

# EXHIBIT E

## THE JOINT OPERATING AND MAINTENANCE PROTOCOLS

### 1. Introduction

The Joint Operations and Maintenance Protocols (“JOMP”) describe how the Concessionaire and the Department are will work cooperatively to coordinate their operation of the HOT Lanes and the GP Lanes. The Concessionaire and the Department acknowledge that as of the Agreement Date, the level of engineering and design for the Route 495 HOT Lanes in Virginia Project is not sufficient to allow the parties to set forth with specificity all the protocols which will define their operational relationship. This document will outline the framework of the operational relationship between the Concessionaire and the Department and will form the basis for the development of more specific protocols prior to Service Commencement.

The JOMP is an exhibit to the Amended and Restated Comprehensive Agreement Relating to the Route 495 HOT Lanes in Virginia Project (“ARCA”). If any provision of the JOMP should be in conflict with any provision of the ARCA or any exhibits to the ARCA, then such conflict shall be resolved by applying the order of precedence set forth in Section 20.15(f) of the ARCA.

### 2. Reviews and Revisions

The JOMP shall be reviewed by the parties and finalized at least three months prior to Service Commencement. The JOMP shall be consistent with the Concessionaire’s Concept of Operations, which is included as part of Exhibit U to the ARCA.

In order to timely review and finalize the JOMP prior to Service Commencement, the Concessionaire and the Department shall undertake the following:

- the Concessionaire shall provide a proposed draft for its final version of the Concept of Operations and System Interface Specification for the Department’s review by December 31, 2007
- meet no later than March 2008 to discuss the specific steps needed to revise the JOMP prior to Service Commencement and agree upon a detailed schedule
- the Concessionaire and the Department shall finalize the program for the road operations technical specifications by July 2008
- the Concessionaire shall provide a proposed project-level ITS Architecture in accordance with the Technical Requirements by a target date of May 2009
- The Concessionaire shall finalize its project-level ITS Architecture by a target date of July 2009

Following Service Commencement, the Concessionaire and the Department shall meet and confer annually to review the JOMP and, if necessary, revise the JOMP. Either the Department or the Concessionaire may request that the parties meet and confer prior to the next scheduled annual review of the JOMP if such circumstances arise which require the document to be revised to ensure a continuity of operations.

### **3. Operational Management**

The Concessionaire and the Department shall establish a management committee to coordinate operations of the HOT Lanes and the GP in accordance with the terms of the JOMP. The senior members of the committee shall include the Northern Virginia District Administrator and the Concessionaire's General Manager. The committee's operational management shall be administered by the Department's Northern Region Operations Director and the Concessionaire's Operations Manager. Day-to-day coordination between the Concessionaire and the Department as required by the JOMP shall be coordinated by Department's Northern Region Traffic Operations Manager (based in the Department's Traffic Management Center) and the Concessionaire's Senior Control Room Officer.

### **4. Advances in Technology**

Given the length of the Term, the Concessionaire and Department acknowledge that operations of the HOT Lanes or the GP Lanes may be improved by the implementation of as yet unknown technologies. The parties agree that they will meet and confer at least one year prior to the upgrade of their operations systems or the proposed implementation of any new operations systems. The purpose of this meeting shall be to ensure that any Concessionaire proposed upgrades or new systems are compliant with the Department's Northern Region Operation's systems.

The Concessionaire and Department also shall develop additional protocols, if needed, to be included in the JOMP and other relevant Concessionaire documentation to enable the continuity of operations of the HOT Lanes and GP Lanes following the proposed upgrade or installation of new operations systems.

### **5. Protocols**

The protocols set forth below and to be refined pursuant to Section 2 are divided into the following operational areas: (A) Operating Systems, (B) Information, (C) Data, and (D) Asset Maintenance. The description of each protocol outlined below sets forth the minimum information that each such protocol should contain.

The purpose of these protocols is to promote public safety and security and to better ensure efficient congestion management and operations as between the HOT Lanes, the GP Lanes, and the transportation network in Northern Virginia.

**A. Systems Protocols:**

**(I) Operating Systems**

The Concessionaire shall provide to the Department under normal operating conditions and when incidents occur on the HOT Lanes which impact the GP Lanes:

- access to streaming video from the HOT Lanes CCTV cameras
- transmission of data collected from the ITS applications installed on the HOT Lanes
- notice of any planned system shutdowns or periods of degradation

In accordance with Section 12.02 (b) of the ARCA, the Concessionaire shall grant to the Department control of the Concessionaire's CCTV cameras and DMS systems to assist in the management of declared emergencies and accidents involving casualties. The Department will be provided:

- access to streaming video images from the Concessionaire's CCTV cameras
- control over pan-tilt-zoom functions of the Concessionaire's CCTV cameras required to manage the incident
- control of Dynamic Message Signs required to manage the incident

The Department shall provide the following to the Concessionaire under normal operating conditions:

- access to streaming video from the CCTV cameras installed on the GP Lanes and approach roads
- notice of any planned system shutdown or periods of degradation that will effect the CCTV image availability, the HOT Lanes and HOT Lanes systems, including the fiber optic network

The Concessionaire and the Department shall agree on a recovery plan to be implemented by the Concessionaire if unplanned outages of its operations system occur.

**(II) Traffic Detection**

The Concessionaire shall notify the Department in advance of planned outages of the Concessionaire's traffic detection system (including but not limited to sensors embedded in the HOT Lanes roadway surface and installed along the facility) and immediately after the Concessionaire detects an unplanned outage of any such system. If

an unplanned outage occurs, the Concessionaire shall inform the Department of the location of the outage, the estimated duration of the outage, and notice that the outage has been repaired.

The Concessionaire and the Department shall agree on a recovery plan to be implemented by the Concessionaire if unplanned outages of its traffic detection system occur.

In addition, the Concessionaire and the Department also shall agree to a regime for notification of future upgrades to traffic detection systems in order to ensure compatibility and interoperability with the Department's systems.

### **(III) Communications System (Fiber Optic Network)**

The Concessionaire and the Department shall agree on protocols to address how the Concessionaire shall provide the Department with the following information about the Concessionaire's communication system (including the fiber optic network).

- Notification of maintenance and upgrade work
- Notification of planned outages including duration of disruption
- Immediate notification of unplanned outages

The Concessionaire and the Department shall agree on protocols to address how the Department shall provide to the Concessionaire the following under normal operating conditions:

- access to the fiber optic network and conduit to be maintained in accordance with the Technical Requirements
- Access to the fiber optic network as detailed in the Technical Requirements.

The Concessionaire and the Department shall agree on a recovery plan to be implemented by the Concessionaire if unplanned outages of its communication system occur.

### **(IV) Traffic Signals and the Intersection Control Plan**

At least three months prior to Substantial Completion of the HOT Lanes, the Concessionaire and the Department agree that intersection control plans shall be established by the Department to optimize signalization for traffic movements for all new traffic signal devices. In performing this task, the Department shall strive to develop a system that promotes the most efficient operation of the traffic network in Northern Virginia, including the HOT Lanes in accordance with the Technical Requirements.

The Department shall advise the Concessionaire if changes to signal timing affect traffic on the HOT Lanes and connecting roads.

## **(V) Power System**

The Concessionaire shall provide notice to the Department of both planned and unplanned outages, repairs, and maintenance to the Concessionaire's power system.

The Department shall provide notice to the Concessionaire of both planned and unplanned outages, repairs, and maintenance to the Department's power systems for the GP Lanes and other roads that provide a direct connection to the GP Lanes or the HOT Lanes within a three mile radius of the HOT Lanes.

## **(VI) Lighting**

The Concessionaire shall provide to the Department notice of lighting outages (both planned and unplanned) along the HOT Lanes which may impact the safety of the traveling public.

### **B. The Sharing and Exchange of Information:**

All information provided by the Concessionaire to the Department below may be used by the Department as it deems appropriate to advise the public, other governmental agencies and emergency responders of the status of operations of the HOT lanes or the GP lanes, subject to Section 18.04 of the ARCA.

## **(I) Information Systems**

The Concessionaire and the Department understand the importance of providing the traveling public with accurate information about travel along the HOT Lanes. At this time, the Concessionaire has not yet defined all aspects of the driver information systems to be used on the HOT Lanes. Prior to Service Commencement, the Concessionaire and the Department shall work cooperatively develop protocols and procedures to ensure information presented to the traveling public along the HOT Lanes is accurate and consistent with similar information the Department may provide along the GP Lanes. In addition, the Concessionaire and the Department will develop a project ITS overlay that shall assist the parties in the planning and design of ITS facilities and ensure that each party is aware of the location of its respective assets.

Should the Concessionaire provide the traveling public with information regarding travel times along the HOT Lanes, the Concessionaire and the Department shall agree to protocols which shall govern the use of any travel time algorithm to be used to generate and post travel times along either the HOT Lanes or the GP Lanes. The purpose of such protocols is to ensure consistency in the information provided to the traveling public. In all events, the travel times for the GP Lanes as shown on the Concessionaire's systems and signs shall be consistent with the travel times for the GP Lanes as shown by the Department on its systems and signs. The protocols shall address:

- agreement of establishment and changes to algorithms
- the tolerances allowed in posting of estimated travel times
- the calibration process

## **(II) Unplanned Incidents**

The Department and the Concessionaire shall provide to each other, at a minimum, the following information to the Department about all unplanned incidents (including but not limited to accidents, disabled vehicles, or debris) along the GP Lanes, approach roads, and HOT Lanes. Such information shall include:

- The location of the incident (identified by mile marker and nearest interchange)
- The lane(s) impacted
- The severity of the incident
- The number of vehicles involved
- The number of disabled vehicles
- Whether there are any injuries
- Whether hazardous materials are involved
- The estimated time for response to the incident
- The estimated duration of the incident
- Updates regarding the status of the incident

Prior to Service Commencement, the parties shall develop detailed protocols that describe how the parties will coordinate responses to unplanned incidents. In developing such protocols, the parties shall be guided by the following general principles.

- Incidents in HOT Lanes that do not directly impact the GP Lanes. In such situations, the Concessionaire shall take responsibility for clearing the incident.
- Incidents that cause one or more vehicles to come to rest in the GP Lanes. The Department shall take responsibility for clearing the incident (regardless of where started) that ends in or directly affects GP lanes.
- Incidents that cause vehicles to come to rest in both the GP Lanes and the HOT Lanes. While a joint response is needed, the Department shall oversee the response and coordinate with the emergency first responders.

## **(III) Planned Incidents**

The Concessionaire and the Department shall establish protocols which ensure the cooperation of the parties regarding planned incidents (including but not limited to both fixed and mobile work zones) on the GP Lanes, the HOT Lanes and on the arterial

network that may affect access and egress to the HOT Lanes. The protocols shall address the following:

- Advance warning of road works (weekly forward looking schedules for major and routine maintenance)
- Coordination of road closures
- Process for prioritization of conflicting closures

#### **(IV) Evacuation Routing and Suspension of Tolling**

When the HOT Lanes are part of a declared emergency evacuation route, subject to Section 4.06 of the ARCA, the Concessionaire shall follow the Department's directives delivered by authorized representatives in an agreed-upon format as specified below.

- The Department's direct suspension of the tolls
- The Department's control of the HOT Lanes
- Diversion of traffic to the HOT Lanes
- The Department's control of the Concessionaire's DMS messaging for declared emergencies when the HOT Lanes are designated as part of an evacuation route
- Compliance with Virginia Department of Emergency Management evacuation plans

Should the Department order the suspension of tolling pursuant to Section 4.06 of the ARCA, such order shall be communicated to the Concessionaire's Senior Control Room Officer by the Department's Northern Region Operations Director or the Northern Region Operations Manager. The parties shall develop more specific protocols to address the mechanics of how such communications are to occur prior to Service Commencement.

Should the Department require control of the Concessionaire's ITS equipment pursuant to Section 12.02(b) of the ARCA, the Department's Northern Region Traffic Operations Manager shall coordinate such activities with the Concessionaire's Senior Control Officer. The parties shall develop more specific protocols to address how such coordination is to occur prior to Service Commencement.

The Concessionaire and the Department also shall establish protocols which ensure the cooperation of the parties in undertaking emergency planning. Such protocols shall provide for the following:

- Joint participation in evacuation planning
- Joint participation in joint emergency exercises

## **(V) Interstate Agreements**

The parties further acknowledge and agree that, during the term of the ARCA, the Commonwealth and/or the Department may enter into one or more interstate agreements that may entail the sharing of operational and traffic information with other state governmental agencies and the development of regional or interstate congestion management plans. Accordingly, subject to § 12.02 of the ARCA, the Concessionaire agrees that it shall provide, to the extent necessary or appropriate for compliance with such agreements in connection with the HOT Lanes, information and data in substance and format suitable for such purposes and shall participate in, and cooperate with the resulting congestion management plans to the extent that such plans will not change the Concessionaire's operating model.

### **C. Data:**

The protocols governing the sharing and exchange of data will be based on the requirements of the System Interface Specification, which is incorporated into the Technical Requirements (and attached hereto as Attachment B), as well as other relevant standards and specifications described in Attachment 1.4B of the Technical Requirements.

### **D. Asset Maintenance:**

#### **(I) Access for Maintenance**

The Concessionaire and the Department shall agree to protocols addressing the following:

- Department access to the HOT Lanes to repair and maintain structures which span both the HOT Lanes and the GP Lanes and other assets on the HOT Lanes not maintained by the Concessionaire.
- Concessionaire access to the General Purpose Lanes as may be required to maintain the HOT Lanes and associated areas.
- The Department shall have a right of access to the HOT Lanes in order to carry out emergency repairs to address safety hazards on structures spanning both the HOT Lanes and the GP Lanes, subject to coordination with the Concessionaire to facilitate and maintain safe and efficient operations or implementation of appropriate traffic management on the HOT Lanes.
- The Concessionaire shall have the right to access its tolling systems, ITS facilities, and signage mounted on the Department's gantries, bridges, and other structures, subject to complying with the Department's work practices and coordinating such work with the Department to facilitate and maintain safe and efficient operations or implementation of appropriate traffic management on the GP Lanes.

## **(II) Asset Maintenance Scheduling**

The Department and the Concessionaire shall agree to protocols that provide for the following:

- Coordination of major maintenance activities to reduce the impact of the such work on traffic
- Sharing of asset condition data to facilitate coordination of activities and to promote the best whole life cycle maintenance decision-making where assets are shared

### **6. References**

- A. The Scope Document
- B. The Technical Requirements
- C. The System Interface Specification