

1 **APPENDIX 5.0 MAINTENANCE AND OPERATIONS**

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5.1 INTRODUCTION

The following Maintenance and Operations requirements shall apply individually for each System under the Project, unless otherwise specified.

The Maintenance and Operations Phase of the Contract, is divided into two phases: Vendor Provided Maintenance and Shared Maintenance. During Vendor Provided Maintenance, which shall last for at least one year and no more than ten years, the Vendor will be responsible for maintaining the entire Roadway Toll System (RTS). This includes, but is not limited to:

- Troubleshooting and repair of Hardware and Software issues and tracking progress in the Maintenance Online Management System (MOMS)
- Sending and receiving maintenance ticket information between MOMS and Signal Inventory Maintenance Management System (SIMMS)
- Updating the software releases, updating the spare parts inventory in MOMS
- Conducting annual Performance Audits, completing Performance Audit Reports
- Completing monthly Maintenance Reports
- Submitting monthly invoices

MOMS related requirements are addressed in Appendix 4 *Toll Technical Requirements*.

When issues occur, the urgency of the response shall be dictated by the impact of the issue on revenue collection. Liquidated Damages, proportionate to the impact, shall be assigned when the Vendor fails to meet the established maintenance requirements. Monthly performance of devices, system and staff effort shall be reported in the Maintenance Reports, while more thorough evaluations shall be conducted annually and reported in the Performance Audit Reports. The Vendor shall also be responsible for all costs associated with any damage caused by the Vendor during Maintenance and Operations.

If WSDOT elects to switch to a Shared Maintenance arrangement, the Shared Maintenance Transition shall occur. The Shared Maintenance Transition shall facilitate the transition process through the development of a Transition Plan, training of WSDOT maintenance personnel, and the creation of an Amendment to the Contract. Only the first phase, Vendor Provided Maintenance, and the Shared Maintenance Transition are detailed within this Appendix.

5.1.1 DOCUMENT OVERVIEW

This requirements document is divided into six major sections.

- Section 5.1 explains the scope of the document as a whole
- Section 5.2 explains the project management requirements during maintenance and operations
- Section 5.3 explains the maintenance and operations requirements during Vendor provided maintenance
- Section 5.4 describes the Shared Maintenance Transition that may occur any time after the first year of Vendor Provided Maintenance
- Section 5.5 describes the requirements during Shared Maintenance including warranty provisions
- Section 5.6 explains Maintenance of Traffic requirements during operations.

1 **5.1.2 DOCUMENT SCOPE**

2 The requirements set forth herein describe the warranty, maintenance and operations
3 requirements for the RTS that WSDOT desires to procure. These requirements will be
4 used as a baseline from which the Vendor will develop more detailed system design
5 documents.

6 **5.1.3 ABBREVIATIONS AND DEFINITIONS**

7 All capitalized terms and abbreviations used herein, but not expressly defined herein, have
8 the respective meanings set forth in Appendix 1 *Definitions*, attached to the RFP.

5.2 MAINTENANCE AND OPERATIONS PROJECT MANAGEMENT

5.2.1 GENERAL

The Vendor shall provide Project management throughout the term of the Contract. Operations and Project management documents shall be provided for both Vendor Provided Maintenance and Shared Maintenance, if implemented. The Vendor shall prepare and deliver, at a minimum, the following Maintenance and Operations Project management documents described below.

The Vendor shall maintain open and continuous communications with WSDOT, and the two parties shall continually look for opportunities to improve efficiency while at the same time meeting the goals and requirements of this RFP.

5.2.2 MAINTENANCE PLAN

The Vendor shall prepare and provide WSDOT with a proposed written standard Maintenance Plan for each System with which the Vendor and its employees and agents shall strictly comply. Each System's Maintenance Plan shall include details of how maintenance activities will be performed including a plan for preventive maintenance and a preventive maintenance schedule showing what activities will be performed and when each preventive maintenance check will occur. The Maintenance Plan shall also include a plan for inventory management and control, including all activities required to maintain an adequate supply of materials, supplies, spares, configuration files, settings, parts and equipment to maintain the System at all times. The Maintenance Plan shall also include security maintenance tasks such as rotating passwords according to the password rotation policy, reviewing security log files and applying security patches. The Maintenance Plan shall also include a list of maintenance event scenarios, categorized by priority as described in Section 5.3.8 herein.

The Maintenance Plan shall be submitted to and approved by WSDOT as part of the Installation and Testing Completion and Toll Readiness Milestone. Any changes to the Maintenance Plan approved by WSDOT, in its sole discretion, shall be documented by changes to the Maintenance Plan. The Maintenance Plan shall be updated and re-submitted for Shared Maintenance, if implemented, as the Shared Maintenance Plan. This plan shall be updated and re-submitted for use during Shared Maintenance, if implemented, as the Shared Maintenance Plan, which will be developed during the Shared Maintenance Transition if implemented by WSDOT. Requirements for the Shared Maintenance Plan are described in Section 5.4 herein.

The Vendor shall review and provide any revisions to the preventive maintenance schedule upon delivery of the Annual Performance Audit Report.

5.2.3 OPERATIONS MANUAL

The Vendor shall prepare and provide WSDOT with a proposed written standard Operations Manual that details all procedures necessary for administration and operations of the System (e.g., running reports, accessing the DVAS, working with user interfaces, etc.). This document shall provide complete and detailed descriptions of the RTS operations necessary for administration of the System including, but not limited to, the following:

- Running reports

- 1 • Accessing the Digital Video Audit System (DVAS)
- 2 • Working with the User Interface
- 3 • Navigation of the MOMS
- 4 • System Error Message Definitions
- 5 • System Trouble-Shooting Techniques
- 6 • Location and Availability of Support Services for all Major Components
- 7 • Security operations
- 8 • System Tuning and Adjustments
- 9 • System Configurations

10 This manual shall be prepared for WSDOT personnel assigned to the operations oversight
11 of the RTS and shall include a general description, the theory of operation, and all
12 instructions necessary for operation of the System. This manual shall be updated and re-
13 submitted for use as the basis for Shared Maintenance, if implemented, as the Shared
14 Operations Manual, which will be developed during the Shared Maintenance Transition if
15 implemented by WSDOT. Requirements for the Shared Operations Manual are described
16 in Section 5.4 herein.

17 The Operations Manual shall be submitted to and approved by WSDOT as part of the
18 Installation and Testing Completion and Toll Readiness Milestone. Any changes to the
19 Operations Manual approved by WSDOT, in its sole discretion, shall be documented by
20 changes to the Operations Manual.

21 The Vendor shall provide Training manuals for each major component of the system as
22 part of the Operations Manual. All manuals shall be kept up to date by the Vendor during
23 upgrades or modifications to the system. Manuals shall be provided in hardcopy and on
24 CD and on line if available.

25 The Vendor shall develop, publish and maintain a list of contacts for maintenance and
26 operations activities as part of the Operations Manual. This list will identify to WSDOT
27 the specific Vendor contact(s) by subsystem of the RTS. The list will also identify
28 escalation processes and contacts. The list shall be kept up to date by the Vendor and
29 shared with WSDOT at the time of any change.

30 **5.2.4 MONTHLY MAINTENANCE REPORTS**

31 Commencing after the first full month after issuance of System Acceptance, the Vendor
32 shall submit a Monthly Maintenance Report for WSDOT's review. The Monthly
33 Maintenance Reports shall include, but not be limited to the following data:

- 34 • Progress for the current period (previous month) for all Project activities
- 35 • Mean Time To Respond (MTTRespond) and Mean Time To Repair
36 (MTTRepair) data and calculations including exceptions and justification.
37 MTTRespond and MTTRepair calculations are described in Appendix 19.
- 38 • Monthly Performance Measures and any ad hoc verifications performed that
39 month
- 40 • Work Orders including the technician(s) that worked on the issue and associated
41 repair times

- 1 • Lane closure information and associated lane rental fees
- 2 • Security maintenance tasks performed
- 3 • Work plan for following month
- 4 • Trend reporting
- 5 • Root cause analysis of failures

6 The monthly maintenance report shall be due to WSDOT by the 10th of each month.
7 WSDOT will review the Monthly Maintenance Report for conformance with this RFP.
8 The Vendor shall correct any deficiencies and resubmit the Monthly Maintenance Reports.
9 WSDOT will withhold payments from the Vendor until the Monthly Maintenance Report
10 changes have been made to the satisfaction of WSDOT.

11 WSDOT reserves the right to review the maintenance records and database files for
12 compliance with System performance requirements.

13 **5.2.5 MONTHLY MAINTENANCE INVOICES**

14 The Vendor shall invoice WSDOT monthly for maintenance operations for the previous
15 month. Payment requests shall be accompanied by the Monthly Maintenance Report.

16 **5.2.6 ANNUAL PERFORMANCE AUDIT**

17 The Vendor shall conduct a Performance Audit of the System annually following each
18 anniversary date of System Acceptance. The Performance Audit shall begin within 30
19 Calendar Days following the anniversary date. The Vendor shall notify WSDOT in
20 writing at least seven Calendar Days prior to commencing Performance Audit activities.
21 The intent of the Performance Audit is to validate that the System has not degraded over
22 time and that the System still meets the required Performance Measures.

23 The Performance Audit shall be conducted on the installed production System under live
24 operational conditions, including but not limited to actual traffic, maintenance calls and
25 system interfaces.

26 The Vendor shall provide the required support personnel and any necessary equipment.
27 The Performance Audit shall be conducted for no less than 30 consecutive Calendar Days
28 in accordance with the final Master Test Plan and final Performance Audit Procedures.

29 WSDOT will be allowed to witness the audit, and the Vendor shall have the responsibility
30 to perform the audit. The audit shall provide sufficient confidence to WSDOT, in its sole
31 determination, that the Vendor's installed System still meets WSDOT operational
32 requirements and performance criteria, and has not degraded over time to the extent of
33 becoming non-compliant. The Vendor shall contract with a WSDOT-approved third party
34 to attest to the Vendor's assertions on compliance with the RTS Performance Measures in
35 the Contract. The Annual Performance Audit shall include any testing, auditing, updating
36 and reviewing required by the WSDOT OCIO, Standard No. 141.10, *Securing Information*
37 *Technology* (Appendix 22). WSDOT will notify the Vendor upon changes to the
38 Information Technology Security Standards Policy No. 401-S4.

39 The Vendor shall review and incorporate any changes to the Information Technology
40 Security Standards Policy No. 401-S4 into an updated IT Security Plan to be included with
41 the Annual Performance Audit Report.

5.2.6.1 PERFORMANCE AUDIT PROCEDURES

The Vendor shall prepare detailed Performance Audit Procedures for capturing and analyzing the data related to each applicable Performance Measure. The Procedures shall be based on the Operational Test Procedures and shall include steps that cover set-up, data collection, and data analysis including an indication of the expected and actual results.

The Procedures shall also identify the responsible party for each procedural step. WSDOT will arrange for any other Vendor under contract with WSDOT identified in the procedures to provide the necessary data and/or effort.

The Performance Audit shall commence no sooner than seven Calendar Days prior to the approval of the final Test Procedures. This will allow for WSDOT to review the documents in detail prior to the event.

The Performance Audit procedures shall identify the test vehicles that are to be mixed with real traffic and the results to be obtained from the tests.

The Performance Audit procedures shall clarify the calculation methods that will be used to evaluate the performance metrics included in the Performance Audit Report.

The Performance Audit procedures shall also define the operational data to be reviewed and the analysis that will be conducted on that data for presentation in the Performance Audit report.

The Performance Audit procedures shall contain enough detail to enable a third party to reproduce the results

5.2.6.1.1 Operational Test

The Operational Test shall be conducted to verify that all functional elements of the Project and components provided and installed by the Vendor under this Contract are in conformance with WSDOT's technical and operational requirements, the System Design as accepted by WSDOT, and all applicable and accepted ICDs. The Operational Test shall demonstrate the System's full operational capabilities in a real-world environment over a 30-day period.

The Operational Test shall be conducted on the installed production system under live operational conditions, including but not limited to actual traffic, maintenance calls, and system interfaces.

The Operational Test shall include a statistically valid sample size of traffic. The sample size determination shall take into consideration margin of error, confidence rate, population size, and the response distribution. The analysis method and estimated sample size outcome shall be submitted to WSDOT for approval within the Test Procedures.

The Vendor shall operate the Project for 14 consecutive Calendar Days within the 30-day Operational Test period showing the System meets performance requirements without degradation in performance. During the 14-day period, the system and each applicable performance requirement shall be analyzed on a daily basis to determine and quantify the level of performance and to confirm that the performance has not deviated from the minimum system performance requirements. If the System performance degrades more than 1/4 of the total allowable performance tolerance for a specific requirement within the test period, even if it remains within performance thresholds, the Vendor shall demonstrate the cause of the degradation.

1 The Vendor shall hold meetings once per week during the 30-day Operational Test period
2 to discuss progress and any issues during the test. The objective of these discussions is to
3 allow WSDOT the opportunity to provide the Vendor with timely feedback if there is any
4 indication that the System is not meeting performance requirements. In the event of a
5 failure or major degradation in performance, WSDOT, at its discretion, may stop the test
6 until a correction or resolution has been achieved. Depending on the severity of the failure
7 or degradation in performance WSDOT, at its discretion, may elect to restart the test in its
8 entirety beginning at day 1 of the test or restart from the day it was originally stopped.

9 The testing shall provide sufficient confidence to WSDOT, in its sole determination, that
10 the Vendor's installed System meets WSDOT operational requirements, standards and
11 performance criteria. This shall include meeting all exit criteria as established in the test
12 procedures.

13 The Vendor shall provide the required support personnel and any necessary test vehicles
14 and test equipment (e.g., test transponders).

15 **5.2.6.2 PERFORMANCE AUDIT REPORT**

16 The Vendor shall submit a Performance Audit Report for WSDOT's review within 14
17 Calendar Days of completion of the annual Performance Audit. The purpose of the
18 Performance Audit Report is to document that the System has not degraded over time and
19 that the System still meets the required Performance Measures. The Performance Audit
20 Report shall include a summary of the audit activities and general conclusions of the audit
21 results. A detailed description of the audit activities and results including any
22 discrepancies and corrective action taken shall be included as an attachment.

23 Once WSDOT approves the annual Performance Audit Report, the Vendor shall include a
24 request for payment in the amount set forth in the Contract for the Performance Audit with
25 the next monthly maintenance invoice submittal.

26 **5.2.7 MILESTONE INVOICES**

27 The Vendor shall invoice WSDOT in accordance with the Milestone payments schedule,
28 for Milestones achieved, but not more than once per month. Payment requests shall be
29 accompanied by the monthly Progress Report(s), any required Deliverables, backup
30 tabulations, and proof of progress.

31 **5.2.8 MAINTENANCE AND OPERATIONS PROJECT MANAGEMENT** 32 **SUBMITTALS**

33 **5.2.8.1 GENERAL**

34 All submittals shall be submitted to WSDOT for review and comment. Comments
35 submitted by WSDOT shall be addressed by the Vendor in accordance with Appendix 3,
36 Sections 3.9 and 3.17.

37 **5.2.8.2 MAINTENANCE AND OPERATIONS PROJECT MANAGEMENT DOCUMENTS**

38 The Vendor shall submit, at a minimum, the following documents:

- 39 • Maintenance Plan
- 40 • Operations Manual
- 41 • Monthly Maintenance Reports

- 1 • Monthly Maintenance Invoices
- 2 • Annual Performance Audit Reports
- 3 • Milestone Invoices, when applicable

5.3 VENDOR PROVIDED MAINTENANCE

It is anticipated that Vendor Provided Maintenance will last from one to ten years, with the potential to move to a Shared Maintenance arrangement at some point during that period. In the event Shared Maintenance is implemented, the Vendor shall warrant the RTS for one year following the Shared Maintenance transition.

5.3.1 GENERAL

The Vendor shall be responsible for all labor and expenses, including shipping, travel, meals, and lodging, associated with providing the required warranty Services and shall not be reimbursed for said items.

The Vendor shall be responsible for all required Products and spare parts, repair and replacement of all Products and spare parts, as well as related expenses including, but not limited to, shipping, travel, meals, and lodging associated with providing the required maintenance and warranty Services and shall not be reimbursed for said items.

The Vendor shall coordinate and perform all necessary maintenance, repair, renewal and replacement of Products through the term of the Contract.

The Vendor shall perform all annual Performance Audits as specified in Section 5.2 herein.

The Vendor shall maintain current and accurate records for all System Maintenance Work.

The records shall be organized and managed by a computerized data and information management system as part of Maintenance Online Management System (MOMS). MOMS related requirements are addressed in Appendix 4.

The Vendor shall cooperate with all security audits for the life of the contract.

The roadside maintenance demarcation point between WSDOT and Vendor responsibilities during Vendor provided maintenance shall be the Roadside Toll Zone Cabinet where the Vendor is responsible for the Roadside Toll Zone cabinets and all downstream equipment.

Each piece of Cisco network infrastructure equipment purchased by WSDOT will be individually covered under an annual Cisco Smartnet maintenance contract.

5.3.2 MAINTENANCE WARRANTY

Hardware and software warranties are described within Section 5.5 herein.

The warranties shall also apply to all Work re-done, repaired, corrected or replaced by the Vendor in the performance of its obligation to maintain the System anytime during the maintenance period.

The warranties as to each such re-done, repaired, corrected or replaced element of the Work during the maintenance term shall remain in effect until one year after acceptance by WSDOT of such element of the Work.

5.3.3 MAINTENANCE REQUIREMENTS

The requirements within this Section are applicable from System Acceptance to either WSDOT's formal transfer of an agreed portion of maintenance responsibilities, as provided in Sections 5.4 and 5.5 herein, or the end of the Contract.

1 The Vendor shall provide support to WSDOT in completing all agency head
2 responsibilities contained within the WSDOT OCIO, Standard No. 141.10, *Securing*
3 *Information Technology* (Appendix 22).

4 The Vendor shall provide all tools and equipment required to provide maintenance and
5 repairs to the RTS.

6 The Vendor shall provide all lane closures in accordance with applicable requirements of
7 this RFP during the Vendor Provided Maintenance. Maintenance of Traffic (MOT) During
8 Operations requirements are described in Section 5.6 herein.

9 The Vendor shall perform all maintenance through the term of the Contract.

10 Preventive maintenance and Priority 3 maintenance shall be performed during the night
11 time allowable closures described in Section 5.6 herein. Priority 1 and 2 maintenance shall
12 be performed during the night to the extent practicable, however may also perform work
13 during the day in accordance with the Lane Rental provisions described in Section 5.6.

14 The Vendor shall coordinate and perform all necessary renewal and replacement of
15 Products through the term of the Contract. The Vendor shall provide low level passwords
16 to WSDOT to allow system access and monitoring.

17 The Vendor shall replace the Uninterruptible Power Supply (UPS) batteries no less than
18 every four years by the anniversary of Toll Commencement for the respective System.

19 During Maintenance and Operations, the Vendor shall follow the Environmental
20 Compliance Plan prepared in accordance with Appendix 3, Section 3.8. The Vendor shall
21 also follow the Spill Prevention, Control, and Countermeasures (SPCC) Plan prepared in
22 accordance with Appendix 3, Section 3.8.

23 **5.3.4 SPARE PARTS PROCUREMENT**

24 Thirty Calendar Days prior to the expected Toll Commencement date, the Vendor shall
25 have purchased and have on hand the requisite inventory of spare parts in an office
26 maintained by the Vendor.

27 WSDOT will provide the following spare parts, as further defined in Appendix 3, Section
28 3.5, in the requisite quantities to the Vendor:

- 29 • Roadside Toll Cabinets
- 30 • Toll Reader Equipment Cabinet
- 31 • Communication Switches

32 The Vendor shall cooperate with and assist WSDOT as necessary to jointly develop a plan
33 to ensure that all spare parts, Products, equipment, and other WSDOT-owned property is
34 stored or otherwise located on WSDOT's property and shall not be subject to any risk of
35 being confiscated, claimed, attached, withheld by a landlord, creditor, or similar risk. This
36 cooperation includes, but is not limited to, affixing appropriate labeling to all property,
37 thereby identifying it as the property of WSDOT, with a WSDOT-specific part or control
38 number.

39 All spare parts and consumables shall be maintained by the Vendor at a location or
40 locations agreed upon by WSDOT and the Vendor.

41 WSDOT shall have the right to inspect the spare parts and consumables inventory upon
42 request at any time during the Contract.

5.3.5 SPARE PARTS INVENTORY MANAGEMENT

The Vendor shall provide spare parts inventory control functionality as part of MOMS. Refer to Appendix 4 for related requirements.

5.3.6 MAINTENANCE AND OPERATIONS OVERSIGHT TRAINING

The Vendor shall provide relevant information, procedures, and instructions to WSDOT personnel and their agents on the proper maintenance and operations of the RTS to support WSDOT oversight and management of the RTS. Training shall consist of both classroom training and field training.

WSDOT and the Vendor shall coordinate the method, duration, time, and location of the training. The maintenance and operations oversight training shall be completed prior to Toll Commencement for each System.

Training shall be conducted by engineers or technicians knowledgeable in the maintenance and operations of the equipment. The Vendor shall be responsible to provide training offered by integrators and original equipment manufacturers for specific system components where available and required to properly maintain and operate such equipment. All costs associated with travel for the trainer shall be the responsibility of the vendor.

The following requirements shall apply individually for each System.

5.3.6.1 CLASSROOM TRAINING

The vendor shall submit a draft of the classroom training agenda to WSDOT for review along with the draft Operations Manual. The vendor shall submit a final classroom training agenda to WSDOT for approval along with the final Operations Manual.

The Vendor shall provide classroom training in a WSDOT-provided facility for up to 12 persons in each of the following categories:

- System Administration Personnel, two hours minimum
- Office Engineering Personnel (servers/Software), two hours minimum
- Toll Program Oversight Personnel, six hours minimum
- Field Maintenance Personnel, six hours minimum

Classroom training shall reference both the Maintenance Plan and Operations Manual, where applicable.

Classroom training shall address, at a minimum, usage and maintenance of the following:

- Lane – Vehicle Detection and Classification System
- Lane – Video Processing/Photo Toll System
- Lane – ETC
- Toll rate sign posting system
- System interfaces
- Monitoring, troubleshooting techniques, reconciliation, audit and reports

1 Classroom training shall be completed no later than 30 Calendar Days prior to Toll
2 Commencement and no earlier than the final Operations Manual has been submitted.

3 In addition to classroom training, training for field personnel shall consist of printed and
4 electronic materials accompanied by verbal instructions and hands-on training or job
5 shadowing with the applicable Product and operating environment for the System,
6 described in Section 5.3.6.2 herein.

7 All user accounts shall be established before the training program begins although a guest
8 account may be used for training purposes.

9 All WSDOT user accounts required during Vendor Maintenance shall be verified by each
10 user during training.

11 All training materials shall be provided by the Vendor (i.e., manuals, media, source
12 documents, white papers, etc) and shall be submitted to WSDOT 30 Calendar Days prior to
13 the date training is scheduled to take place.

14 The Vendor shall grant WSDOT permission to reproduce the training materials at
15 WSDOT's discretion.

16 The training shall incorporate a final production version (or up to date test environment) of
17 all user interfaces and Products.

18 The Vendor shall supply four training terminals with simulation Software to simulate real
19 conditions.

20 Simulated or actual data shall be populated into the System so that users may experience
21 all aspects of System operation including, but not limited to, live or simulated Transaction
22 monitoring, image monitoring, DVAS monitoring, MOMS monitoring and notification,
23 performance measure calculations, and reporting functions.

24 The Vendor shall provide one refresher retraining, if requested by WSDOT, within 60
25 Calendar Days of the Toll Commencement Milestone, including a minimum of two hours
26 of classroom training for up to 12 persons of System Administration and Office
27 Engineering Personnel and a minimum of four hours of classroom training for up to 12
28 persons of Toll Program Oversight and Field Maintenance Personnel in a WSDOT-
29 provided facility.

30 The Vendor shall provide a draft agenda including the topics and skills to be refreshed as
31 well as all training materials 30 Calendar Days before refresher retraining commences.

32 **5.3.6.2 FIELD TRAINING**

33 The Vendor shall provide a minimum of 40 hours of hands-on field training for Field
34 Maintenance Personnel, for up to six persons in a group. Field training shall be completed
35 no later than 30 Calendar Days prior to the transfer of maintenance responsibility to
36 WSDOT and no earlier than the draft Maintenance Plan and Operations Manual have been
37 submitted.

38 The Vendor shall provide one refresher retraining, if requested by WSDOT, within 180
39 Calendar Days of the Toll Commencement Milestone, including a minimum of five hours
40 of field training.

1 **5.3.7 NOTIFICATIONS**

2 Maintenance notifications may be provided to the Vendor through various means. The
3 start of the maintenance response time, for purposes of measuring the Vendor’s response
4 time, shall be as described in Sections 5.3.8.1 through 5.3.8.3 herein.

5 **5.3.7.1 VERBAL NOTIFICATION**

6 WSDOT’s first conversation with, voicemail to, or electronic page of the Vendor’s
7 answering/routing service shall constitute the start of the response time.

8 The Vendor shall document verbal notification in the Work Order.

9 **5.3.7.2 WRITTEN NOTIFICATION**

10 Written notification may be emailed to the Vendor 24 hours a day, seven days a week. The
11 time stamp in the sent e-mail from WSDOT shall constitute the start of the response time.

12 **5.3.7.3 AUTOMATIC NOTIFICATION**

13 Automatic alarm and alert messages shall be sent out by MOMS notifying the recipient
14 responsible for response to respond to the failure. The time stamp of the notification
15 within MOMS shall constitute the start of the response time. MOMS related requirements
16 are addressed in Appendix 4.

17 **5.3.8 RESPONSE TO NOTIFICATION**

18 Response to notifications shall be determined by priority as specified in Sections 5.3.8.1
19 through 5.3.8.3 herein with the exception of issues that could cause harm to the public or
20 that could involve infrastructure failure (emergencies).

21 The corresponding response time and repair shall not exceed the mean time, per month,
22 prescribed in Table 5-1.

23 The Vendor shall record all response times and repair times for every maintenance event
24 via MOMS and provide full reports of response and repair times to the WSDOT within the
25 monthly Maintenance Report. WSDOT may spot check or audit the reported response and
26 repair times.

27 **5.3.8.1 PRIORITY 1 MAINTENANCE EVENTS**

28 A Priority 1 Maintenance Event is defined as any malfunction or fault that will result in the
29 immediate loss of revenue and/or hazard to maintenance staff or the public.

30 **5.3.8.2 PRIORITY 2 MAINTENANCE EVENTS**

31 A Priority 2 Maintenance Event is defined as any malfunction or fault that will not result in
32 immediate loss of revenue but will/may impact operational performance.

33 **5.3.8.3 PRIORITY 3 MAINTENANCE EVENTS**

34 A Priority 3 Maintenance Event is defined as any action or event reported that will/may
35 impact operational performance, has potential of degrading the System performance, and
36 has no impact to revenue collection.

5.3.9 RESPONSE TIME

The response time measurement shall end when the Vendor arrives at the site where the maintenance event occurred, remotely begins addressing the failure, or implements a temporary solution.

For maintenance events of WSDOT provided toll rate sign infrastructure, the response time shall end when the Vendor begins review and validation of the maintenance event.

In the event a temporary solution is implemented and additional Work is required to wholly correct the issue, a new Work Order shall be created and a new Priority Level set.

A Work Order opened following a temporary solution may stay open no longer than 30 Calendar Days from the issue of the original Work Order.

5.3.10 REPAIR TIME

Repair time measurement shall start after the technician remotely begins troubleshooting the failure or the Vendor arrives at the site where the maintenance event occurred, whichever happens first. Repair time shall include any traffic control activities that involve taking a lane.

For maintenance events of WSDOT-provided toll rate sign infrastructure, the repair time shall end when the Vendor has validated the event, including the Priority Level, and assigned the Work Order to WSDOT.

Repair time measurement shall end when corrections have been made and the System, and roadway in the event of corresponding lane closures, has been restored to a fully operating condition. This includes both permanent and temporary solutions.

5.3.11 REQUIRED SERVICE LEVELS

Liquidated Damages may be assessed if the MTTRespond or MTTRepair are exceeded, as described in Exhibit H of the Contract. See Table 51 for associated average priority and response times.

5.3.11.1 PRIORITY 1 MAINTENANCE EVENTS

The Vendor shall respond to all Priority 1 Maintenance Events within two hours. The Vendor shall repair all Priority 1 Maintenance Events within two hours.

5.3.11.2 PRIORITY 2 MAINTENANCE EVENTS

The Vendor shall respond to all Priority 2 Maintenance Events within six hours. The Vendor shall repair all Priority 2 Maintenance Events within six hours.

5.3.11.3 PRIORITY 3 MAINTENANCE EVENTS

The Vendor shall respond to all Priority 3 Maintenance Events within 12 hours. The Vendor shall repair all Priority 3 Maintenance Events within 30 Calendar Days.

Table 5-1: Priority Level Response and Repair Times

Maintenance Event Priority	Response Time	Repair Time
Priority 1	2 hrs	2 hrs
Priority 2	6 hrs	6 hrs
Priority 3	12 hrs	30 days

5.3.12 CHARGEABLE AND NON-CHARGEABLE FAILURES**5.3.12.1 CHARGEABLE FAILURES**

Chargeable failures to the Vendor by WSDOT include any failures that are not specifically identified as non-chargeable failures, including but not limited to:

- A failure that prevents the Product from performing its designated function, when used and operated under its intended operational and environmental conditions as detailed in the Maintenance and Operations phase of Work
- A failure that poses a threat to the safety of the Products, RTS customers, or others
- A failure to operate during the first 72 hours of power-outage
- An occurrence where data is not successfully transmitted between the RTS and the Facility Management and Administration System (FMAS), but shall not cause double charging of a single failure (e.g., if the lane is not functioning and does not transmit data to the Host, either the lane would be charged or the System would be charged for the failure, but not both)
- A failure of Products that allow revenue loss to occur on the RTS that is not already accounted for as a separate performance failure
- Software anomalies and bugs that degrade the performance of the system below the characteristics defined in Appendix 4
- Shutdown or unavailability of the RTS unless specifically directed by WSDOT
- Failure to properly register or report a Transaction
- Failure to electronically send or receive Transaction and payment record
- Failure to post the correct toll rate or message to toll rate sign
- Failure to generate the reports required to reconcile and audit the System

5.3.12.2 NON-CHARGEABLE FAILURES

Non-chargeable failures shall include:

- Force Majeure, as defined in Appendix 1 of the RFP
- Failure of a test facility or test instrumentation
- System part failures caused by externally applied stress conditions outside of the requirements of the Maintenance and Operations phase of Work
- System part failures caused by environmental or operating conditions outside of the requirements of the Contract

- 1 • WSDOT approved adjustments as allowed in the test procedure or Maintenance
2 Plan, as applicable
- 3 • Failure of WSDOT-provided equipment or communication networks, not
4 including power

5 **5.3.13 MAINTENANCE OF TRAFFIC**

6 The Vendor shall provide all traffic control for the maintenance activities specified in
7 Section 5.6 herein.

8 **5.3.14 PERFORMANCE AUDIT**

9 The Vendor shall prepare Performance Audit procedures, perform an Annual Performance
10 Audit, and submit the Annual Performance audit report as specified in Section 5.2.

11 **5.3.15 PROJECT DOCUMENTATION**

12 The Project documentation shall be reviewed and updated by the Vendor annually, within
13 30 Calendar Days following the anniversary date of the Agreement. Any updates shall be
14 distributed to WSDOT for review and approval. Project documentation shall include, but
15 not be limited to, the following:

- 16 • System Design Document
- 17 • Design calculations and documentation
- 18 • As-Built plans and specifications
- 19 • Owner’s manuals, operating instructions and product data
- 20 • Maintenance plan
- 21 • Operations manual

22 **5.3.16 MAINTENANCE ASIDE FROM THE TOLL SYSTEM**

23 **5.3.16.1 GENERAL**

24 This Section will address maintenance of Right of Way, Roadways, Structures, Property,
25 and Aesthetic Treatments aside from the Toll System, which the Vendor is primarily
26 responsible for maintaining.

27 The Vendor shall not perform Work that will damage or adversely affect any drainage
28 structures within the respective Project area. Free draining of water through any drainage
29 structure shall be maintained by the Vendor.

30 The Vendor shall preserve public and private property at all times in accordance with
31 Section 1-07.16 of the Standard Specifications, as modified by Appendix 19. Refer to
32 Appendix 3, Section 3.11 for additional Site Restoration requirements.

33 The Vendor shall not alter the appearance of any aesthetic treatments on walls, bridges,
34 Toll Gantries, or toll cabinets. If the Vendor’s Work affects the appearance of any
35 aesthetic treatments, the Vendor shall notify the WSDOT Project Manager and shall be
36 responsible for the associated costs to repair the aesthetic treatments. The use of paint
37 and/or permanent marking of any type on permanent barrier, railing, walls, Toll Gantries,
38 or toll cabinets will not be allowed except as required by the Contract.

5.3.16.2 SAFETY AND HEALTH HAZARDS

There are areas occupied by transients, birds, bats, and rodents, and will contain biological and associated physical hazards within the Project areas. The areas most impacted by these hazards are the areas under the ends of the bridges within the Project areas. Other areas may also be impacted.

The Project area includes materials and waste that pose a physical and/or biological safety and health hazard, such as waste associated with transients and drug users. Materials and waste may include, but are not limited to, hypodermic needles, food, garbage, clothing, bedding, broken glass, human and animal excrement, drug paraphernalia, makeshift dwellings, and other hazards. The Project area may also be occupied by violent and dangerous individuals.

In the event transients are encountered within the Project limits and are hampering work or causing unsafe work conditions, the Vendor shall follow *WSDOT's Guidelines to Address Illegal Encampments within State Right of Way* in Appendix 16.

The Vendor shall ensure that the public, including persons who may be non-English speaking or those who may not be able to recognize potential safety and health hazards within the Project area, are not harmed by the Vendor's activities.

The Vendor shall communicate with the WSDOT Project Manager and other projects to ensure a coordinated effort for providing and maintaining a safe Project area for WSDOT's, other projects', and the Vendor's personnel.

The Vendor shall provide and maintain a safe and healthy Project area for the duration of the respective Project, in accordance with applicable laws and this RFP.

If the Project area becomes unsanitary or unsafe due to biological and physical hazards, the Vendor shall notify WSDOT.

5.3.16.3 ADVERSE WEATHER CONDITIONS

WSDOT will perform snowplowing and application of de-icer or abrasives for public travel lanes. The snowplowing will be done as part of the normal course of plowing the public roadways within and in the vicinity of the Project. WSDOT will not remove snow and/or ice from the public travel lanes to facilitate the Work or installation.

When plowing within the Project limits, WSDOT will take no special measures to protect materials, or equipment the Vendor has stored or stockpiled on shoulders or within the Project limits.

WSDOT will not remove snow, ice, abrasives, or other debris such as car parts and tire chains that are plowed or migrate from the public traffic lanes or shoulders into the Work area.

The Vendor shall not be allowed to perform Maintenance and Operations Work when adverse weather is forecasted. WSDOT will deny any closure requests when adverse weather is forecasted.

5.3.16.4 HAZARDOUS SPILLS RESPONSE**5.3.16.4.1 Public Travel Way**

Cleanup of hazardous spills by third parties within the public traffic lanes and shoulders will be coordinated by WSDOT, the Washington State Department of Ecology, and/or

1 other local jurisdictions. The Vendor shall allow access to the Project area for spill
2 response. The Vendor shall make personnel and equipment available to respond to all
3 emergencies, except when such emergencies are life threatening to the personnel.

4 In the event the hazardous spill is caused by the Vendor’s equipment, operations, or Work,
5 the Vendor shall be responsible for cleanup under the direction of WSDOT and the
6 Washington State Department of Ecology. All costs for cleanup including all costs
7 incurred by the Vendor, WSDOT, the Washington State Department of Ecology, and other
8 resource agencies and/or contractors required to mitigate the hazard shall be borne by the
9 Vendor.

10 **5.3.16.4.1.1 SR 99 AWW Projects**

11 In the event that the hazardous spill is within City of Seattle right of way, the Design-
12 Builder shall follow notifications listed in City of Seattle *Standard Specifications for Road,*
13 *Bridge, and Municipal Construction*, Section 1-07.28.

14 **5.3.16.4.2 Work Zone**

15 Any hazardous spills caused by the Vendor within the Work area and outside of the public
16 travel lanes shall be the responsibility of the Vendor. The Work shall be performed in
17 accordance with the Spill Prevention, Control, and Countermeasures Plan described in
18 Appendix 3, Section 3.8.

19 **5.3.16.5 EMERGENCY RESPONSE**

20 The Vendor shall cooperate with law enforcement and other emergency response agencies
21 in response to accidents, fires, spills, or other emergencies in any area affected by the
22 Project, including the Project area and public traffic lanes. The Vendor shall cooperate in
23 all WSDOT investigations of accidents and other incidents within the Project area. Refer
24 to Appendix 3, Section 3.4 for additional public information requirements regarding
25 emergency response.

26 The Vendor shall work with emergency service providers to address their concerns about
27 emergency access to and through the respective Project corridor.

28 The Vendor shall notify WSDOT, the Washington State Patrol, and all emergency service
29 providers in the affected area in writing of any access closures at the installation site.
30 Notification will include the names, pager numbers, telephone numbers (business,
31 residence, and cellular) of Project personnel to contact in case of emergencies. This
32 contact list will be updated as necessary.

33 The Vendor shall make personnel and equipment available to respond to all emergencies,
34 except when the emergency is life-threatening to the personnel.

5.4 SHARED MAINTENANCE TRANSITION

WSDOT may decide, during the term of the Contract, but after the first year of maintenance, to transfer an agreed portion up to all of the maintenance responsibilities from the Vendor to WSDOT by amendment. The extent of WSDOT's portion of work is not known at this time; however, WSDOT plans for the Vendor, at a minimum, to retain responsibility for software licensing and warranty support after the transition to Shared Maintenance.

If WSDOT so chooses, WSDOT will set a date, at least 180 Calendar Days in advance, for the Shared Maintenance Transition.

The Vendor shall satisfy the conditions in Section 5.4.1 herein for WSDOT to certify the Vendor has met the Shared Maintenance Transition Milestone.

The Vendor shall not receive payment for the Shared Maintenance Transition until WSDOT certifies the Vendor has met the Shared Maintenance Transition Milestone.

5.4.1 SHARED MAINTENANCE TRANSITION ACTIVITIES

5.4.1.1 MILESTONE REQUIREMENTS

The Vendor shall not be released from any maintenance obligations until each of the following Qualifying Events are met to the satisfaction of WSDOT, as a written Amendment to the Contract and mutually agreed upon by the Vendor and WSDOT:

- Transition Plan – A detailed plan outlining the process the Vendor will follow to transition an agreed portion of maintenance and operations of the System to WSDOT as specified in Section 5.4.1.2 herein.
- Inspection – A detailed inspection of the RTS will be performed by WSDOT and the Vendor to create a Punch List documenting any deficiencies prior to transition. Any items identified on the Punch List will be resolved in a timely manner to the satisfaction of WSDOT maintenance and tolling staff.
- Maintenance Records – The Vendor shall provide to WSDOT all current and historical maintenance records, Product support contact information, outstanding Product and second source Product warranty paperwork, Service records, and other relevant documentation to WSDOT as appropriate.
- Spares Parts and Tools – The Vendor shall transfer all spare parts and tools to WSDOT required to perform the agreed WSDOT portion of maintenance. Training and documentation of the use of any specialized maintenance tools, not commonly found in non-toll environments, shall be provided. The spare parts will be cross-referenced with MOMS to ensure that all parts are transferred to WSDOT and shall be in good working order. WSDOT will inspect any transferred spare parts and tools to ensure good working order.
- Passwords – The Vendor shall provide all System passwords, user names, and other access and System security information to WSDOT as needed to perform the maintenance Work.
- Training – The Vendor shall provide maintenance training to designated WSDOT staff to the satisfaction of WSDOT as specified in Section 5.4.1.3 herein.

- 1 • Documents, Manuals, and Drawings – The Vendor shall provide revised, fully
2 updated versions of all System documents (i.e., System Design Development
3 [SDD], Maintenance Plan, etc.), Shared Maintenance Plan, Shared Operations
4 Manual, As-Built, and other relevant documentation to WSDOT as specified in
5 Section 5.4 hereinafter.
- 6 • Punch List – The Vendor shall complete all items on the Punch List prior to the
7 Shared Maintenance Transition Milestone unless otherwise agreed to in writing
8 by WSDOT.
- 9 • Warranty – The Vendor shall submit description of Warranty for any hardware or
10 software transferred to WSDOT. The Warranty description shall include a list of
11 specific devices, any licenses, serial numbers and extent and duration of
12 coverage.

13 **5.4.1.2 TRANSITION PLAN**

14 The Vendor shall prepare and submit a Transition Plan that describes the process the
15 Vendor will follow to transition the agreed portion of maintenance and operations of the
16 System to WSDOT and terminate its Services for that portion hereunder at the Shared
17 Maintenance Transition Milestone.

18 The Vendor shall submit a draft Transition Plan to WSDOT for review 150 Calendar Days
19 prior to the Shared Maintenance Transition Milestone.

20 The Vendor shall submit a final Transition Plan to WSDOT for approval 105 Calendar
21 Days prior to the Shared Maintenance Transition Milestone.

22 **5.4.1.3 TRANSITION TRAINING**

23 In the event that WSDOT elects to take on maintenance responsibility, the Vendor shall
24 provide relevant information, procedures, and instructions to WSDOT personnel and their
25 agents on the proper operation and maintenance of the RTS.

26 WSDOT and the Vendor shall coordinate the method, duration, time, and location of the
27 training.

28 Vendor shall ensure that WSDOT maintenance personnel are properly trained on the use
29 and operation of each piece of equipment required to maintain the RTS. The vendor,
30 WSDOT maintenance and tolling shall concur that WSDOT maintenance personnel are
31 properly trained.

32 Training shall be conducted by engineers or technicians knowledgeable in the installation
33 and maintenance of the equipment. The Vendor shall be responsible to provide training
34 offered by integrators and original equipment manufacturers for specific system
35 components where available and required to properly operate, maintain and repair such
36 equipment. All costs associated with travel for the trainer shall be the responsibility of the
37 vendor.

38 The following requirements shall apply individually for each System.

39 **5.4.1.3.1 Classroom Training**

40 The vendor shall submit a draft of the classroom training agenda to WSDOT for review
41 along with the draft Transition Plan. The vendor shall submit a final classroom training
42 agenda to WSDOT for approval along with the final Transition Plan.

1 The Vendor shall provide classroom training in a WSDOT-provided facility for up to 12
2 persons in each of the following categories:

- 3 • System Administration Personnel, four hours minimum
- 4 • Office Engineering Personnel (servers/Software), four hours minimum
- 5 • Toll Program Oversight Personnel, 12 hours minimum
- 6 • Field Maintenance Personnel, 12 hours minimum

7 Classroom training shall follow the Transition Plan section related to training and reference
8 both the Shared Maintenance Plan and the Shared Operations Manual, where applicable.

9 Classroom training shall address, at a minimum, usage and maintenance of the following:

- 10 • Lane – Vehicle Detection and Classification System
- 11 • Lane – Video Processing/Photo Toll System
- 12 • Lane – ETC
- 13 • Toll rate sign posting system
- 14 • System interfaces
- 15 • Monitoring, troubleshooting techniques, reconciliation, audit and reports

16 Classroom training shall be completed no later than 30 Calendar Days prior to the transfer
17 of maintenance responsibility to WSDOT and no earlier than the draft Maintenance Plan
18 and Operations Manuals have been submitted.

19 In addition to classroom training, training for field personnel shall consist of printed and
20 electronic materials accompanied by verbal instructions and hands-on training or job
21 shadowing with the applicable Product and operating environment for the System,
22 described in Section 5.4.1.3.2 herein.

23 All user accounts shall be established before the training program begins although a guest
24 account may be used for training purposes.

25 All WSDOT user accounts required during Shared Maintenance shall be verified by each
26 user during training.

27 All training materials shall be provided by the Vendor (i.e., manuals, media, source
28 documents, white papers, etc) and shall be submitted to WSDOT 30 Calendar Days prior to
29 the date training is scheduled to take place.

30 The Vendor shall grant WSDOT permission to reproduce the training materials at
31 WSDOT's discretion.

32 The training shall incorporate a final production version (or up to date test environment) of
33 all user interfaces and Products.

34 The Vendor shall supply four training terminals with simulation Software to simulate real
35 conditions.

36 Simulated or actual data shall be populated into the System so that users may experience
37 all aspects of System operation including, but not limited to, live or simulated Transaction
38 monitoring, image monitoring, DVAS monitoring, MOMS monitoring and notification,
39 performance measure calculations, and reporting functions.

1 The Vendor shall provide one refresher retraining, if requested by WSDOT, within 60
2 Calendar Days of the Shared Maintenance Transition Milestone, including a minimum of
3 two hours of classroom training for up to 12 persons of System Administration and Office
4 Engineering Personnel and a minimum of four hours of classroom training for up to 12
5 persons of Toll Program Oversight and Field Maintenance Personnel in a WSDOT-
6 provided facility.

7 The Vendor shall provide a draft agenda including the topics and skills to be refreshed as
8 well as all training materials 30 Calendar Days before refresher retraining commences.

9 **5.4.1.3.2 Field Training**

10 The Vendor shall provide a minimum of 80 hours of hands-on field training for Field
11 Maintenance Personnel, for up to six persons in a group. Field training shall be completed
12 no later than 30 Calendar Days prior to the transfer of maintenance responsibility to
13 WSDOT and no earlier than the draft Maintenance Plan and Operations Manual have been
14 submitted.

15 The Vendor shall provide one refresher retraining, if requested by WSDOT, within 180
16 Calendar Days of the Shared Maintenance Transition Milestone, including a minimum of
17 ten hours of field training.

18 **5.4.1.4 SHARED MAINTENANCE PLAN**

19 The Vendor shall revise the Maintenance Plan as specified in Section 5.2.2 herein to create
20 a Shared Maintenance Plan. The Shared Maintenance Plan shall include Maintenance
21 activities that WSDOT will be responsible to perform as a result of the Vendor transferring
22 its agreed portion of Services hereunder.

23 The Vendor shall submit a draft version of the Shared Maintenance Plan to WSDOT for
24 review 75 Calendar Days prior to the Shared Maintenance Transition Milestone.

25 The Vendor shall submit a final version of the Shared Maintenance Plan to WSDOT for
26 approval 30 Calendar Days prior to the Shared Maintenance Transition Milestone.

27 **5.4.1.5 SHARED OPERATIONS MANUAL**

28 The Vendor shall revise the Operations Manual as specified in Section 5.2.3 herein to
29 create a Shared Operations Manual. The Shared Operations Manual shall include
30 Maintenance activities that WSDOT will be responsible to perform as a result of the
31 Vendor transferring its agreed portion of Services hereunder.

32 The Vendor shall submit a draft version of the Shared Operations Manual to WSDOT for
33 review 75 Calendar Days prior to the Shared Maintenance Transition Milestone.

34 The Vendor shall submit a final version of the Shared Operations Manual to WSDOT for
35 approval 30 Calendar Days prior to the Shared Maintenance Transition Milestone.

36 **5.4.1.6 REPLACEMENT OF FAILED EQUIPMENT**

37 Equipment will be considered to have failed if it is out of service for 12 consecutive hours
38 or longer.

39 When a subsystem, as defined in Appendix 4, is unavailable the event shall be documented
40 in the monthly report. The documentation shall identify the faulty equipment. If the same
41 equipment is identified two or more times, that equipment shall be replaced with a new
42 piece of equipment at the Vendor's expense.

1 All electronic equipment that has failed two or more times shall be replaced and tested
2 before the transition from Vendor provided maintenance.

3 All equipment that fails within one year of the transition shall be replaced by the Vendor,
4 and the associated spare part shall be replenished if used

5 The above requirements related to replacement of failed equipment shall apply to, but not
6 limited to, the following:

- 7 • FMAS Server
- 8 • Laser Scanners
- 9 • Antennas
- 10 • DVAS Cameras
- 11 • Optical Character Recognition (OCR) Cameras
- 12 • Power Distribution Unit
- 13 • Readers
- 14 • Lane Controllers
- 15 • Failover Unit

16 **5.4.2 SHARED MAINTENANCE TRANSITION SUBMITTALS**

17 The Vendor shall submit, at a minimum, the following documents:

- 18 • Transition Plan
- 19 • Inspection Punch List
- 20 • Maintenance Records
- 21 • Passwords
- 22 • Documents, Manuals and Drawings
- 23 • Shared Maintenance Plan
- 24 • Shared Operations Manual
- 25 • Warranty

5.5 SHARED MAINTENANCE

After WSDOT has indicated its intent to accept maintenance responsibilities in accordance with Section 5.4 herein, WSDOT will take responsibility for an agreed portion of maintenance activities defined in the Shared Maintenance Plan and the Shared Operations Manual, but shall reserve the right to notify Vendor of need to perform Work under warranty as specified in Section 5.5 herein. WSDOT will contact the Vendor to assist with troubleshooting and repairs when all of the agreed upon maintenance procedures have been exhausted.

During the Shared Maintenance period, the Vendor shall provide changes or updates to the Shared Maintenance Plan, Shared Operations Manual, other relevant documentation, interfaces, reports, or equipment to WSDOT within 15 Calendar Days of implementation of the change or update.

The Vendor shall continue to provide all maintenance support other than the WSDOT portion as defined in the Transition Plan, the Shared Maintenance Plan, and the Shared Operations Manual.

WSDOT Network Services and the Vendor will perform a network design review and analysis including a review of the topology and connectivity, the results of which will serve as the specification for the next generation purchase of Network Infrastructure equipment. Additional infrastructure elements such as servers, storage, and other critical system components will be performed by the WSDOT Office of Information Technology Server Support group concurrently with the network design review.

5.5.1 WARRANTY

The Vendor shall warrant any elements of Hardware or Software transitioned to WSDOT beginning at the time of transition. The Shared Maintenance Plan and Shared Operations Manuals shall address warranty-related procedures including, but not limited to repair and replacement options, remote or local troubleshooting, conditions which would void or extend warranty, Return Merchandise Authorization (RMA) process, and expected turn around time.

5.5.1.1 HARDWARE WARRANTY

The Vendor shall warrant each Hardware part supplied by the Vendor to be free from defects in material and workmanship, under normal use, for at least one year after the Shared Maintenance transition.

If any of the Hardware has not met the requirements set forth in this Contract at any time within the warranty period, then the Vendor shall correct such Hardware, even if the performance of such corrective Work extends beyond the stated warranty period.

Hardware repaired or replaced under warranty shall be exactly the same as the original part, unless approved by WSDOT.

5.5.1.2 SOFTWARE WARRANTY

The Vendor shall warrant that the Software is in good operating condition; free of malicious Software, viruses, and spyware; has received recommended updates and shall conform to the Specifications and meet the Contract requirements for at least one year after the Shared Maintenance transition.

If WSDOT determines that any of the Software has not met the requirements set forth in this Contract at any time within the warranty period, then the Vendor shall correct such

1 Software, even if the performance of such corrective Work extends beyond the stated
2 warranty period.

5.6 MAINTENANCE OF TRAFFIC DURING OPERATIONS

5.6.1 GENERAL

The Vendor shall conduct all Work necessary to meet the requirements associated with MOT during Operations, including providing for the safe and efficient movement of people, goods, and services through and around the Project, while minimizing negative impacts to residents, commuters, and businesses.

The Vendor shall prepare a Traffic Management Plan (TMP), a Traffic Incident Management Plan (TIMP), and MOT Plans for Operations prior to Installation and Testing Completion, and shall conduct all on-site activities relating to traffic maintenance in accordance with this Section.

5.6.2 MANDATORY STANDARDS

The following is a list of publications that shall be used for all Maintenance and Operations. They are listed in hierarchical order, with the most important appearing at the top of the list. This is not a comprehensive list; other applicable publications may be required to complete the Maintenance and Operations. If the Vendor becomes aware of any ambiguities or conflicts relating in any way to the Mandatory Standards, the Vendor shall notify WSDOT immediately, so that WSDOT may resolve them.

- Special Provisions, Appendix 26
- Amendments to the Standard Specifications, Appendix 16
- Standard Specifications (M41-10), Appendix 16
- WSDOT *Design Manual* (M22-01), Appendix 16
- Standard Plans (M21-01), Appendix 16
- WSDOT *Traffic Manual* (M51-02), Appendix 16
- Washington State Modifications to the *Manual on Uniform Traffic Control Devices* (MUTCD) (M24-01), Appendix 16
- WSDOT *Materials Manual* (M46-01), Appendix 16
- WSDOT *Construction Manual* (M41-01), Appendix 16
- WSDOT *Sign Fabrication Manual* (M55-05), Appendix 16
- WSDOT *Plans Preparation Manual* (M22-31) (PPM), Appendix 16
- WSDOT *Maintenance Manual* (M51-01), Appendix 16
- WSDOT *Work Zone Traffic Control Guidelines* (M54-44), Appendix 16
- Washington State Patrol (WSP), Instructional Letter IL 4008.00, *Washington State Patrol Traffic Control Assistance in Work Zones*, Appendix 16
- WSDOT Secretary's Executive Order E 1060.00, *Speed Limit Reductions in Work Zones*, Appendix 16
- WSDOT, Secretary's Executive Order E 1001.01, *Work Zone Safety and Mobility*, Appendix 16

- 1 • FHWA *Manual on Uniform Traffic Control Devices for Streets and Highways*
- 2 (MUTCD), latest edition adopted by WSDOT, Appendix 16
- 3 • Transportation Research Board (TRB), National Cooperative Highway Research
- 4 Project (NCHRP) Report 350, *Recommended Procedures for the Safety*
- 5 *Performance Evaluation of Highway Features*
- 6 • AASHTO *A Policy on Design Standards - Interstate System*, January 2005
- 7 • AASHTO *A Policy on Geometric Design of Highways and Streets*, 5th Edition,
- 8 2004
- 9 • AASHTO *Standard Specifications for Structural Supports for Highway Signs,*
- 10 *Luminaires, and Traffic Signals*, 5th Edition, with 2010 and 2011 Interim
- 11 Revisions
- 12 • AASHTO *Roadside Design Guide*, 4th Edition, 2011
- 13 • AASHTO *Roadway Lighting Design Guide*, 2005
- 14 • TRB *Highway Capacity Manual*, 5th Edition, 2010
- 15 • Institute of Transportation Engineers (ITE) *Traffic Control Devices Handbook*,
- 16 2001
- 17 • FHWA *Traffic Control Systems Handbook*, 2005
- 18 • FHWA *Traffic Monitoring Guide*, 2001, with 2008 Supplement
- 19 • ITE *Traffic Engineering Handbook*, 6th Edition, 2009
- 20 • ITE *Manual of Transportation Engineering Studies*, 2nd Edition, 2010
- 21 • American Traffic Safety Services Association (ATSSA) *Quality Guidelines for*
- 22 *Work Zone Traffic Control Devices*
- 23 • WSDOT *Downtown Seattle and SODO Construction Coordination and*
- 24 *Communications Plan*, October 2009, Appendix 16
- 25 • WSDOT *Construction Closure Request Form*, Appendix 16
- 26 • City of Seattle *Standard Specifications for Road, Bridge and Municipal*
- 27 *Construction*, 2011, Appendix 16
- 28 • City of Seattle *Right-of-Way Improvements Manual*, Appendix 16
- 29 • Seattle Department of Transportation (SDOT) *Traffic Control Manual for In-*
- 30 *Street Work*, Appendix 16
- 31 • SDOT *Major Truck Streets*, Appendix 16
- 32 • SDOT *Downtown Traffic Control Zone*, Appendix 16
- 33 • Port of Seattle *Highway and Intermodal Connector Maps*, Appendix 16

34 **5.6.2.1 CONFORMANCE TO ESTABLISHED STANDARDS**

35 Flagging, signs, and all other traffic control devices and procedures provided by the
36 Vendor shall conform to the standards established in the FHWA MUTCD adopted by
37 WSDOT, the Washington State Modifications to the MUTCD, and the FHWA Final Rule -
38 23 CFR Part 630. The quality of devices provided shall be based on the ATSSA Quality

1 Guidelines for Work Zone Traffic Control Devices. Copies of the FHWA MUTCD and
2 the ATSSA Quality Guidelines for Work Zone Traffic Control Devices may be purchased
3 from the ATSSA, 15 Riverside Parkway, Suite 100, Fredricksburg, Virginia, 22406-1022.
4 The Washington State Modifications to the MUTCD may be obtained from the Department
5 of Transportation, Olympia, Washington 98504.

6 In addition to the standards described above, WSDOT has scheduled the implementation of
7 crashworthiness requirements for most Work zone devices. The NCHRP Report 350 has
8 established requirements for crash testing. Work zone devices are divided into four
9 categories. Each of those categories and, where applicable, the schedule for
10 implementation is described below:

- 11 • Category 1 includes those items that are small and lightweight, channelizing, and
12 delineating that have been in common use for many years and are known to be
13 crashworthy through testing of similar devices, or years of demonstrable safe
14 performance. These devices include cones, tubular markers, flexible delineator
15 posts, and plastic drums. All Category 1 devices used on the Project shall meet
16 the requirements of the NCHRP Report 350 as certified by the manufacturers of
17 the devices.
- 18 • Category 2 includes devices that are not expected to produce significant
19 vehicular velocity change, but may otherwise be hazardous. Examples of this
20 class are barricades, portable sign supports and signs, intrusion alarms, and
21 vertical panels. All Category 2 devices shall meet the requirements of the
22 NCHRP Report 350. For the purpose of definition, a sign support and sign shall
23 be considered a single unit.
- 24 • Category 3 is for hardware expected to cause significant velocity changes or
25 other potentially harmful reactions to impacting vehicles. Examples of this class
26 are barriers, fixed sign supports, crash cushions, Truck-Mounted Impact
27 Attenuators (TMAs), and other Work zone devices not meeting the definitions of
28 Categories 1 or 2. Many Category 3 devices are defined in the design of the
29 Project. Where this is the case, the NCHRP Report 350 requirements shall be
30 incorporated into the design. Where the device is a product chosen by the
31 Vendor, the device chosen shall comply with the requirements of the NCHRP
32 Report 350.
- 33 • Category 4 includes portable or trailer-mounted devices such as arrow displays,
34 temporary traffic signals, area lighting supports, and Portable Changeable
35 Message Signs (PCMS). Presently, there is no implementation schedule for
36 mandatory crashworthiness compliance of these devices.

37 The condition of signs and traffic control devices shall be new or “acceptable” as defined
38 in the ATSSA Quality Guidelines for Work Zone Traffic Control Devices, and will be
39 accepted based on a visual inspection by the Traffic Control Supervisor. WSDOT may
40 also identify devices that are unacceptable. WSDOT’s decision on the condition of a sign
41 or traffic control device will be final. The Vendor shall remove a sign or traffic control
42 device determined to be unacceptable, and replace it within twelve (12) hours of
43 notification.

44 **5.6.3 TRAFFIC MANAGEMENT PLAN FOR MAINTENANCE AND OPERATIONS**

45 The Vendor shall develop a TMP for the Maintenance and Operations phase of work that
46 includes the following items:

- 1 • Procedures to identify and incorporate the needs of emergency service providers,
2 law enforcement entities, and other related corridor users. The Vendor shall also
3 include procedures to ensure all information required by these agencies to protect
4 the public is made available.
- 5 • Provisions for incident and emergency response
- 6 • Methods and frequency of inspection and maintenance of all traffic control
7 throughout the Project limits, including response times to correct, modify, or
8 implement changes to signing
- 9 • Descriptions of contact methods, personnel available, and response times for any
10 conditions requiring attention during off-hours. Include a communications plan
11 to WSDOT radio and field offices.
- 12 • Identification of measurable limits for the repair and replacement of traffic
13 control devices
- 14 • Procedures to modify the plans, as needed, to adapt to current Project
15 circumstances
- 16 • Procedures to accommodate adjacent project’s MOT Plans, if applicable (see
17 Appendix 2, Section 2.5)
- 18 • Procedures to accommodate the MOT Plans when the staging schedule of the
19 Project or any adjacent project changes
- 20 • Procedures to accommodate oversized (height and width) trucks through the
21 work zone when given 48 hours notice
- 22 • The TMP shall specifically address the closures that may be required to maintain
23 the Toll System

24 The TMP shall be submitted to and approved by WSDOT as part of the Installation and
25 Testing Completion and Toll Readiness Milestone. The Vendor shall submit six copies of
26 the Draft TMP to WSDOT. WSDOT will respond to the submittal within 14 Calendar
27 Days of receipt.

28 The Vendor shall prepare a Final TMP for WSDOT’s approval, responding to all WSDOT
29 comments. The Final TMP shall carry the WTEM's Professional Engineering stamp. The
30 Vendor shall submit six copies and an electronic copy of the Final TMP to WSDOT.
31 WSDOT will respond to the Final TMP within 14 Calendar Days of receipt. Changes to
32 the TMP shall be prepared and submitted to WSDOT for approval 14 Calendar Days after
33 the need to change is recognized by WSDOT or the Vendor.

34 **5.6.4 TRAFFIC INCIDENT MANAGEMENT PLAN FOR MAINTENANCE AND** 35 **OPERATIONS**

36 During operations, MOT will be sensitive to incidents such as equipment malfunctions,
37 traffic crashes, inclement weather, and special events. The Vendor shall prepare and
38 implement a formal TIMP for the Maintenance and Operations phase of work to address
39 how these incidents shall be managed.

40 The TIMP shall identify methods for incident detection and verification, Key Project Staff,
41 site management, clearance, and motorist information. The TIMP shall include procedures
42 for interaction with WSDOT’s Northwest Region Traffic Management Center (TMC). In
43 addition, if any local agencies along the Project corridors have adopted incident

1 management guidelines, the Vendor shall be responsible for adhering to local policies and
2 procedures.

3 The Vendor shall modify and implement the TIMP in conjunction with planned special
4 events. The TIMP shall include specific time limits for the detection, verification, and
5 classification of incidents, as well as for the dissemination of information about the
6 incidents. The TIMP shall provide a mechanism to review and capture lessons learned
7 from incidents.

8 The TIMP shall identify and provide for the incorporation of design elements to aid
9 incident management, including turn-around for emergency vehicles, emergency access
10 points, incident investigation sites, and signing to help motorists report the location of
11 incidents in the Project.

12 The Vendor will not be required to provide Incident Response Team equipment or
13 personnel; however, the Vendor shall make materials and equipment available that are on
14 site as requested by WSDOT or the WSP.

15 The TIMP shall be submitted to and approved by WSDOT as part of the Installation and
16 Testing Completion and Toll Readiness Milestone. The Vendor shall submit six copies of
17 the Draft TIMP to WSDOT. WSDOT will provide comments on the Draft TIMP within 14
18 Calendar Days of receipt.

19 The Vendor shall prepare a Final TIMP for WSDOT approval responding to all WSDOT
20 comments. The Final TIMP shall carry the WTEM's Professional Engineering stamp. The
21 Vendor shall submit six copies and an electronic copy of the Final TIMP to WSDOT.
22 WSDOT will respond to the Final TIMP within 14 Calendar Days of receipt. Changes to
23 the TIMP shall be prepared and submitted to WSDOT for approval 14 Calendar Days after
24 the need to change is recognized by WSDOT or the Vendor.

25 **5.6.4.1 EMERGENCY VEHICLE ACCESS**

26 Emergency vehicle access shall be maintained through all closures.

27 **5.6.4.2 HIGHWAY ADVISORY RADIO**

28 There are existing Highway Advisory Radio (HAR) transmitters located within the Project
29 areas. The existing HAR transmitters may be used by WSDOT to provide motorists with
30 incident and construction-related information prior to entering the Work zone.

31 **5.6.4.3 VENDOR RESPONSE TIME**

32 The Vendor shall have a Traffic Control Supervisor (TCS) on call or on site equipped with
33 a mobile phone that can respond to and take appropriate action to manage an emergency
34 situation. The TCS shall be at the Project site within 45 minutes of notification of an
35 emergency situation. Upon arrival, the TCS shall have the experience, resources, and
36 equipment required to set up temporary traffic control, as necessary.

37 **5.6.4.4 CONTINGENCY PLAN**

38 The Vendor shall provide WSDOT with a Contingency Plan for re-opening each closed
39 roadway or lane to traffic in the event of an equipment breakdown, shortage of materials,
40 lack of production of materials, other production failure, or when it becomes necessary to
41 re-open the closure for use by traffic. The Vendor shall submit the Contingency Plan at
42 least seven Calendar Days prior to the scheduled closure. The submission of a

1 Contingency Plan and its acceptance by WSDOT shall not relieve the Vendor from the
2 liquidated damages specified in Appendix 19.

3 **5.6.5 MOT PLANS**

4 **5.6.5.1 WORK ZONE TRAFFIC ENGINEERING MANAGER**

5 A Work Zone Traffic Engineering Manager (WTEM) shall sign and stamp the MOT plans.
6 The WTEM shall be responsible for ensuring that the design of all elements related to work
7 zone safety, and work zone traffic control are completed and all applicable design
8 requirements are met. The WTEM shall be on site for the duration of the MOT Plan
9 development. The WTEM shall also be available for approval of modifications to the
10 MOT Plans. The WTEM shall be a Professional Engineer, registered in the State of
11 Washington.

12 The WTEM shall have at least three years of recent work zone and/or traffic engineering
13 experience on complex, urban interstate projects in design and/or construction. The
14 WTEM shall understand the concepts of traffic modeling and have experience designing
15 work zone safety and work zone traffic control.

16 Design elements that the WTEM is responsible for include, but are not limited to, the
17 following:

- 18 • Detours
- 19 • MOT Plans

20 **5.6.5.2 MOT PLANS REQUIREMENTS**

21 The Vendor shall use the procedures in the TMP to develop detailed MOT Plans that
22 provide for all preventative and emergency maintenance.

23 The MOT Plans shall show the necessary signs, flaggers, spotters, and other traffic control
24 devices required to support the Work. The Vendor shall be solely responsible for
25 submitting proposed MOT Plans to WSDOT and obtaining WSDOT's comments.

26 At a minimum, the MOT Plans shall include the following items:

- 27 • Complete plan sheets and details for all preventative and emergency maintenance
28 scenarios
- 29 • The spacing, size, color (legend and background, if applicable), and quantity of
30 all traffic control devices
- 31 • Work areas, including ingress and egress for construction vehicles
- 32 • Roadway plan sheets with the location of each sign so it can be easily read in
33 relation to the roadway and other traffic control devices. A small-scale layout of
34 each sign shall be shown on the corresponding roadway plan sheet where the sign
35 is to be placed.
- 36 • Drawings on how to fabricate any sign not detailed in the then current WSDOT
37 Sign Fabrication Manual showing dimensions, background color, and legend
- 38 • Where MOT plans are developed with the intent of operating without flaggers or
39 spotters, the Plans shall include a note stating "No FLAGGERS OR
40 SPOTTERS". In such cases, flaggers or spotters will not be allowed except
41 when no other means of traffic control is feasible, or in the event of an

1 emergency. The MOT plans shall show locations of all required advance
 2 warning signs and a safe, protected location for the flagging station. If flagging
 3 shall be performed during hours of darkness, the modified MOT Plans shall
 4 require a minimum of 150W illumination for the flagging station.

- 5 • The MOT Plans shall show the necessary construction signs, flaggers, spotters
 6 and other traffic control devices required to support the Work except those used
 7 in emergency situations. The Vendor shall be solely responsible for submitting
 8 proposed MOT plans to WSDOT, obtaining WSDOT’s comments, releasing the
 9 drawings for construction and providing copies of the MOT plans to the TCS.

10 The MOT Plans shall be complete, including all necessary details. The Vendor shall use
 11 typical traffic control configurations such as those found in the FHWA MUTCD and the
 12 WSDOT Work Zone Traffic Control Guidelines to assist in developing the MOT plans.
 13 The Vendor shall use only site-specific MOT plans that have been Released for
 14 Installation. Typical plans are not acceptable unless incorporated as details into the MOT
 15 plans. The Vendor shall provide WSDOT at least ten Business Days to review. The
 16 Vendor shall allow for more approval time if submitting multiple plan sets at once. The
 17 Vendor may contact the Northwest Region Construction Traffic Control Office (CTCO)
 18 office for approval of the advance Release for Installation MOT plans. The Vendor shall
 19 request day-of approval during Operations from WSDOT as described in Section 5.6.6
 20 herein. For the time period between Toll Commencement and the I-405 Project Physical
 21 Completion on the I-405 System, the Vendor shall submit all closure requests through the
 22 I-405 Design-Builder as well as through WSDOT.

23 **5.6.6 ALLOWABLE CLOSURES**

24 This Section lists the allowable lane, ramp, and shoulder closure hours during the Project.
 25 Any restrictions for roadway segments not listed in this Section require WSDOT approval.
 26 No lane, ramp, or shoulder closures shall occur outside of the hours specified within this
 27 Section, unless approved in advance and in writing by WSDOT.

28 As described in Section 5.3 herein there are three Priority levels of maintenance events in
 29 addition to preventive maintenance. See Table 5-2 for the associated Priority and WSDOT
 30 advance request time.

31 **Table 5-2: Priority Level Repair and Request Times**

Maintenance Event Priority	Repair Time	WSDOT Request Time
Priority 1	2 hrs	1 hr
Priority 2	6 hrs	1 hr
Priority 3	30 days	1 day

32
 33 The Vendor shall request closures from WSDOT at least 60 minutes before a lane closure
 34 is required for Priority 1 events defined in Section 5.3.8.1 herein. WSDOT will respond
 35 within 60 minutes for Priority 1 events. This allows for any necessary review of current
 36 traffic conditions and the potential impacts created by the requested closure. For Priority 2
 37 events the Vendor shall request closures at least one hour in advance and WSDOT will
 38 respond within one hour. For Priority 3 events the Vendor shall request closures at least
 39 one Business Day in advance and WSDOT will respond within one Business Day.

40 No temporary lane, ramp, or shoulder closures or restrictions, including set-up of traffic
 41 control devices, will be allowed, except during the hours where permitted lane, ramp and

1 shoulder closures are allowed. In addition, no Work that restricts or interferes with traffic
2 will be allowed from 12:00 p.m. on the day preceding, through 12:00 p.m. on the day
3 following, a holiday or holiday weekend. Holidays that occur on Friday, Saturday,
4 Sunday, or Monday are considered a holiday weekend. January 1, the third Monday of
5 January, the third Monday of February, Memorial Day, July 4, Labor Day, November 11,
6 Thanksgiving Day, the day after Thanksgiving, and Christmas Day shall be considered
7 holidays. When any of these holidays fall on a Sunday, the following Monday shall be
8 considered a holiday. When any of these holidays fall on a Saturday, the preceding Friday
9 shall be considered a holiday.

10 In addition, closures will not be allowed in the Project area during the following time
11 periods:

- 12 • Annual Seafair Hydroplane Race Weekend from 12 p.m. Friday to 8:00 p.m.
13 Sunday (SR 99 System only)
- 14 • Scheduled closures of the I-90 floating bridge (I-405 System only from NE 6th to
15 NE 80th)
- 16 • Scheduled closures of the SR 520 floating bridge (both Systems)

17 The Vendor shall coordinate their Work activities with other local events in the area, so
18 that the events will not be impacted. In addition, closures will not be allowed during the
19 following Annual Special Events, including the two-hour period prior to and the two-hour
20 period after the Event.

- 21 • Seattle Center Events (single event or combination of events) with projected
22 combined attendance over 8,000 (SR 99 System only)
- 23 • All University of Washington home football games (both Systems)
- 24 • Safeco Field and CenturyLink Field events with projected attendance over
25 25,000 (both Systems)
- 26 • M. L. King Jr. March (SR 99 System only)
- 27 • Northwest Flower and Garden Show (SR 99 System only)
- 28 • Northwest Women’s Show (SR 99 System only)
- 29 • Opening Day of Boating Season (both Systems)
- 30 • Pike Place Market Festival (SR 99 System only)
- 31 • Graduation Ceremonies at CenturyLink Field (SR 99 System only)
- 32 • Pride Parade and Festival (SR 99 System only)
- 33 • Lake Union Wooden Boat Festival (SR 99 System only)
- 34 • July 4th Fireworks in all of the following cities: of Seattle, Bellevue, Kirkland,
35 Redmond and Mercer Island (both Systems)
- 36 • Bite of Seattle (both Systems)
- 37 • Capitol Hill Block Party (SR 99 System only)
- 38 • Seafair Torchlight Run & Parade (SR 99 System only)
- 39 • Seafair Rock n Roll Marathon (SR 99 System only)

- 1 • Blue Angels Practice and Air Show (SR 99 System only)
- 2 • Hempfest (SR 99 System only)
- 3 • Bellevue Arts Fair (I-405 System only)
- 4 • Bumbershoot (both Systems)
- 5 • Seattle Marathon (both Systems)
- 6 • Seattle Marathon 10k Race (SR 99 System only)
- 7 • Escape from the Rock (SR 99 System and I-405 System from NE 6th St to NE
- 8 80th St.)
- 9 • Jingle Bell Run (I-405 System only)
- 10 • TREK Triathlon (SR 99 System only)

11 Exceptions to the allowable lane closures may be necessary to accommodate wide loads or
12 other permit loads through the temporary traffic control area. In addition, the Vendor shall
13 coordinate with adjacent concurrent projects to provide continuity in the lane
14 configurations.

15 WSDOT reserves the right to not approve closure requests during adverse weather events.
16 The Vendor shall coordinate with WSDOT for details regarding lane closure restrictions.

17 **5.6.6.1 ALLOWABLE LANE CLOSURES**

18 The Vendor shall, at a minimum, maintain the existing configuration at all times outside of
19 the allowable closures described in this Section, unless otherwise permitted in this Section.

20 The Vendor's traffic control plans and traffic control subcontractor relating to maintenance
21 shall be pre-approved by WSDOT.

22 The Vendor shall submit their request for full directional roadway closures or full ramp
23 closures for WSDOT approval at least 30 Calendar Days in advance. A simultaneous total
24 closure of both directions of the same roadway shall not be permitted. Any full directional
25 roadway or full ramp closures would be limited to nighttime hours between 11:00 p.m. and
26 4:00 a.m.

27 Detour routes shall be provided by the Vendor for ramp closures and all roadway closures.
28 Detours must be approved by impacted local agencies a minimum of 14 Calendar Days
29 prior to implementing the closure. All detours shall be in place, including all signing, prior
30 to closure of the ramp. If more than one ramp and/or roadway will be closed at the same
31 time, all detour routes shall be shown on the same plan.

32 The Vendor shall coordinate ramp closures with adjoining projects to ensure consecutive
33 on-ramps or off-ramps are not closed simultaneously or result in conflicting or overlapping
34 detours.

35 The Vendor shall complete all ramp Work within the specified closure times prior to
36 opening the ramps to traffic.

37 No closures shall be permitted on Friday or Saturday nights. Overnight closures shall be
38 limited to hours between 9:00 p.m. and 4:00 a.m. For the I-405 System between Toll
39 Commencement and the I-405 Physical Completion, additional guidance on nighttime
40 closure restrictions is included in Appendix 25.

41 Daytime lane closure allowance and rentals are described in Section 5.6.6.1.1 herein.

5.6.6.1.1 Lane Closure Rental

Lane closures during the day should be minimized. Daytime lanes closures shall only be used to respond to Priority 1 or 2 events. No Priority 3 response or preventive maintenance shall be done under a daytime lane closure.

The Vendor shall be required to pay a lane rental fee to close one or more lanes for in-lane maintenance during specific periods of the day and days of the week. Tables 5-3 through 5-6 herein define the time of day restrictions for the lane closure, and the lane rental adjustment for the closure. The lane rental fee applies to Vendor Provided Maintenance only. The Vendor is only allowed to close a lane that is adjacent to a shoulder under one lane closures. Work on a ramp may only be performed at night, and upon approval of WSDOT. Ramp closures shall be subject to the notification times as described in Section 5.6.6.2 herein unless otherwise approved by WSDOT.

For the I-405 System within the dual Express Toll Lanes segment the outer (closest to the general purpose lanes) Express Toll Lane shall not be closed without the inner (closest to the shoulder) Express Toll Lane also being closed.

The maximum allowable closure durations described in Tables 5-3 through 5-6 herein shall not be combined across multiple time periods. If a closure crosses the boundary between two allowed time periods, the more restrictive allowance shall be applied at the start of the second time period.

All traffic control setup and takedown shall occur within the maximum allowable closure durations.

The lane rental fee for each closure shall be calculated by subtracting the Earned Revenue of the current closure from the Average Earned Revenue of the previous comparable four week period from the same time of day and same day(s) of week and multiplying by the lane rental adjustment. If the result is a negative number, the lane rental cost will be \$0.00. For the I-405 System, a closure will have a calculated value based on the difference of cumulative Earned Revenue and Average Earned Revenue for the system by direction.

The lane rental fee shall be specifically called out and deducted within the monthly invoice.

WSDOT may waive lane rental fees when Work occurs under extenuating circumstances.

WSDOT may suspend or change the schedules at any time, Provided, that WSDOT shall notify Vendor of such changes prior to the effective date of the changes. WSDOT will provide seven Calendar days notice for temporary changes to these schedules. WSDOT will provide 30 Calendar days notice of permanent changes to these schedules.

1 Tables 5-3 and 5-4 describe the Lane Rental fees associated with the SR 99 System.

2 **Table 5-3: SR 99 Weekday Lane Closure Rental Matrix**

Time Period	Max Closure Allowance	Lane Rental Adjustment	Count Against Repair Time?
Peak 5am - 9am 3pm - 7pm	No Closures	N/A	Yes
Pre – Peak 4am - 5am 2pm - 3pm	1/2 Hour, 1 Direction, 1 Lane Only	100%	Yes
Post – Peak 9am - 10am 7pm - 10pm	1 Hour, 1 Direction, 1 Lane Only	100%	Yes
Off Peak – Day 10am - 2pm	2 Hours, 1 Direction, 1 Lane Only	50%	Yes
Off Peak – Night 10pm - 4am	No time length restriction, 1 Direction, 1 Lane Only	0%	Yes

3

4 **Table 5-4: SR 99 Saturday and Sunday Lane Closure Rental Matrix**

Time Period	Max Closure Allowance	Lane Rental Adjustment	Count Against Repair Time?
Morning 4am - 10am	2 Hour, 1 Direction, 1 Lane Only	50%	Yes
Mid-Day 10am - 3pm	1 Hour, 1 Direction, 1 Lane Only	100%	Yes
Evening 3pm - 10pm	1/2 Hour, 1 Direction, 1 Lane Only	100%	Yes
Off Peak – Night 10pm - 4am (Sunday Only)	No time length restriction, 1 Direction, 1 Lane Only	0%	Yes

5

1 Tables 5-5 and 5-6 describe the Lane Rental fees associated with the I-405 System.

2

Table 5-5: I-405 Weekday Lane Closure Rental Matrix

Time Period	Max Closure Allowance	Lane Rental Adjustment	Count Against Repair Time?
Peak 5am – 9:30am 3pm - 7pm	No Closures	N/A	Yes
Pre – Peak 4am - 5am 2pm - 3pm	1/2 Hour, 1 Direction, 1 Lane Only	100%	Yes
Post – Peak 9:30am – 10:30am 7pm - 9pm	1 Hour, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments	100%	Yes
Off Peak – Day 10:30am - 2pm	2 Hours, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments	50%	Yes
Off Peak – Night 9pm - 4am	No time length restriction, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments*	0%	Yes
* A single general purpose lane adjacent to the express toll lane facilities may also be closed during night closures, such that up to two lanes are closed in the single express toll lane segment and up to three lanes are closed in the dual express toll lane segment.			

3

4

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Table 5-6: I-405 Saturday and Sunday Lane Closure Rental Matrix

Time Period	Max Closure Allowance	Lane Rental Adjustment	Count Against Repair Time?
Morning 4am - 10am	2 Hour, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments	50%	Yes
Mid-Day 10am - 3pm	1 Hour, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments	100%	Yes
Evening 3pm - 9pm	1/2 Hour, 1 Direction, 1 Lane Only	100%	Yes
Off Peak – Night 9pm - 4am (Sunday Only)	No time length restriction, 1 Direction, 1 Lane Only or 2 Lane allowed for dual express toll lane segments*	0%	Yes
* A single general purpose lane adjacent to the express toll lane facilities may also be closed during night closures, such that up to two lanes are closed in the single express toll lane segment and up to three lanes are closed in the dual express toll lane segment.			

6

5.6.6.2 ALLOWABLE RAMP CLOSURES

The Vendor shall maintain the existing ramp configurations at all times outside of the allowable closures described in this Section, unless otherwise permitted. The Vendor shall submit their request for ramp closures for WSDOT approval at least 14 Calendar Days in advance.

Consecutive off-ramps or on-ramps shall not be closed concurrently. No ramp shall be closed if it is being used as a detour for another ramp closure. No more than one ramp in the same freeway-to-freeway interchange shall be closed at the same time. Ramps may only be closed from 11:00 p.m. to 4:00 a.m. Ramp closures are not allowed on Friday, Saturday or Sunday nights.

The Vendor shall provide detours for ramp closures in accordance with Section 5.6.6.1 herein.

5.6.6.3 SIGNS AND TRAFFIC CONTROL DEVICES

All signs and traffic control devices for lane, ramp, and roadway closures shall be installed only during the hours specified in this Section. If placed earlier than the specified hours of closure, the signs shall be turned or covered so as not to be visible to motorists.

The Vendor may work with WSDOT to incorporate lane control signs with variable message signs (VMS) along SR 99.

5.6.6.4 HOUR ADJUSTMENT

If WSDOT determines that the permitted closure hours adversely affect traffic, WSDOT may adjust the closure hours accordingly. WSDOT will notify the Vendor in writing of any change in the closure hours.

5.6.6.5 PUBLIC NOTIFICATION

The Vendor shall furnish and install information signs that provide advance notification of full ramp and roadway closures a minimum of seven Calendar Days prior to the scheduled closure. The signs shall have a black legend on a white reflective background. Sign locations, messages, letter sizes, and sign sizes shall be shown in the MOT Plans. For ramp closures, PCMS shall be used to supplement the required signs. The Vendor shall notify the WSP, local fire departments, police departments, city engineering departments, public transit agencies, and the affected school districts in writing a minimum of seven Calendar Days prior to scheduled closures. The Vendor shall provide written copies of these notifications to WSDOT.

5.6.7 MAINTENANCE OF TRAFFIC REQUIREMENTS

The Vendor shall plan, manage, supervise, and perform all temporary traffic control activities required to support the Work using labor, equipment, and materials provided by the Vendor (except when such labor, equipment, or materials are to be provided by WSDOT as specifically identified herein).

The traffic control devices must be continually and adequately monitored and maintained to ensure proper placement and working order, and to ensure the safe and efficient flow of all traffic through and adjacent to the Project.

All materials shall meet the requirements of Section 9-35 of the Standard Specifications.

5.6.7.1 TRAFFIC CONTROL PERSONNEL

The Vendor shall designate one or more people to perform the duties of the primary TCS, and identify an alternate TCS who can assume the duties of the primary TCS in the event of that person's inability to perform. The TCS shall be responsible for safe implementation of the approved MOT Plans.

The TCS shall be certified as a Work site traffic control supervisor by one of the following agencies:

The Northwest Laborers-Employers Training Trust
27055 Ohio Avenue
Kingston, WA 98346
(360) 297-3035

Evergreen Safety Council
401 Pontius Avenue North
Seattle, WA 98109
1-800-521-0778
(206) 382-4090

Possession of a current flagging card by the TCS is mandatory.

The Vendor shall provide all personnel for execution of all procedures related to temporary traffic control, and setup, maintenance, and removal of all temporary traffic control devices and construction signs necessary to control traffic during maintenance operations.

All personnel engaged in execution of all procedures related to temporary traffic control shall wear reflective vests and hard hats. During hours of darkness, white coveralls or white or yellow rain gear shall be worn. The vests and other apparel shall be in accordance with Section 1-07.08 of the Standard Specifications.

5.6.7.1.1 Traffic Control Supervisor

A TCS shall be present on the Project whenever flagging, spotting, or other traffic control is occurring; or less frequently, as authorized by WSDOT.

The TCS shall personally perform all of the duties of the TCS. During non-working hours, the TCS shall be available at the Project within 45 minutes after notification by WSDOT.

The TCS's duties shall include the following:

- Possessing a current set of approved MOT Plans; applicable Contract provisions as provided by the Vendor; the latest adopted edition of the Washington State and FHWA MUTCDs, including the Washington State Modifications to the MUTCD; the publication Quality Standards for Work Zone Traffic Control Devices; and applicable standards and specifications.
- Inspecting traffic control devices and nighttime lighting for proper location, installation, message, cleanliness, and effect on the traveling public. Traffic control devices shall be inspected at least once per hour during working hours, except that Class A signs and nighttime lighting may be inspected only twice a week. Traffic control devices left in place for 24 hours or more shall also be inspected once during non-working hours when they are initially set up (during daylight or darkness, whichever is opposite of the working hours). The TCS

1 shall correct, or arrange to have corrected, any deficiencies noted during these
2 inspections.

- 3 • Preparing a daily traffic control diary on each day that traffic control is
4 performed using DOT Forms 421-040A and 421-040B and submitting them to
5 WSDOT no later than the end of the next Business Day. The daily traffic control
6 diaries shall be maintained at the Project office and made available to WSDOT at
7 any time upon request. The Vendor may use alternate forms if approved by
8 WSDOT. Diary entries shall include, but are not limited to, the following:
 - 9 – Time of day when signs and traffic control devices are installed and removed
 - 10 – Location and condition of signs and traffic control devices
 - 11 – Revisions to the MOT Plans
 - 12 – Lighting used at night
 - 13 – Observations of traffic conditions
- 14 • Making minor revisions to the MOT Plans to accommodate site conditions,
15 provided that the original intent of the MOT Plans is maintained. The revisions
16 shall be documented in the daily traffic control diary.
- 17 • Attending traffic control coordination meetings or coordination activities,
18 including meetings and activities for adjacent projects, as necessary, for a
19 complete understanding of the Project and effective performance.
- 20 • Ensuring that all required traffic control devices and equipment are available and
21 in good working condition prior to the need to install or use them.

22 Provided that the duties of the TCS are accomplished, the TCS may perform other duties
23 described in this Section.

24 The TCS shall be considered a critical component of the Vendor's management team, and
25 shall have at least 5 years of practical experience managing MOT operations on similarly
26 complex projects. Registration as a licensed Professional Engineer is not required.

27 The TCS or a designee shall be available on a 24-hour basis with a single contact phone
28 number throughout the duration of the Project; supervise and verify all changes in the
29 MOT setup; and perform daily Project reviews to verify that MOT devices are correctly
30 placed and traffic is safely and efficiently moving through the Project. The TCS or a
31 designee shall be available on the Project within 45 minutes of notification of an
32 emergency situation, and shall be prepared to positively respond to the need to repair the
33 traffic control system or to provide alternate traffic arrangements. The TCS shall have the
34 resources, ability, and authority to expeditiously correct any deficiencies in the traffic
35 control system, or to demobilize any construction operation that is resulting in excessive
36 delays to traffic or creating an unsafe condition. Any designees to the TCS shall be
37 qualified as a TCS.

38 The TCS shall maintain a 30 Calendar Day advance schedule of all traffic control activities
39 and a long-range schedule for all planned ramp and roadway closures.

40 When temporary traffic control measures are in place, the TCS shall perform drive-through
41 inspections each Calendar Day and immediately after any shift in MOT setup, while crews
42 are still on-site to make modifications. The results of the inspections shall be documented
43 in a daily report that, at a minimum, lists the time frame of the drive-through inspection
44 and the defects noted. The report shall also document any maintenance or corrective action
45 ordered as a result of the inspection, and the name and position of the Vendor's personnel

1 who have been directed to provide the maintenance or corrective action. The daily report
2 shall state that the MOT setup and all traffic control devices substantially conform to the
3 Contract requirements, except as noted, and shall be signed by the TCS.

4 **5.6.7.2 TRAFFIC CONTROL PROCEDURES**

5 **5.6.7.2.1 Rolling Slowdown**

6 Rolling slowdown traffic control operations shall not be used for routine Work that can be
7 addressed by standard lane or shoulder closure traffic control. When a short-term roadway
8 closure of 15 minutes or less is needed for an infrequent, non-repetitive Work operation the
9 Vendor may implement a rolling slowdown on a multilane roadway, as part of an approved
10 traffic control plan. Rolling slowdowns on the Project will only be permitted between
11 12:01 a.m. and 4:00 a.m., Sunday through Friday.

12 Where included in the approved MOT Plans, a rolling slowdown shall be accomplished
13 using one traffic control vehicle with flashing amber lights for each lane to be slowed
14 down, plus one control vehicle to serve as a chase vehicle for traffic ahead of the blockade.
15 The Vendor shall provide and pay for a minimum of two WSP officers per direction, for
16 mainline rolling slowdowns. The traffic control vehicles shall enter the roadway and form
17 a moving blockade to reduce traffic speeds and create a clear area in front of the moving
18 blockade to accomplish the Work without a complete stoppage of traffic.

19 A PCMS shall be placed ahead of the starting point of the traffic control to warn traffic of
20 the slowdown. The sign shall be placed far enough ahead of the Work to avoid any
21 expected backup of vehicles.

22 The location where the traffic control vehicles shall begin the slowdown and the speed at
23 which the moving blockade shall be allowed to travel shall be calculated to accommodate
24 the estimated time needed for closure. The chase control vehicle shall follow the slowest
25 vehicle ahead of the blockade. When the chase vehicle passes, the Vendor may begin the
26 Work operation. In the event that the Work operation is not completed when the moving
27 blockade reaches the site, all Work, except the Work necessary to clear the roadway, shall
28 cease immediately, and the roadway shall be cleared and reopened as soon as possible.

29 All ramps and entrances to the roadway between the moving blockade and the Work
30 operation shall be temporarily closed using construction vehicles. Radio communications
31 between the Work operation and the moving blockade shall be established and utilized to
32 adjust the speed of the blockade to accommodate the closure time needed.

33 If more than one rolling slowdown occurs during the same period, the Vendor shall ensure
34 that any queues originating from previous rolling slowdowns have fully dissipated.

35 **5.6.7.2.2 Lane Closure Setup/Takedown**

36 Where allowed by the Contract and where shown on the approved MOT Plans or as
37 directed by WSDOT, the Vendor shall establish traffic control measures to close one or
38 more lanes of a multilane facility. When this is scheduled to occur, the Vendor shall
39 adhere to the following sequence:

- 40 • Set up advance warning signs on the shoulder of the roadway opposite the lane to
41 be closed
- 42 • Set up advance warning signs on the same shoulder as the lane to be closed
- 43 • Move a TMA with arrow board into place at the beginning of the closure taper

- 1 • Place channelization devices to mark the taper and the length of the closure as
2 shown on the MOT plans
- 3 • Once the lane is closed, the TMA/arrow board combination may be replaced with
4 an arrow board without attenuator

5 If additional lanes are to be closed, this shall be done in sequence with previous lane
6 closures, using the same sequence of activities. A TMA with arrow board is required
7 during the process of closing each additional lane, and may be replaced with an arrow
8 board without attenuator after the lane is closed. Each closed lane shall be marked with a
9 separate arrow board at all times.

10 Traffic control for lane closures shall be removed in the reverse order of its installation.

11 **5.6.7.2.3 Patrol and Maintain Traffic Control Measures**

12 When temporary traffic control measures are in place, the Vendor shall patrol and maintain
13 these measures at all times. The Work shall consist of resetting mislocated devices;
14 assuring visibility of all devices; cleaning and repairing where necessary; providing
15 maintenance for all equipment, including replacing batteries and light bulbs, as well as
16 keeping motorized and electronic items functioning; and adjusting the location of devices
17 to respond to actual conditions, such as queue length, unanticipated traffic conflicts, and
18 other areas where planned traffic control has proven ineffective.

19 This Work shall be performed by the Vendor, either by or under the direction of the TCS.
20 Personnel, with vehicles if necessary, shall be dispatched so that all traffic control can be
21 reviewed at least once per hour during working hours, and at least once during each
22 Calendar Day.

23 **5.6.7.2.4 Traffic Control Devices**

24 Traffic control devices are used to visually guide drivers through Work zones. Signing,
25 channelizing devices, arrow boards, and warning beacons all display a message to the
26 driver. Work zone credibility is established through the proper use of these devices to send
27 correct messages to drivers. Poor Work zone credibility has a direct, negative impact on
28 Work zone safety by causing driver confusion, frustration, and disrespect, which results in
29 a high potential for accidents.

30 **5.6.7.2.5 Construction Signs**

31 All construction signs required by the approved MOT Plans, as well as any other
32 appropriate signs directed by WSDOT, shall be provided by the Vendor. The Vendor shall
33 provide the posts or supports, and erect and maintain the signs in a clean, neat, and
34 presentable condition until they are no longer required. Post-mounted signs shall be
35 installed as shown in the applicable WSDOT Standard Plan(s). Sign attachment to posts
36 shall conform to the applicable detail shown in the Standard Plans. When the construction
37 signs are no longer required, the Vendor shall remove all signs, posts, and supports from
38 the Project and they shall remain the property of the Vendor.

39 Construction signs are divided into two classes. Class A construction signs are those signs
40 that remain in service throughout the construction or during a major phase of the Work.
41 They are mounted on posts, existing fixed structures, or substantial supports of a semi-
42 permanent nature. Class A signs shall be designated as such on the approved MOT Plans.
43 “Do Not Pass” and “Pass With Care” signs are Class A construction signs. Sign and
44 support installation for Class A signs shall be in accordance with the applicable WSDOT

1 Standard Plan(s). Class B construction signs are those signs that are placed and removed
2 daily, or are used for short durations that may extend for one or more days. They are
3 mounted on portable or temporary mountings.

4 Where it is necessary to add weight to signs for stability, the Vendor shall follow the
5 manufacturer’s recommendations for sign ballasting.

6 Signs, posts, or supports that are lost, stolen, damaged, destroyed, or which WSDOT
7 deems to be unacceptable while used on the Project, shall be replaced by the Vendor.

8 **5.6.7.2.6 Sequential Arrow Signs**

9 Where shown on the approved MOT Plans or when requested by WSDOT, the Vendor
10 shall provide, operate, and maintain sequential arrow signs. In some locations, the signs
11 shall be shown on the MOT Plans as a unit with a TMA. In other locations, the MOT
12 Plans shall indicate a stand-alone unit.

13 **5.6.7.2.7 Portable Changeable Message Signs**

14 Where shown on the approved MOT Plans or when requested by WSDOT, the Vendor
15 shall provide, operate, and maintain PCMS. The Vendor shall provide a minimum of 4
16 PCMS available for use throughout the duration of the Project, and shall provide additional
17 PCMS as required. These signs shall be available on site for the entire duration of their
18 anticipated use.

19 **5.6.7.2.8 Barricades**

20 Where shown on the approved MOT Plans or when requested by WSDOT, the Vendor
21 shall furnish, install, and maintain barricades. Barricades shall be kept in good repair, and
22 shall be removed and/or replaced immediately when, in the opinion of WSDOT, they are
23 no longer functioning as designed.

24 Where it is necessary to add weight to barricades for stability, the Vendor shall follow the
25 manufacturer’s recommendations for sign ballasting.

26 **5.6.7.2.9 Traffic Safety Drums**

27 Where shown on the approved MOT Plans, or when requested by WSDOT, the Vendor
28 shall furnish, install, and maintain traffic safety drums.

29 Used traffic safety drums may be utilized, provided all drums used on the Project are of
30 essentially the same configuration and in acceptable condition.

31 Traffic safety drums shall be designed to resist overturning by means of a weighted lower
32 unit that will separate from the drum when impacted by a vehicle.

33 Traffic safety drums shall be regularly maintained to ensure that they are clean and that the
34 drum and reflective material are in good condition. If WSDOT determines that a drum has
35 been damaged beyond usefulness, or provides inadequate reflectivity, a replacement drum
36 shall be provided by the Vendor at no cost to WSDOT.

37 When WSDOT determines that the traffic safety drums are no longer required, they shall
38 be removed from the Project and shall remain the property of the Vendor.

39 **5.6.7.2.10 Traffic Cones**

40 The Vendor shall not use traffic cones on ramps, interstates, or state highways.

