roosevelt	100	far	no
Massachusetts	shelter	Vets at Massachusetts	25	near	yes
Mississippi	shelter	Vets at Mississippi	25	near	yes
Montana	bench	Vets at Mississippi	500	far	no
David	shelter	Vets at David	35	near	possible removal
Lisa	shelter	Vets at David	730	far	yes
Downs	shelter	Vets at Downs	450	near	no
Roberta	shelter	Vets at Bissonet	20	near	no
Club	bench	Vets at Bissonet	390	far	no
Green Acres	shelter	Vets at Green Acres	40	near	yes
Kent	shelter and bench	Vets at Transcontinental	745	near	no
Transcontinental	shelter	Vets at Transcontinental	20	near	no
Lemon	shelter	Vets at Driveway/U-turns	540	near	no
Harvard	shelter	Vets at Driveway/U-turns	180	far	no
Lime	bench	Vets at Clearview	730	near	no
Clearview	bench	Vets at Clearview	430	near	no
Clearview Mall	shelter	Vets at Clearview Mall	115	far	no
Houma	shelter	Vets at Houma	250	near	no
Lake Villa	shelter	Vets at Houma	890	far	no
Richland	bench	Vets at Cleary	670	near	no
Cleary	shelter	Vets at Cleary	170	near	yes - move to bank
Taft	shelter	Vets at Cleary	625	far	no
N Turnbull	shelter	Vets at Division	1250	near	no
Turnbull/Division	shelter	Vets at Division	660	near	no
Edenborn	shelter	Vets at Edenborn	340	mid block	no
N Arnoult	shelter	Vets at Edenborn	340	far	no
Severn	shelter	Vets at Severn	80	near	possible removal
Athania	shelter	Vets at Severn	540	far	no
Causeway	shelter	Vets at Causeway	110	far	no
N Labarre	shelter	Vets at Kmart	230	near	no
Metairie Heights	sign only	Vets at Kmart	520	far	yes - shift west
Melody	bench	Vets at Kmart	1065	mid block	no
Hesper	sign only	Vets at Bonnabel	740	near	no
Bonnabel	shelter	Vets at Bonnabel	20	near	no
Aurora	bench	Vets at Aurora	20	near	no
Phosphor	sign only	Vets at Aurora	335	far	no
Brockenbraugh	sign only	Vets at Aurora	1020	far	no
Sena	sign only	Vets at Oaklawn	820	near	no
E William David	shelter	Vets at Oaklawn	290	near	no
Oaklawn	shelter	Vets at Oaklawn	20	near	no
Wilshire	shelter	Vets at Martin Behrman	145	far	no
Focis	bench	Vets at Martin Behrman	520	far	no
Nursery	bench	Vets at Papwroth	320	near	no
Papworth	shelter	Vets at Papwroth	20	near	no
Carrolton	shelter	Vets at Carrolton	80	far	no
Fleur De Lis	sign only	Vets at Fleur Dis Lis		near	no
Fleur De Lis		Vets at Fleur Dis Lis		far	no

Veterans Transit Priority
Bus Stop Inventory - New Orleans to Kenner

Location	Type	Closest Signalized Intersection	Distance (feet)	Near/Far Side of Signal	Possible Candidate for Relocation
Fleur Di Lis	sign only	Vets at Ponchartrain		far	no
Fleur Di Lis	sign only	Vets at Fleur Di Lis		near	no
Carrolton	shelter	Vets at Carrolton	30	near	no
Papworth	shelter	Vets at Papworth	10	near	no
Nursery	bench	Vets at Papworth	245	far	no
Focis	shelter	Vets at Martin Behrman	580	near	no
Martin Behrman	sign only	Vets at Martin Behrman	10	near	yes
Oaklawn	shelter	Vets at Oaklawn	20	near	no
E William David	bench	Vets at Oaklawn	230	far	no
Sena	bench	Vets at Elmeer	315	near	no
Brockenbraugh	bench	Vets at Elmeer	260	far	no
Phosphor	sign only	Vets at Elmeer	880	far	no
Aurora	bench	Vets at Bonnabel	745	near	yes
Bonnabel	bench	Vets at Bonnabel	25	near	yes
Hesper	bench	Vets at Bonnabel	705	far	no
Melody	shelter	Vets at Clifford	1000	mid	no
Metairie Heights	bench	Vets at Clifford	535	near	no
N Labarre	shelter	Vets at Clifford	180	far	no
Ridgelake	shelter	Vets at Causeway	445	near	no
Causeway	sign only	in intersection Vets at Causeway			no
Lakeside Mall	shelter	Vets at Lakeside Mall	205	near	no
N Arnoult	shelter	Vets at Severn	285	far	no
Hessmer	shelter	Vets at Division	340	near	no
Division/Neyrey	bench	Vets at Division	530	far	no
N Turnbull	shelter	Vets at Division	1145	mid	no
Taft Park	bench	Vets at Cleary	710	near	no
Cleary	shelter	Vets at Cleary	50	far	no
Richland	shelter	Vets at Cleary	600	far	no
Lake Villa	shelter	Vets at Houma	990	near	no
Houma	shelter	Vets at Houma	150	far	no
Hudson	sign only	Vets at Houma	460	far	no
Clearview	shelter	Vets at Clearview	115	far	no
Lime	sign only	Vets at Clearview	645	far	no
Harvard	shelter	Vets at Clearview	1330	far	no
Lemon	shelter	Vets at Transcontinental	635	near	no
Trasncontinental	shelter	Vets at Transcontinental	125	far	no
Kent	shelter	Vets at Transcontinental	630	far	no
Green Acres	bench	Vets at Green Acres	20	far	no
Club	sign only	Vets at Green Acres	400	far	no
Bisonnet	shelter	Vets at Bissonnet	30	near	yes
I-10	sign only	Vets at Best Buy Driveway	160	near	yes
Downs	shelter	Vets at Downs	40	near	no
Downs/Lisa	shelter	Vets at Downs	840	mid	no
Lisa	shelter	Vets at Lisa	20	far	no
Power	bench	Vets at Power	30	far	possible removal
Mississippi	bench	Vets at Mississippi (driveway)	130	far	no
Massachusetts	shelter	Vets at Walmart	735	near	no

VETERANS TRANSIT PRIORITY
TRAFFIC SIGNAL INVENTORY

	INTERSECTION	OWNER	CONTROLLER	COMMENTS
1	Veterans Blvd. and Fleur De Lis	Orleans	Trafficware	
2	Veterans Blvd. and Lake Ave.	Jefferson	Econolite	
3	Veterans Blvd. and Carrollton Ave.	Jefferson	Econolite	
4	Veterans Blvd. and Papworth	Jefferson	Econolite	
5	Veterans Blvd. and Martin Behrman	Jefferson	Econolite	
6	Veterans Blvd. and Oaklawn	Jefferson	Econolite	
7	Veterans Blvd. and Elmeer	Jefferson	Kentronics	being upgraded to Econolite in 2018
8	Veterans Blvd. and Aurora	Jefferson	Kentronics	being upgraded to Econolite in 2018
9	Veterans Blvd. and Bonnabel	Jefferson	Kentronics	being upgraded to Econolite in 2018
10	Veterans Blvd. and Whitney	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
11	Veterans Blvd. and Labarre	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
12	Veterans Blvd. and Causeway	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
13	Veterans Blvd. and Lakeside Driveway	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
14	Veterans Blvd. and Severn	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
15	Veterans Blvd. and Edenborn	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
16	Veterans Blvd. and Division	Jefferson	Kentronics	being upgraded to Econolite/Glance Equip -Causeway/Veterans Closed Loop Project
17	Veterans Blvd. and Cleary	Jefferson	Kentronics	
18	Veterans Blvd. and Houma	Jefferson	Kentronics	
19	Veterans Blvd. and Clearview Mall	Jefferson	Kentronics	
20	Veterans Blvd. and Clearview Pkwy.	Jefferson	Kentronics	
21	Veterans Blvd. and 4848 (Harvard)	Jefferson	Kentronics	
22	Veterans Blvd. and Transcontinental	Jefferson	Kentronics	
23	Veterans Blvd. and Green Acres	Jefferson	Kentronics	
24	Veterans Blvd. and Bissonett	Jefferson	Kentronics	
25	Veterans Blvd. and I-10 Ramp	LADOTD	Trafficware	
26	Veterans Blvd. and Best Buy/I-10	LADOTD	Trafficware	
27	Veterans Blvd. and Downs/I-10	LADOTD	Trafficware	
28	Veterans Blvd. and Lisa	Jefferson	Kentronics	
29	Veterans Blvd. and David Dr.	Jefferson	Kentronics	
30	Veterans Blvd. and Chapelle	Jefferson	Kentronics	
31	Veterans Blvd. and Mississippi	Jefferson	Kentronics	
32	Veterans Blvd. and Massachusetts	Jefferson	Kentronics	
33	Veterans Blvd. and Wal-mart	Kenner	Kentronics	
34	Veterans Blvd. and Roosevelt	Kenner	Kentronics	
35	Veterans Blvd. and Williams	LADOTD	Trafficware	

LEGEND:

- X AM Peak Hour
- [X] MID Peak Hour
- (X) PM Peak Hour
- Unsignalized Intersection
- Signalized Intersection

N W E S

Veterans Blvd.

Matchline "B" Figure 2

Matchline "C" This Sheet

Veterans Memorial Blvd.

Matchline "C" This Sheet

Cleary Ave.

Bonnabel Blvd.

Division St.

Edenborn Ave.

Severn Ave.

Lakeside Mall D/W

Causeway Blvd.

K Mart D/W

Old TGIF D/W

Lake Ave.

Elmeer Ave.

Oaklawn Dr.

Martin Behrman Ave.

Aurora Ave.

Papworth Ave.

Carrollton Ave.

Figure 3

2015 Traffic Counts (2 of 2)

Veterans Boulevard Corridor Study

Metairie, LA

NOT TO SCALE

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URBAN SYSTEMS inc.

Project # 15-061

LEGEND:

- X AM Peak Hour
- [X] MID Peak Hour
- (X) PM Peak Hour
- Unsignalized Intersection
- Signalized Intersection

N W E S

Veterans Memorial Blvd.

Massachusetts Ave.

Mississippi Ave.

Chapelle D/W

Montana Ave.

Power Blvd.

David Dr.

Lisa Dr.

Commercial D/W

Downs Blvd.

Best Buy D/W

EB I-10 Ramp

WB I-10 Ramp

Houma Blvd.

Matchline "A" This Sheet

Matchline "B" Figure 3

Bissonet Dr.

Green Acres Rd.

Transcontinental Dr.

Harvard Development D/W

Clearview Pkwy.

Clearview Mall D/W

(1662) [1118] 1380
(31) [21] 34
112 [195] (227)
1 [35] (38)
(213) [198] 129
10 [92] (78)
14 [5] (8)
15 [126] (140)
(11) [2] 1
(45) [35] 6
(1640) [1169] 1370
(27) [22] 74
47 [127] (105)
834 [1209] (1400)
147 [66] (142)
20 [63] (87)
(22) [13] 28
(17) [9] 5
(133) [113] 195
(1938) [1412]1558
(2) [1] 1
15 [8] (2)
26 [65] (79)
570 [466] (516)
874 [444] (598)
(3) [3] 1
(362) [211] 233
(1222) [986] 1182
(266) [218] 146
(875) [394] 471
(401) [397] 417
77 [163] (306)
556 [1121] (1279)
119 [179] (265)
17 [39] (23)
9 [36] (29)
(180) [165] 93
19 [18] (23)
788 [1328] (1672)
6 [100] (79)
2 [15] (12)
9 [86] (71)
(72) [65] 30
(39) [56] 10
(1471) [1210] 1352
(176) [91] 79
6 [27] (19)
696 [1142] (1542)
165 [152] (354)
10 [19] (28)
(165) [115] 89
(2) [12] 2
(257) [201] 321
9 [40] (47)
2 [23] (19)
(3) [5] 0
(20) [25] 2
(949) [804] 791
1 [6] (0)
968 [1358] (1860)
(129) [106] 49
(11) [13] 6
(289) [246] 297
(1254) [1084] 1039
671 [989] (1136)
(721) [412] 321

251 [83] (147)
138 [47] (74)
92 [73] (92)
925 [1391] (1966)
(139) [104] 84
(167) [65] 91
(1246) [1143] 1076
63 [58] (73)
154 [92] (90)
70 [65] (52)
93 [39] (40)
51 [57] (68)
838 [1298] (1777)
9 [12] (2)
(142) [81] 56
(218) [141] 121
(253) [162] 73
(13) [10] 10
(107) [60] 104
(1161) [1045] 1035
(11) [16] 5
108 [152] (137)
1238 [528] (966)
1072 [515] (1033)
331 [221] (209)
(142) [119] 131
(788) [922] 875
(171) [117] 181
181 [183] (214)
613 [1120] (1496)
165 [208] (276)
(288) [210] 178
(907) [778] 760
(1053) [869] 807
(158) [205] 207
16 [33] (25)
93 [248] (158)
(1241) [1234] 1454
(25) [43] 8
(38) [52] 0
68 [110] (113)
818 [574] (789)
288 [190] (214)
(99) [120] 99
(946) [1064] 1055
(393) [453] 392
108 [169] (222)
647 [1421] (1471)
323 [817] (824)
(446) [356] 433
(771) [570] 586
(1024) [1062] 1213
33 [134] (114)
(641) [301] 141
(501) [223] 106
(73) [112] 22
(140) [78] 35
(1759) [2005] 2401
(128) [176] 75
1015 [1894] (2125)
33 [134] (114)
(152) [189] 334
(1667) [1922] 1911
(79) [78] 70
152 [367] (332)
158 [153] (154)
875 [1560] (1871)
(282) [240] 209
(49) [57] 40
(180) [151] 120
(254) [278] 423

Figure 2
2015 Traffic Counts (1 of 2)

Veterans Boulevard Corridor Study
Metairie, LA

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URBAN SYSTEMS inc.

Project # 15-061

1. Intent

The intent of this specification is to describe the minimum requirements for a fully functional conditional transit signal priority (TSP) system to be operated in Jefferson Parish. The TSP capabilities would apply only to transit vehicles operated by Jefferson Parish Transit (JeT). Additionally, numerous traffic signal controllers will require upgrading to equipment compatible with the TSP system. As described in these specifications, the proposed TSP system and signal controllers shall be compatible with existing traffic signal control equipment, on-board technologies, and communication systems.

2. Project Background

The route selected for the Transit Signal Priority System is Route E1 – Veterans Memorial Boulevard. The TSP system will be limited to the Veterans Blvd corridor between Williams Blvd in Kenner and Fleur De Lis Street in New Orleans. The number of intersections and vehicles requiring transit priority equipment for this route is thirty-five (35) signalized intersections and a minimum of twenty (20) transit vehicles.

This RFP includes a bid form that the proposer is required to submit. The proposer's costs shall include providing equipment, design for any required integration, interfacing, training, testing, optional hardware/software installation, warranties, project management, and optional maintenance of equipment. The proposer shall include detailed specifications for each bid item that meets or exceeds the technical requirements contained in this RFP.

Prior to contract execution, this proposer will be required to submit a final quote or Work Order based on the detailed scope of services which will be evaluated against the competitively procured prices obtained in the proposer's originally submitted cost proposal in response to this specification.

3. Description of Existing Equipment

Existing Traffic Signal System

The Proposer shall ensure that the TSP system equipment is compatible with the existing/proposed traffic signal equipment outlined in this section.

Traffic Signal Controllers

The following table outlines the owner and type of signal controller currently in operation at each of the subject intersections.

Existing Traffic Signal Inventory

No.	INTERSECTION	OWNER	CONTROLLER
1	Veterans Blvd. and Fleur De Lis	LADOTD	Trafficware
2	Veterans Blvd. and Lake Ave.	Jefferson	Econolite
3	Veterans Blvd. and Carrollton Ave.	Jefferson	Econolite
4	Veterans Blvd. and Papworth	Jefferson	Econolite
5	Veterans Blvd. and Martin Behrman	Jefferson	Econolite
6	Veterans Blvd. and Oaklawn	Jefferson	Econolite
7	Veterans Blvd. and Elmeer	Jefferson	Kentronics*
8	Veterans Blvd. and Aurora	Jefferson	Kentronics*
9	Veterans Blvd. and Bonnabel	Jefferson	Kentronics*
10	Veterans Blvd. and Whitney	Jefferson	Kentronics*
11	Veterans Blvd. and Labarre	Jefferson	Kentronics*
12	Veterans Blvd. and Causeway	Jefferson	Kentronics*
13	Veterans Blvd. and Lakeside Driveway	Jefferson	Kentronics*
14	Veterans Blvd. and Severn	Jefferson	Kentronics*
15	Veterans Blvd. and Edenborn	Jefferson	Kentronics*
16	Veterans Blvd. and Division	Jefferson	Kentronics*
17	Veterans Blvd. and Cleary	Jefferson	Kentronics
18	Veterans Blvd. and Houma	Jefferson	Kentronics
19	Veterans Blvd. and Clearview Mall	Jefferson	Kentronics
20	Veterans Blvd. and Clearview Pkwy.	Jefferson	Kentronics
21	Veterans Blvd. and 4848 (Harvard)	Jefferson	Kentronics
22	Veterans Blvd. and Transcontinental	Jefferson	Kentronics
23	Veterans Blvd. and Green Acres	Jefferson	Kentronics
24	Veterans Blvd. and Bissonett	Jefferson	Kentronics
25	Veterans Blvd. and I-10 Ramp	LADOTD	Trafficware
26	Veterans Blvd. and Best Buy/I-10	LADOTD	Trafficware
27	Veterans Blvd. and Downs/I-10	LADOTD	Trafficware
28	Veterans Blvd. and Lisa	Jefferson	Kentronics
29	Veterans Blvd. and David Dr.	Jefferson	Kentronics
30	Veterans Blvd. and Chapelle	Jefferson	Kentronics
31	Veterans Blvd. and Mississippi	Jefferson	Kentronics
32	Veterans Blvd. and Massachusetts	Jefferson	Kentronics
33	Veterans Blvd. and Wal-mart	Kenner	Kentronics
34	Veterans Blvd. and Roosevelt	Kenner	Kentronics
35	Veterans Blvd. and Williams	LADOTD	Trafficware

*Controllers expected to be upgraded as part of other projects.

The proposers shall assume that the signal controllers identified with an asterisk will be upgraded to Econolite controllers prior to this project. It is anticipated that Seven (7) of the controllers scheduled for upgrade will also include the installation of Glance Priority & Priority equipment.

The remaining Kentronics signal controllers will require upgrading for compatibility purposes. For the purposes of this proposal fifteen (15) traffic signal controllers are expected to require upgrading. The signal controllers shall be upgraded to Econolite Cobalt Controllers to match the signal controllers currently scheduled for upgrade.

The bid shall include the upgrade of the existing signal controllers' firmware to also be capable of operating TSP. The proposer's bid for this technical specification shall therefore include the provision of TSP firmware at the number of intersections included within the cost proposal.

If needed, the proposers should submit questions to the [letting agency] for additional information from the Jefferson Parish and LADOTD Traffic Engineering Divisions regarding existing controllers.

Traffic Signal Cabinets

The majority of traffic signal cabinets along the corridor are NEMA cabinets. Therefore, the proposers shall assume that the transit signal priority equipment will be interfacing with these traffic signal cabinets in their cost proposal.

If needed, the proposers should submit questions to the [letting agency] for additional information from the Jefferson Parish and LADOTD Traffic Engineering Divisions regarding existing cabinets.

System Communications

The proposers shall submit recommendations for system communications. If needed, the proposers should submit questions to the [letting agency] for additional information from the Jefferson Parish and DOTD District 02 Traffic Engineering Divisions regarding existing system communications.

Existing Emergency Vehicle Prioritization

The existing emergency vehicle prioritization system uses infrared detection. The existing infrared prioritization system is expected to remain in operation. The Proposer shall ensure that the TSP system has the capability to integrate emergency vehicle prioritization should it be desired in the future.

If needed, the proposers should submit questions to the [letting agency] for additional information from the Jefferson Parish and LADOTD Traffic Engineering Divisions regarding emergency vehicle prioritization.

Existing Transit System

The Proposer shall ensure that the TSP system equipment is compatible with the existing transit equipment outlined in this section.

Vehicle Equipment

The proposers shall also assume transit vehicles have on-board systems that include a Transdev Shadow System which utilizes GPS to track bus locations and a mobile radio system used for incident management and/or maintenance issued. The proposed system must be compatible with existing systems.

If needed, the proposers should submit questions to the [letting agency] for additional information from JeT regarding existing transit system.

Transit Management Center

JeT operations and maintenance for the east bank of Jefferson Parish are located at 118 David Drive in Metairie, Louisiana. Administrative operations are located at 21 Westbank Expressway in Gretna, Louisiana.

The tracking information communicated from the transit vehicles are compared against scheduled times at designated time points along the transit routes. This provides a means for field monitoring of travel times and schedule adherence (ahead of, on-time, or behind schedule).

If needed, the proposers should submit questions to the [letting agency] for additional information from JeT regarding transit management.

Bus Stop Locations/Types

The following tables identify the bus stop locations along the route relative to the nearest signalized intersection, the type of stop, whether the stop is nearside, farside or mid-block, and if the stop is a potential candidate for relocation or removal.

The Proposer shall submit recommendations for bus stop relocations or removals. If needed, the proposers should submit questions to the [letting agency] for additional information from JeT regarding bus stops.

Bus Stop Inventory - Eastbound

Location	Type	Closest Signalized Intersection	Distance (feet)	Near/Far Side of Signal	Possible Candidate for Relocation
Georgia	bench	Vets at Williams	370	far	no
Indiana	bench	Vets at Williams	1145	mid block	no
Kansas	bench	Vets at Roosevelt	500	near	no
Roosevelt	bench	Vets at Roosevelt	100	far	no
Massachusetts	shelter	Vets at Massachusetts	25	near	yes
Mississippi	shelter	Vets at Mississippi	25	near	yes
Montana	bench	Vets at Mississippi	500	far	no
David	shelter	Vets at David	35	near	possible removal
Lisa	shelter	Vets at David	730	far	yes
Downs	shelter	Vets at Downs	450	near	no
Roberta	shelter	Vets at Bissonet	20	near	no
Club	bench	Vets at Bissonet	390	far	no
Green Acres	shelter	Vets at Green Acres	40	near	yes
Kent	shelter and bench	Vets at Transcontinental	745	near	no
Transcontinental	shelter	Vets at Transcontinental	20	near	no
Lemon	shelter	Vets at Driveway/U-turns	540	near	no
Harvard	shelter	Vets at Driveway/U-turns	180	far	no
Lime	bench	Vets at Clearview	730	near	no
Clearview	bench	Vets at Clearview	430	near	no
Clearview Mall	shelter	Vets at Clearview Mall	115	far	no
Houma	shelter	Vets at Houma	250	near	no
Lake Villa	shelter	Vets at Houma	890	far	no
Richland	bench	Vets at Cleary	670	near	no
Cleary	shelter	Vets at Cleary	170	near	yes - move to bank
Taft	shelter	Vets at Cleary	625	far	no
N Turnbull	shelter	Vets at Division	1250	near	no
Turnbull/Division	shelter	Vets at Division	660	near	no
Edenborn	shelter	Vets at Edenborn	340	mid block	no
N Arnoult	shelter	Vets at Edenborn	340	far	no
Severn	shelter	Vets at Severn	80	near	possible removal
Athania	shelter	Vets at Severn	540	far	no
Causeway	shelter	Vets at Causeway	110	far	no
N Labarre	shelter	Vets at Kmart	230	near	no
Metairie Heights	sign only	Vets at Kmart	520	far	yes - shift west
Melody	bench	Vets at Kmart	1065	mid block	no
Hesper	sign only	Vets at Bonnabel	740	near	no
Bonnabel	shelter	Vets at Bonnabel	20	near	no
Aurora	bench	Vets at Aurora	20	near	no
Phosphor	sign only	Vets at Aurora	335	far	no
Brockenbraugh	sign only	Vets at Aurora	1020	far	no
Sena	sign only	Vets at Oaklawn	820	near	no
E William David	shelter	Vets at Oaklawn	290	near	no
Oaklawn	shelter	Vets at Oaklawn	20	near	no
Wilshire	shelter	Vets at Martin Behrman	145	far	no
Focis	bench	Vets at Martin Behrman	520	far	no
Nursery	bench	Vets at Papwroth	320	near	no
Papworth	shelter	Vets at Papwroth	20	near	no
Carrolton	shelter	Vets at Carrolton	80	far	no
Fleur De Lis	sign only	Vets at Fleur Dis Lis		near	no
Fleur De Lis		Vets at Fleur Dis Lis		far	no

Bus Stop Inventory – Westbound

Location	Type	Closest Signalized Intersection	Distance (feet)	Near/Far Side of Signal	Possible Candidate for Relocation
Fleur Di Lis	sign only	Vets at Ponchartrain		far	no
Fleur Di Lis	sign only	Vets at Fleur Di Lis		near	no
Carrolton	shelter	Vets at Carrolton	30	near	no
Papworth	shelter	Vets at Papworth	10	near	no
Nursery	bench	Vets at Papworth	245	far	no
Focis	shelter	Vets at Martin Behrman	580	near	no
Martin Behrman	sign only	Vets at Martin Behrman	10	near	yes
Oaklawn	shelter	Vets at Oaklawn	20	near	no
E William David	bench	Vets at Oaklawn	230	far	no
Sena	bench	Vets at Elmeer	315	near	no
Brockenbraugh	bench	Vets at Elmeer	260	far	no
Phosphor	sign only	Vets at Elmeer	880	far	no
Aurora	bench	Vets at Bonnabel	745	near	yes
Bonnabel	bench	Vets at Bonnabel	25	near	yes
Hesper	bench	Vets at Bonnabel	705	far	no
Melody	shelter	Vets at Clifford	1000	mid	no
Metairie Heights	bench	Vets at Clifford	535	near	no
N Labarre	shelter	Vets at Clifford	180	far	no
Ridgelake	shelter	Vets at Causeway	445	near	no
Causeway	sign only	in intersection Vets at Causeway			no
Lakeside Mall	shelter	Vets at Lakeside Mall	205	near	no
N Arnoult	shelter	Vets at Severn	285	far	no
Hessmer	shelter	Vets at Division	340	near	no
Division/Neyrey	bench	Vets at Division	530	far	no
N Turnbull	shelter	Vets at Division	1145	mid	no
Taft Park	bench	Vets at Cleary	710	near	no
Cleary	shelter	Vets at Cleary	50	far	no
Richland	shelter	Vets at Cleary	600	far	no
Lake Villa	shelter	Vets at Houma	990	near	no
Houma	shelter	Vets at Houma	150	far	no
Hudson	sign only	Vets at Houma	460	far	no
Clearview	shelter	Vets at Clearview	115	far	no
Lime	sign only	Vets at Clearview	645	far	no
Harvard	shelter	Vets at Clearview	1330	far	no
Lemon	shelter	Vets at Transcontinental	635	near	no
Trasncontinental	shelter	Vets at Transcontinental	125	far	no
Kent	shelter	Vets at Transcontinental	630	far	no
Green Acres	bench	Vets at Green Acres	20	far	no
Club	sign only	Vets at Green Acres	400	far	no
Bisonnet	shelter	Vets at Bissonnet	30	near	yes
I-10	sign only	Vets at Best Buy Driveway	160	near	yes
Downs	shelter	Vets at Downs	40	near	no
Downs/Lisa	shelter	Vets at Downs	840	mid	no
Lisa	shelter	Vets at Lisa	20	far	no
Power	bench	Vets at Power	30	far	possible removal
Mississippi	bench	Vets at Mississippi (driveway)	130	far	no
Massachusetts	shelter	Vets at Walmart	735	near	no

4. Transit Signal Priority System Requirements

This section describes the minimum performance specifications for the Transit Signal Priority System.

Overview

The [letting agency] wishes to procure a Traffic Signal Priority and Remote Monitoring System (the TSPRMS) for the subject bus route along Veterans Memorial as previously defined. The intention of the TSPRMS is to allow the following to key requirements to be provided:

1) The system shall track transit vehicles and provide priority requests to the traffic signal controller.
2) The system shall be capable of configuring priority requests for more than 120 seconds before the vehicle approaches the intersection.
3) A web based configuration utility shall provide an easy way of defining priority zones.
4) The system shall use a GPS position of the vehicle to determine when to send a priority request to the traffic signal controller.
5) The system shall have redundant communication from the vehicles to the traffic intersections using both 900MHz radio and Cellular communications.
6) Display of the real time fault status of the client(s) traffic intersections.
7) Issue real time alerts via SMS and email to the appropriate response personnel immediately a fault occurs, so that the client(s) no longer has to rely on notification by the public.
8) Operating the TSPRMS with cloud hosted software with user web-based access, and with no software or IT infrastructure for the client(s) to install or maintain. The client(s) user interface will be browser based, with no software to be installed on client computers except for a standard browser.
9) The monitoring of the priority system assures that the devices (both in vehicle and in cabinet) are functioning correctly, and that the system will be available when required.
10) The field devices must be capable of receiving “over the air” software and security updates. The over the air updates allows new features to be installed remotely without having to physically go to the field devices.
11) The hardware shall be under warrantee for as long as the devices have a connectivity and support license and connected to the TSPRMS.

i. Traffic Signal Priority and Remote Monitoring System Client(s) User Interface Requirements.

The TSPRMS software user interface shall provide, as a minimum, features to meet the following requirements:

1) General

a. The user interface shall be web based, and to be able to be viewed using a browser. Internet Explorer, Chrome and Firefox browsers shall be supported, as well as Safari on an iPad. Systems that use remote desktop or similar to view a thick-client user interface will not be acceptable.
b. The TSPRMS shall require a user name and password to log on.
c. The RSBMS systems shall be mobile friendly and operators shall be able to open the system on a mobile phone to access the data and control the school beacons. The web based system shall be viewable on any modern web browser on a mobile phone and automatically sized for the screen.

2) Map Display

a. The TSPRMS shall include a scrollable, zoomable map display, with the intersections and emergency vehicles shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.
b. The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.
c. The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.
d. The icons shall change to be able to clearly indicate if an intersection is offline.
e. Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.
f. The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.
g. The map view shall have the ability to show Google traffic overlays on the map.
h. The map view shall be able to show vehicle trails when the vehicles have been in an emergency or not active.

3) Regional Intersection and Vehicle Grouping

a. The TSPRMS shall provide for intersections and Vehicles to be logically grouped into regional groupings (for example, transit 1; transit 2)

b. The TSPRMS user logon shall be configurable so that if a maintenance or operational person is responsible for, say, the DOTD intersections then when that user logs on, the user has visible only the intersections that belong to the group that the user is authorized to view.

4) Intersection Detail Display

a. It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:
    i. The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).
    ii. The time since the last communication with the device
    iii. The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)
        1. The AC mains voltage (value)
        2. The battery back-up voltage (value)
        3. The cabinet temperature (value)
        4. The cabinet humidity (value)
        5. The presence of AC power (OK or Fail)
        6. The flashing status of the intersection (OK or Flashing)
        7. Stop Time status (OK or Stop Time Active)
        8. The cabinet door status (Open or Closed)
        9. The intersection fan status (Fan On or Fan off)
    iv. It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two week period. This includes real time graphs of:
        1. The AC mains voltage
        2. The battery back-up voltage
        3. The cabinet temperature
        4. The cabinet humidity

5) Diagnostics and Log Display

a. From the device level detail, it shall be possible to further drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems on the TSPRMS.
b. It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.
c. It shall be possible to print these selected logs to a local printer or a PDF file.
d. It shall be possible to export these logs to Excel on the local computer for further analysis.

6) Alarms

a. The TSPRMS shall have a comprehensive alarm generation capability
b. It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.
c. Alarms shall be configurable to be of Low, High or Critical Priority.
d. The alarm priority shall be displayed throughout the TSPRMS, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.
e. The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7) Alerts

a. The TSPRMS shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.
b. It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.
c. The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.
d. The intention is that the TSPRMS provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8) Reports

a. It shall be possible to view reports on the screen, in the browser of the TSPRMS, and if desired print the report to a printer or a PDF file.
b. Alarm Activity Report
    i. The TSPRMS shall include a report which shows the alarms activity for a period.
    ii. The Alarm Report shall indicate the time the alarm occurred; by color the priority of the alarm; whether it is still active; and if not active then the time that the alarm cleared.
    iii. It shall be possible to filter the alarms by Device Type; by Device and/or by Device Group as well as by date time to be able drill down into a large alarm list to be able to view, for example, the alarm activity for a particular intersection or controller type over a three month period.
c. User Activity Report
    i. The TSPRMS shall include a report which shows user activity for a given period, to enable an audit of a user's response to an alarm to be made.

ii. The report shall show which screens the user viewed; when the screen was viewed, and the IP address of the computer from which the screen was viewed.

d. Priority System Operational Availability Report
    i. The TSPRMS shall include a report which shows the overall operational availability of the client(s) intersections. The intersection is available when not in an alarm condition such as flashing or power fail.
    ii. The availability report shall be detailed for each intersection for the period (i.e. 1 month) and summarized by group (region) and for each controller type, and shall result in a Key Performance Indicator (KPI) for each region; for each controller type; and an overall system KPI for the intersection system availability.
    iii. Using this report, it shall be possible to determine if system availability is trending up or down for the overall intersection system; by region and/or by controller type. It shall also be possible to compare the system availability by region; and also to compare system availability by controller type.
e. Vehicle Trip Report
    i. The TSPRMS shall include a report which shows all the vehicle trips and include information on start time, end time, total travel time, average speed and destination point.
    ii. The report shall provide the user the ability to select a start date and end date.

9) Vehicle Trails

a. The maps display shall show live information of the priority status of the vehicles on the system.
b. The user shall have the option to select which class of vehicles to display on the map via the information overlay menu.
c. The information overlay will provide the option to select the number of hours of live data the operator would like to see. This ranges from 1 hour to 24 hours. The user shall have the ability to select that the trails will fade away as the data becomes older.
d. The information overlay shall provide the ability for user to display the device names on the map, for easy identification of both intersections and vehicles.
e. Operators will have the ability to display legends that explain the vehicle trails color codes, including idle, priority service requested, left turn indicator, and right turn indicator so that it is easy to see the behavior of the emergency vehicle.

10) Vehicle Playback

a. The TSPRMS shall include the ability to playback the activity of the vehicles, so that retrospective fault finding of the priority system can be carried out.
b. Playback shall support the same controls for panning and zooming the map, as well as using the information overlay to select the type of data being displayed on the playback menu.

c. Users shall have the additional functionality of controlling which devices are displayed by selecting the checkboxes on a selection panel on the left of the map.
d. The playback screen should provide the user with the option to select a date range via a drop-down date selector menu. The menu will provide a full calendar and the option to select the exact start time and end time for the playback.
e. The bottom section of the map screen shall display the timestamp based on the location within playback.
f. The user shall have controls that allow one click access to start from the beginning, rewind, play, fast-forward, and scroll to end.
g. The user shall have the option to use a slider that is operated by click and drag to the time of interest in the playback.

11) Remote Power Cycle

a. The TSPRMS shall include the ability to remotely cycle power to the outlets on the back of the field device. In this way it shall be possible to cycle power to ancillary connected equipment such as network switches, cameras and similar equipment.
b. The user interface shall display the status of the outlets, and provide confirmation via an associated input whether the sockets are energized or not.

ii. Priority System Functional Requirements

The Traffic Signal Priority system shall conform to the following requirements:

1) Overall Requirements

a. When a transit vehicle requests priority service, the TSPRMS shall reliably request a priority from the traffic controller by activating a digital output (which is connected to one of the priority inputs on the traffic controller) when the circumstance of the transit vehicle comply with the rules established by the configuration of the intersection.

b. The interfaces described above shall provide, as a minimum, the following conditional transit signal priority checks prior to the granting of a vehicle request:

Transit Vehicles:

i. Bus is operating in-service
ii. Meets user-defined bus lateness criteria or queue jump parameters.
iii. Meets first-come, first served criteria if multiple TSP requests and under equal request timing, service to be based on determining highest magnitude of lateness and type of fleet if such is defined.
iv. Exceeds minimum time between successive TSP requests (aka re-arm or re-service)
v. Meets TSP parameters (TSD, TED)

vi. Meets signal operator criteria for maximum green extension and TSP minimum phase green
vii. Would not be served during a rail or emergency pre-emption event
viii. Meets time of day criteria (as needed)
ix. Vehicle doors are in closed position
x. Vehicle is in motion
xi. A priority rule shall stay active until the vehicle is detected at a safe distance away from the intersection, and moving away from the intersection.
xii. The priority shall be released once all active rules that triggered the priority have become deactivated.

c. The priority system shall support eight (8) priority or pulsed low priority outputs. All inputs are optically isolated.
d. The status of priorities shall be indicated by LED's on the front of the in-cabinet priority unit.
e. It shall be possible to test each of the priorities by pressing a test button (with an associated selector switch) which will cause each priority to be triggered. This will allow for the wiring, and operation of the signal controller, to be tested without actually driving a vehicle down each approach.
f. The system shall be able to support service calls on a first come first serve basis.

2) Communications Requirements

a. The priority system shall support both radio and cellular communications.
b. The radio system shall operate on unlicensed bands, and shall not require user certification.
c. The radio shall have a range in excess of 2500 feet.
d. The system latency shall support real time communications on a second-by-second basis from the vehicle to the intersection.
e. Data paths shall be established (if configured) to operate via radio and via cell network. In this way, the priority request packets from the vehicle will potentially arrive at the intersection from both communication paths. The intersection shall process the packet that arrives first, and ignore the packet that arrives subsequently.
f. The system shall continue to operate correctly in the event of radio or cellular failure.

3) Central configuration Requirements

a. It shall be possible to configure the parameters required to implement the desired rules on a browser client connected to the central computer.
b. Setting of left and right direction limits, and distances, shall be accomplished by clicking and dragging of lines on a map of the roads.
c. Other rule parameters shall be entered on the user interface, and saved and/or sent to the intersection as required.
d. Systems that require the installation of software onto client computers will not be acceptable.

4) Local Configuration Requirements

a. The editing of the rules shall be accomplished by using a local web site hosted by the priority controller, using a browser.
b. Systems that require the user to load custom configuration software on the laptop for the purpose of editing the priority rules will not be acceptable.

iii. Intersection Device Requirements

It is a requirement that the TSPRMS operate independent of the brand/type of intersection controller deployed at the intersection. The TSPRMS contractor shall install a small field device into each intersection cabinet which connects to the terminal strip in the cabinet (via a wiring harness) and makes the TSPRMS functions independent of controller operation. The TSPRMS Field Device (TSPRMSFD) shall conform to the following requirements:

a. The TSPRMSFD shall function correctly between -34 degrees C and +74 degrees C.
b. The maximum size of the TSPRMSFD shall be 19" x 7,455" by 1.719" (1U), and shall be suitable for placing in a AGENCY traffic cabinet.
c. The TSPRMSFD shall be provided with appropriately rated connects that allows the TSPRMSFD to be exchanged by unplugging connectors, without tools.
d. The RMDFD shall incorporate an integrated GPS and cell modem.
e. The configuration of the TSPRMSFD shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the TSPRMSFD without any special software.
f. The TSPRMSFD shall be powered via a standard 120V input power.
g. The TSPRMS FD shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for the types of controller that are utilized by the client(s). In this way is shall be possible to configure the controller, and utilize the controller specific software to interrogate the controller, and the TSPRMS shall provide the communications pipe which allows this to be accomplished.
h. The TSPRMSFD shall utilize field initiated communications. This allows for a low cost cellular data plans to be used, with infrequent polling. However, when an abnormal event occurs and is detected by the TSPRMSFD, then the TSPRMSFD will immediately initiate the transfer of a data packet to the TSPRMS to enable real-time alerting of response personnel to take place.
i. The TSPRMSFD shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the TSPRMS to function correctly even when all power to the intersection has failed. The battery shall continue to power the TSPRMSFD for a minimum of 5 hours after all power has failed to the intersection.
j. The TSPRMSFD shall incorporate an integrated GPS which will allow the TSPRMSFD to geo-locate itself on the map, without configuration.

k. The TSPRMSFD shall operate without requiring a static IP address. The only configuration required at the TSPRMSFD is to enter the URL of where the TSPRMS central software is hosted.
l. In the event that the cell service is interrupted or is not available, the TSPRMSFD shall store any events that occur in internal memory, and forward these events automatically to the TSPRMS when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.
m. The TSPRMSFD shall utilize HTTP and HTTPS protocols, and XML data structures, for communications with the TSPRMS. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.
n. The TSPRMSFD shall be a 1U 19" rack mount device, with all connections on the rear, and LED indicators, power switches and selector switches on the front.
o. The TSPRMSFD shall include Ethernet communications with an RJ45 connector.
p. The TSPRMSFD shall use no self tapping screws.
q. The TSPRMSFD shall be powered coated aluminum enclosures.
r. The TSPRMSFD shall include weather proof antennas if installed externally.

iv. In-vehicle Device Requirements

The Traffic Priority System Vehicle Device (TPSVD) shall conform to the following requirements:

a. The TPSVD shall function correctly between -34 degrees C and +74 degrees C.
b. The TPSVD shall be capable of being mounted inside a vehicle either under a seat or strapped under the dashboard. The unit will come with all wiring needed to connect the system to the vehicle.
c. The TPSVD shall interface to a non- invasive road sensor for environmental measurements via either RS485 or Bluetooth connection.
d. The TPSVD shall be provided with appropriately rated and keyed connectors that allows the TPSVD to be exchanged by unplugging connectors, without tools.
e. The TPSVD shall incorporate an integrated GPS and cell modem.
f. The configuration of the TPSVD shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the TPSVD without any special software.
g. The TPSVD shall utilize field-initiated communications. This allows for low cost cellular data plans to be used, with infrequent polling. However, when an abnormal event or significant change in road conditions occurs, then the RCMSDC will immediately initiate the transfer of a data packet to the RCMS to enable real-time road condition information to be displayed on the TPSVD.
h. The TPSVD shall incorporate an integrated GPS which will allow the TPSVD to geo-locate itself on the map, without configuration.

i. The TPSVD shall operate without requiring static IP address. The only configuration required at the TPSVD is to enter the URL of where the TSPRMS central software is hosted.
j. In the event that the cell service is interrupted or is not available, the TPSVD shall store any events that occur in internal memory, and forward these events automatically to the RCMS when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period.
k. The TPSVD shall utilize HTTP and HTTPS protocols, and XML data structures, for communications with the RCMS. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.
l. The TPSVD shall support Ethernet, cellular and license free radio communication.
m. The TPSVD shall have the option of being supplied with an enhanced GPS, which provides GPS coordinates based on dead-reckoning even when the GPS signal is shielded from the vehicle such as under an overpass; in a tunnel or in between tall buildings in a city. The dead reckoning system shall include accelerometers, gyroscopes and a distance measure that will provide accuracy of better than 20 feet in 1000 feet, when there is no information from the GPS satellites. The enhanced GPS shall optionally be connected to the vehicle OBD-II port; the J1939 ECU port (for heavy vehicles) or a wheel tick sensor as the project requires. The enhanced GPS shall self-calibrate the wheel tick input.

v. Installation

All installation work in the client(s) cabinets shall be carried out by personnel certified by client(s) for work in the subject traffic cabinets.

vi. Hosting and Connectivity and Service.

The TSPRMS contractor, as part of the quote, shall include 5 or 10 years options for Connectivity and Service, as part of the purchase price. The RSBMS contractor, as part of the response to this RFQ, shall provide the option to extend the operation for a further 5 years of the Connectivity and Service agreement of the RSBMS.

The Connectivity and Service agreement shall include at a minimum:

- Cellular Connectivity
- Upgrade the cellular modem if the technology is not supported by the cellular networks.
- Telephone and email support
- No cellular overage charges
- Extended warranty on the hardware for the period of the Connectivity and Service Agreement
- Over-the-air software updates
- Over-the-air security updates

- Future Connected Vehicles Service

vii. Commissioning, Training and Documentation

The TSPRMS contractor shall configure the system and reports, and train the client(s) in the correct operation of the TSPRMS, to enable the client(s) to utilize the TSPRMS for the objectives outlined above.

viii. Extensibility

The TSPRMS shall be designed to be extensible to cover the monitoring, maintenance and operations of additional ITS systems such as:

1) Emergency Vehicle Preemption
2) School Beacons
3) Speed Feedback Radars
4) Dynamic message signs
5) Mobile systems such as maintenance vehicles, and Remote Weather tracking vehicles.
6) Traffic detection systems.
7) ITS cabinet monitoring systems.
8) Remote Weather Information Systems (RWIS)
9) Over-height vehicle detection and warning systems
10) High Mast lighting control systems

5. Training

If required, the Proposer shall develop a schedule for completion of training for different groups including, but not limited to, transit drivers, road supervisors and administration staff. The proposer shall provide operations and maintenance manuals for approval in advance of the training sessions. Each agency will also have On-the-job training for installation process. The proposer will be required to certify that those trained are capable and able to perform all installation activities properly.

6. Warranty

The Proposer shall provide an unrestricted warranty of parts and labor and telephone support during a maintenance period of not less than five (5) years following certification for each Work Order and acceptance by the [letting agency]. During this maintenance period, and through the contract period, the Proposer shall provide software and firmware upgrades at no additional costs.

The Proposer shall provide a copy of the manufacturer's written warranty outlining the conditions stated above with the cost proposal. Coverage and coverage limitations are to be administered as detailed in the manufacturer's Warranty/Maintenance document.

7. Maintenance

The Proposer shall submit a draft agreement between themselves and LADOTD for the maintenance of all intersection equipment at the five (5) LADOTD owned traffic signals. The agreement shall include associated fees and service coverage.

8. Certificate of Insurance

The manufacturer of the required priority control system shall provide a certificate of product liability insurance protection for a minimum of [$XXXXXX] assuring that the manufacturer is insured against civil damages if proven to be at fault for an accident due to equipment failure within the system of matched priority control components.

9. Field Unit Verification/Validation Performance Test Plan

The cost proposal shall include a Field Unit Verification/Validation Performance Test Plan meeting System Engineering principles. The Verification portion of the plan will demonstrate system performance to the specifications guaranteed by the equipment provider and insure that the installations are completed per manufacturer documented installation procedures. The Validation portion of the plan will demonstrate that the system meets user expectations as defined in these specifications and insure that any/all performance issues have been addressed.

If selected, the proposer will work with the client(s) finalize, coordinate and implement the Field Unit Verification/Validation Performance Test Plan and will, furthermore, document and distribute Verification/Validation Performance Test Plan results in a predetermined and agreed to format.

The Field Unit Verification/Validation Performance Test will be completed no later than [## days] after award of contract. The Final Test Plan will specify the number of completed intersections and vehicles required to perform a comprehensive test. Upon completion of all or an adequate magnitude of installations a test will be done to confirm that all equipment is properly functioning.

10. Optional System Features

The proposers may include within their cost proposal descriptions of any existing optional system features not described in these specifications but included normally with the proposer's system that would offer enhanced system performance or capabilities. The [letting agency] will consider these additional features during bid evaluation and reserves the right to include them as a requirement of the proposed system.

Proposers may also include with their cost proposal descriptions of future optional system features available or currently in development or testing that could enhance system performance or capabilities. The proposers shall include a price limiting offer for these future features to the [letting agency] in the cost proposal that includes a maximum dollar amount per year for the upgrade of the installed system with the future features. The [letting agency] will

consider these additional features during bid evaluation and reserves the right to include them as a requirement of the proposed system final Work Order.

The [letting agency] reserves the right before awarding the contract, to require proposers to submit such evidence of his qualifications as it may deem necessary, and may consider any evidence available to it of the financial, technical, and other qualifications and abilities of the proposer.

11. Certificate of Insurance

The manufacturer of the required priority control system shall provide a certificate of product liability insurance protection for a minimum of [$XXXXXX] assuring that the manufacturer is insured against civil damages if proven to be at fault for an accident due to equipment failure within the system of matched priority control components.

12. Field Unit Verification/Validation Performance Test Plan

The cost proposal shall include a Field Unit Verification/Validation Performance Test Plan meeting System Engineering principles. The Verification portion of the plan will demonstrate system performance to the specifications guaranteed by the equipment provider and insure that the installations are completed per manufacturer documented installation procedures. The Validation portion of the plan will demonstrate that the system meets user expectations as defined in these specifications and insure that any/all performance issues have been addressed.
If selected, the proposer will work with the NORTA and the City of New Orleans to finalize, coordinate and implement the Field Unit Verification/Validation Performance Test Plan and will, furthermore, document and distribute Verification/Validation Performance Test Plan results in a predetermined and agreed to format.

The Field Unit Verification/Validation Performance Test will be completed no later than [90 days] after award of contract. The Final Test Plan will specify the number of completed intersections and vehicles required to perform a comprehensive test. Upon completion of all or an adequate magnitude of installations a test will be done to confirm that all equipment is properly functioning.

13. Optional System Features

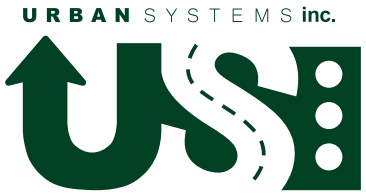
The proposers may include within their cost proposal descriptions of any existing optional system features not described in these specifications but included normally with the proposer's system that would offer enhanced system performance or capabilities. The [letting agency] will consider these additional features during bid evaluation and reserves the right to include them as a requirement of the proposed system.

Proposers may also include with their cost proposal descriptions of future optional system features available or currently in development or testing that could enhance system performance or capabilities. The proposers shall include a price limiting offer for these future features to the [letting agency] in the cost proposal that includes a maximum dollar amount per year for the upgrade of the installed system with the future features. The [letting agency] will consider these additional features during bid evaluation and reserves the right to include them as a requirement of the proposed system final Work Order.

The [letting agency] reserves the right before awarding the contract, to require proposers to submit such evidence of his qualifications as it may deem necessary, and may consider any evidence available to it of the financial, technical, and other qualifications and abilities of the proposer.

_____ _____

Vendors Authorized Signature Required **Date**



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