

EXHIBIT B-4

INITIAL SCOPE DOCUMENT

1. Introduction

1.1 Purpose of the Scope Document

The Scope Document provides an overview of the Route 495 HOT Lanes in Virginia Project as description of the Concessionaire's scope of work. Pursuant to the Technical Requirements, the Scope Document also describes the respective maintenance obligations of the Concessionaire and the Department.

1.2 General

The Concessionaire shall perform or cause to be performed any and all work or services required to develop, design, engineer, construct, operate and maintain the Route 495 HOT Lanes in Virginia Project on a lump sum, turnkey basis pursuant to the Amended and Restated Comprehensive Agreement Relating to the Route 495 HOT Lanes in Virginia Project (the "ARCA") and the Technical Requirements.

The obligations of the Department and the risks the Department has agreed to assume are set forth in the ARCA. Nothing in the Scope Document shall be construed as expanding upon the obligations and risks of the Department or the Concessionaire set forth in the ARCA.

Unless otherwise provided in the ARCA to be the responsibility of the Department, the Concessionaire shall provide or cause to be provided the necessary supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities and other temporary facilities to permit the Concessionaire to complete or cause to be completed the construction, operation, and maintenance of the Route 495 HOT Lanes in Virginia Project consistent with the ARCA and the Technical Requirements.

The Concessionaire and the Department agree and acknowledge that the design, engineering, and construction standards for the Route 495 HOT Lanes in Virginia Project are set forth in the Technical Requirements. The Concessionaire and the Department further agree and acknowledge that the standards for the operation and maintenance of the Project will evolve over the Term.

1.3 Updates to the Scope Document

The Concessionaire and the Department acknowledge that the current design for the Route 495 HOT Lanes Project is preliminary and the nature of the design, including the location of entry and exit points along the HOT Lanes, may change before construction begins.

The Concessionaire and the Department will agree on addendums to the Scope Document which reflect the design development process.

1.4 Construction of the Scope Document

All capitalized terms that appear in the Scope Document shall have the meaning ascribed to them in Exhibit A to the ARCA.

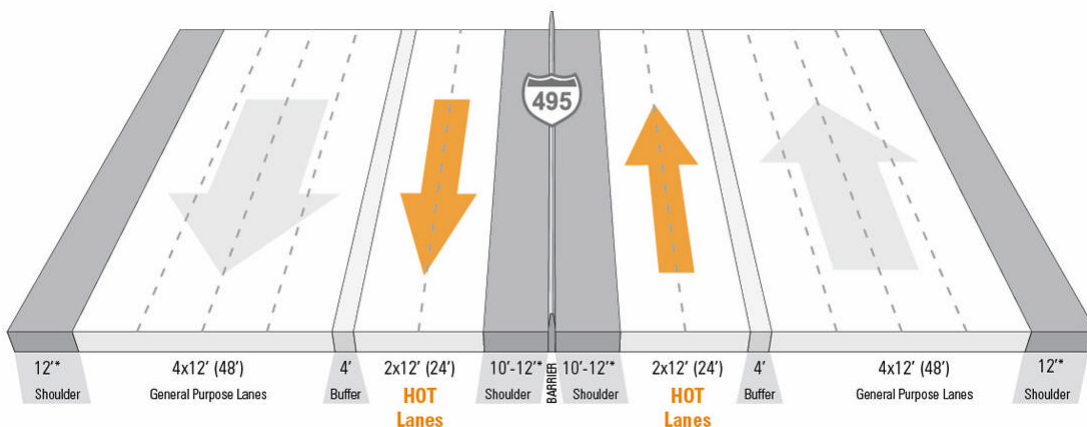
In the event of a conflict between the Scope Document, the ARCA, or any exhibit to the ARCA, such conflict shall be resolved by applying the order of precedence set forth in Section 20.15 of the ARCA.

2. Project Outline

2.1 Project Overview

As of the Agreement Date and pursuant to Exhibit B-1 of the ARCA, the Capital Beltway Corridor consists of four GP Lanes running in each direction. In order to accommodate the Route 495 HOT Lanes in Virginia Project, two additional GP Lanes in each direction will be constructed along the outside of the existing GP Lanes from Braddock Road in the south to Old Dominion Drive Bridge (Route 738), just south of the Georgetown Pike (Route 193), to the north (a distance of approximately 14 miles). The inner two lanes along the Capital Beltway Corridor will then be converted for use as HOT Lanes. This will result in a 4-2-2-4 alignment, as depicted in Figure 1 below. As part of the Route 495 HOT Lanes in Virginia Project, the Concessionaire also shall construct the Springfield Interchange Phase VIII.

Figure 1: Representative Cross Section



2.1.1 The cross sections, as depicted in Appendix 1 (the Representative Cross Section Dimensions and Clearances) will vary from the Representative Cross Section in some locations for the following reasons:

2.1.1.1 accommodation of HOT Lane ramps;

2.1.1.2 areas where HOT Lanes are constructed on independent alignments; and

2.1.1.3 within Phase VIII limits.

Access to and egress from the HOT Lanes will be provided via dedicated entry and exit points from the adjoining arterial and freeway networks. As of the Agreement Date, the Concessionaire and Department agree, pursuant to Exhibits B-1 and B-2 to the ARCA, such entry and exit points will include the following:

- Braddock Road
- Gallows Road
- Lee Highway
- the I-66 interchange
- Route 7
- Westpark Boulevard
- Jones Branch Drive
- the Dulles Toll Road/Dulles Airport Access Road

2.2 Scope of Work

The proposed Work is described below.

2.2.1 Widening the Capital Beltway Corridor to accommodate the HOT Lanes, including:

2.2.1.1 The conversion of the four traffic lanes in the median of the Capital Beltway Corridor (two in each direction) to HOT Lanes as depicted in Appendix 1 and Appendix 2 (Reference Design)

2.2.1.2 The construction of four GP Lanes (two in each direction) along the outside of the GP Lanes from Braddock Road in the south to Old Dominion Drive Bridge (Route 738), just south of the Georgetown Pike (Route 193), to the north, as depicted in Appendix 1 and Appendix 2.

2.2.1.3 The separation of the HOT Lanes from the adjacent GP Lanes by a four foot wide buffer outfitted with pylon separators.

2.2.2 The construction of entry and exit connections to the HOT Lanes between the northern terminus at Route 193 and the southern terminus between Braddock Road

and the Springfield Interchange Phase VIII and modifications to interchanges are as shown on Exhibit B-2 to the ARCA and as modified by the Concessionaire's proposed Interchange Justification Reports and plans for the following existing interchanges.

- 2.2.2.1 The Springfield Interchange Phase VIII
- 2.2.2.2 Braddock Road (Route 620)
 - 2.2.2.2.1 Accommodation of Braddock Road HOT Lanes entry and exits to and from southbound I-495 is not included in the Work.
 - 2.2.2.2.2 As proposed by the Concessionaire, subject to the applicable Regulatory Approvals, 11 ½ foot wide lanes will be used at the fifth lane eastbound through the Port Royal intersection.
- 2.2.3.3 Little River Turnpike (Route 236)
- 2.2.3.4 Gallows Road (Route 650)
 - 2.2.3.4.1 As proposed by the Concessionaire, subject to the applicable Regulatory Approvals, across the Gallows Road Bridge, and as needed to transition to existing, 11.0 foot wide lanes will be used.
- 2.2.3.5 Arlington Boulevard (U.S. 50)
- 2.2.3.6 Lee Highway (Route 29) (such work to be coordinated with the Department's ongoing project in the vicinity)
- 2.2.3.7 I-66
- 2.2.3.8 Leesburg Pike (Route 7)
- 2.2.3.9 Chain Bridge Road
 - 2.2.3.9.1 The modification or replacement of the existing bridge (Department bridge number 2104 and structure number 138-22NB) is not included in the Work.
- 2.2.3.10 Dulles Airport Access Road

- 2.2.3.11 Westpark Bridge Connector
- 2.2.3.12 Jones Branch Drive Connector
- 2.2.3 Modifications to the following existing overpasses:
 - 2.2.3.1 Idylwood Road (Route 695)
 - 2.2.3.2 Oak Street (Route 769)
 - 2.2.3.3 Lewinsville Road (Route 694)
- 2.2.4 Bicycle and pedestrian accommodations as described in the Technical Requirements.
- 2.2.5 National Environmental Policy Act (“NEPA”) Compliance:
 - 2.2.5.1 The FHWA has approved the scope of the Route 495 HOT Lanes in Virginia Project in accordance with the NEPA documents, which include the Final Environmental Impact Statement (FEIS), the Record of Decision (ROD) and Environmental Re-evaluation (attached hereto as Appendix 8).
 - 2.2.5.2 For clarity, the Concessionaire’s scope of work with respect to the NEPA documents is described below:
 - Braddock Road Interchange:
 - The FEIS Preferred Alternative was modified at this interchange as documented within the Re-evaluation document.
 - Accommodation for future HOT Lane ramps to/from the south is excluded during the Work Period.
 - Gallows Road Interchange:
 - The FEIS Preferred Alternative was modified as documented within the Re-evaluation document to add ramps to/from the north at this interchange.
 - I-66 Interchange:
 - The FEIS Preferred Alternative accommodated the I-495 NB to I-66 WB movement via a flyover ramp. This alternative was modified as documented within the Re-evaluation to a two-lane loop ramp.
 - The FEIS Preferred Alternative included additional improvements to I-66 outside the Beltway that are excluded from the scope of work.
 - Tysons Corner:

- The FEIS Preferred Alternative included one HOT Lanes interchange at Route 123 to serve the Tysons Corner area. This alternative was replaced with HOT access ramps to/from the south at Route 7, full HOT access to Westpark Boulevard and full HOT access at the Jones Branch Connector. These changes were subsequently documented in the Re-evaluation.
- Improvements required for the future extension of the Jones Branch Connector (Phase II) to the inside of the Beltway is excluded during the Work Period.
- Dulles Toll Road
 - The FEIS Preferred Alternative aligned the HOT Lanes adjacent to the existing general purpose lanes. This alternative was modified to shift the alignment of the HOT Lanes through the center of the interchange. With the shift in alignment, the geometry of the HOT Lane ramps was adjusted and the reconstruction of existing general purpose ramps was eliminated. These modifications were subsequently documented in the Re-evaluation.
 - The connection from DTR eastbound to I-495 northbound HOT Lanes and the connection from I-495 southbound HOT Lanes to eastbound Dulles connector road are excluded from the initial scope of work. Provision for these future connections, as depicted within the Re-evaluation document, will be accommodated.
- Northern Project Limit
 - The FEIS Preferred Alternative extended north of Route 193 (Georgetown Pike). This was modified and documented in the Re-evaluation to a northern limit that was approximately 3600 feet south of Georgetown Pike. Therefore, improvements north of the revised limits are excluded from the scope of work.
- General
 - All auxiliary lanes that were characterized as part of the FEIS documentation are excluded from the scope of work, with the following exceptions:
 - § Construction of the northbound auxiliary lane from I-66 to Route 7 along I-495 is included during the Work Period.
 - § The bridge spans at Idylwood Road and at Oak Street will be constructed long enough to accommodate a future southbound auxiliary lane from Route 7 to I-66 along I-495.

- The extent of project soundwalls will be determined in accordance with the Department's State Noise Abatement Policy. A final noise impact assessment will be prepared, which will address applicable updates resulting from final scope, traffic volumes and construction costs.

2.2.6 ETTM Equipment, Facilities, and System

2.2.7 Utility Relocations

2.2.8 Any other physical assets, plants, machinery, equipment, improvements, hardware, and software necessary to operate and maintain the HOT Lanes pursuant to the ARCA.

2.2.9 All other Work necessary to complete the scope of work described in Sections 2.2.1 through 2.2.10 above including:

- 2.2.9.1 acquisition of the Project Right of Way
- 2.2.9.2 demolition and clearing
- 2.2.9.3 drainage and earthworks
- 2.2.9.4 structures
- 2.2.9.5 pavements
- 2.2.9.6 pavement markings, static signs, traffic signals, and lighting
- 2.2.9.7 noise barriers
- 2.2.9.8 items necessary to provide safety including traffic barriers and, where necessary, limited permanent perimeter fencing
- 2.2.9.9 traffic management monitoring, enforcement, control systems, hardware, software, and firmware
- 2.2.9.10 infrastructure and equipment necessary to operate and maintain the HOT Lanes
- 2.2.9.11 environmental measures necessary to mitigate the environmental impacts pursuant to applicable Regulatory Approvals

2.2.9.12 site clean-up

2.2.10 The performance of all activities necessary to manage and control performance of the Work in accordance with the ARCA, including the development of and adherence to the project development plans required by the Technical Requirements.

2.2.11 Operation of the HOT Lanes pursuant to the ARCA, including:

2.2.11.1 traffic management

2.2.11.2 traffic monitoring

2.2.11.3 electronic toll collection

2.2.11.4 violation enforcement

2.2.12 Maintenance of the HOT Lanes pursuant to the ARCA and the Technical Requirements, including:

2.2.12.1 asset management

2.2.12.2 routine maintenance, major maintenance, and accident damage repairs

2.2.12.3 asset renewal on an as-needed basis of the traffic management system, violation enforcement system, and tolling system

2.2.13 Maintenance of infrastructure and assets located off the HOT Lanes including:

2.2.13.1 the Concessionaire's signs located outside of the Project Right of Way

2.2.13.2 the HOT Operations Center

2.2.13.3 the fiber optic cable linking the HOT Operations Center to the HOT Lanes and to the interagency communications system

2.2.14 Prior to the construction of through-lanes connecting Jones Branch to Route 123, Jones Branch will serve as a direct connection to the HOT Lanes. Therefore, the Concessionaire shall maintain Jones Branch within the limits of the State's responsibility for maintenance until the through-lanes are constructed.

2.2.14 Major maintenance of the Springfield Interchange Phase VIII pursuant to the ARCA and the Technical Requirements

2.2.15 Construction of any temporary works in accordance with the Technical Requirements necessary to carry out the Work

2.3 Design and Construction

The ARCA describes the specific conditions under which the Concessionaire shall perform or cause to be performed the design and construction of the Route 495 HOT Lanes in Virginia Project and the specific responsibilities of the Concessionaire. The Concessionaire shall provide quality control and quality assurance of the Work in accordance with the Department's minimum requirements. Those conditions and responsibilities are further described in the Technical Requirements.

2.4 Business and Toll Operating Model

The business and toll operating model will comply with the provisions outlined in the Technical Requirements, Appendix 3 (Concept of Operations - Tolling and Enforcement), Appendix 4 (Concept of Operations - Operations and Traffic Management), and Appendix 5 (Concept of Operations - Maintenance).

2.5 Geotechnical

2.5.1 The Concessionaire's preliminary geotechnical investigations are detailed in Appendix 6 (Geotechnical Investigations).

2.5.2 The Concessionaire will conduct further investigation as necessary to complete the analyses, design, and construction. The geotechnical investigation plan shall be in compliance with the Department's Materials Division Manuals of Instruction unless otherwise approved by the Northern Virginia District Materials Engineer.

2.6 Signing

2.6.1 The Concessionaire will be permitted to place directional signage located outside the Project Right of Way subject to applicable Regulatory Approvals.

2.6.2 The Concessionaire will provide new signs (including trail blazer signs) to provide directional information for the HOT lanes on the Project as defined in Appendix 7 (Directional Signage).

2.7 Traffic Signals

2.7.1 The proposed permanent traffic signal work includes:

- 2.7.1.1 Route 620 Braddock Road HOT On-Off-ramp intersection: A new signal will be provided at the HOT lane intersection west of the Braddock Road bridge.
- 2.7.1.2 Route 650 Gallows Road HOT On-Off-ramp intersection: A new signal will be provided at the HOT lane intersection on the Gallows Road bridge.
- 2.7.1.3 Gallows Road/I-495 NB Off-ramp: A modified signal will be provided at the intersection of Gallows Road and I-495 NB Off-ramp due to modified geometry and alignment.
- 2.7.1.4 US 29 Lee Highway HOT On-Off-ramp intersection: A new signal will be provided at the HOT lane intersection on the Lee Highway bridge.
- 2.7.1.5 US 29 Lee Highway/Shreve Road: A modified signal will be provided at the intersection of Lee Highway and Shreve Road due to modified geometry and alignment.
- 2.7.1.6 Route 7 Leesburg Pike HOT On-Off-ramp intersection: A new signal will be provided at the HOT lane intersection east of the Leesburg Pike bridge
- 2.7.1.7 Westpark Drive Connector/I-495 On-Off-ramps: A new signal will be provided at the HOT lane intersection on the Westpark Drive Connector.
- 2.7.1.8 Westpark Connector/Westpark Drive: A new signal will be provided at the intersection of Westpark Drive and the Westpark Connector.
- 2.7.1.9 Westpark Drive/Tysons Boulevard: A modified signal will be provided at the intersection of Westpark Drive and Tysons Boulevard due to modified geometry and alignment.
- 2.7.1.10 Westpark Drive/Galleria Drive: A modified signal will be provided at the intersection of Westpark Drive and Galleria Drive due to modified geometry and alignment.
- 2.7.1.11 Jones Branch Drive/Jones Branch Drive Connector: A new signal will be provided at the intersection of Jones Branch Drive and the Jones Branch Drive Connector.
- 2.7.1.12 Jones Branch Drive Connector HOT On-Off-ramp intersection: A new signal will be provided at the HOT lane intersection on the Jones Branch Drive Connector bridge.

2.8 Operation and Maintenance

2.8.1 Operations

2.8.1.1 The Concessionaire will operate the HOT Lanes in accordance with the operating concepts and the roles and responsibilities described in the ARCA, the Technical Requirements, Appendix 3 (Concept of Operations – Tolling and Enforcement), and Appendix 4 (Concept of Operations – Operations and Traffic Management).

2.8.1.2 The Department shall operate the GP Lanes pursuant to the ARCA and the Technical Requirements.

2.8.1.3 The Department shall monitor and control the reversible roadway gates and associated infrastructure (excluding any tolling equipment) at the Springfield Interchange Phase VIII unless and until such time as the Department may grant such control to a third party subcontractor or operator.

2.8.1.4 The coordination of the operational responsibilities of the Department and the Concessionaire shall be set forth in the Joint Operating and Maintenance Protocols, Exhibit G to the ARCA (the “JOMP”).

2.8.1.5 In accordance with the Technical Requirements, the Concessionaire shall develop an Operations and Maintenance Plan for implementation during the Operating Period.

2.8.2 Maintenance

2.8.2.1 Spares Inventory:

2.8.2.1.1 Spare parts and equipment are those items that are rotated into the Traffic Management System (TMS), the tolling system, and the violation enforcement system to allow worn and failed equipment to be removed, repaired, or rebuilt.

2.8.2.1.2 The Concessionaire will provide an initial inventory of spare parts and equipment (spare inventory) to accommodate, as a minimum, the initial 12 months of operations and maintenance.











2.8.2.1.3 The initial and ongoing spares inventory will be determined via an engineering assessment of the criticality of a system or subsystem component based on its mean time between failure, mean time to repair, lead time for supply and criticality to the safe and efficient operation of the HOT Lanes

2.8.2.2 Responsibility for maintenance by the Concessionaire relates to the HOT Lanes only, and is indicated in Appendix 9 (Maintenance Boundaries). The limits of such maintenance responsibilities shall commence and finish at the line of continuation of the lane extending from the point of tangent of the curb return at the HOT Lane ramps, excluding any maintenance responsibilities for VDOT or dual VDOT/HOT Lane facilities associated with traffic signals or lighting (ducts, cables, poles, loops, control boxes) and to the horizontal extent of the pylon delineators along the mainline at the northern terminus and at Backlick Road in the south.














2.8.2.2.1 Table 1 below describes, in further detail, the respective maintenance obligations of the parties.

2.8.2.2.2 The coordination of the maintenance activities of the parties shall be governed by the JOMP.

Table 1: Maintenance Responsibilities

Description	VDOT	Operator
1. Existing Assets		
1.1 Assets not moved and not related to HOT Lanes		
1.2 Assets to be moved and not related to the HOT Lanes <i>Example: - any noise walls that are replaced as part of the General Purpose Lanes will continue to be maintained by VDOT</i>		
1.3 Assets to be moved and shared with HOT Lanes but with not related to revenue collection <i>Example – Any lighting that is replaced as part of the HOT Lanes will continue to maintained by VDOT</i>		
1.4 Assets to be moved and shared with HOT Lanes that are related to revenue collection (including signs over HOT Lanes) <i>Example – An existing gantry on the Beltway that is replaced and is also used by the Operator for HOT Lanes signage will be maintained by VDOT but the signage specific to the HOT Lanes will be maintained by the Operator</i>		
1.5 Assets that are replaced but not specifically related to the HOT Lanes <i>Example – All interchanges that are upgraded as part of the HOT Lanes will be maintained by VDOT</i>		
1.6 Assets that are part of an existing VDOT system <i>Example – All longitudinal and transverse drainage (pipes, culverts, structures and associated drainage facilities) will, after enhancement to accommodate the HOT Lanes, be maintained by VDOT. Similarly, all existing communications lines will be maintained by VDOT</i>		
1.7 Assets that transfer to the Operator following VDOT rehabilitation as part of the HOT Lanes <i>Example – Pavement on the current ‘inner lanes’ on the Capital Beltway that become the HOT Lanes will be maintained by the Operator</i>		
1.8 Existing signs off project right of way modified on assets providing driver information <i>Example – Existing signs on feeder roads which are modified by means of a new sign face overlay are to be maintained by VDOT</i>		
1.9 Stand alone signs off project right of way on assets providing driver information <i>stand alone signs related to the HOT Lanes will be maintained by the Operator</i>		

(Continued on the following page)

Description	VDOT	Operator
2. New Assets		
2.1 All new assets installed as part of the HOT Lanes which do not replace existing facilities including: <ul style="list-style-type: none"> • tolling systems and equipment; • traffic management systems; • the HOT Lanes Operations Center; • pavements, structures and associated hardware; • lane use management systems; and • the separator system between the HOT and GP Lanes 		
2.2 All new traffic signals and associated infrastructure on HOT Lane access and egress ramps		
2.3 Over bridges and other structures providing access to Jones Branch Drive and the connection to Westpark Bridge		
2.4 Over bridges that replace existing bridges or provide new links across the Capital Beltway		
2.5 Pedestrian and cycle facilities constructed as part of the HOT Lanes project		
3. Refurbished Assets		
3.1 Assets which become part of the HOT Lanes footprint <i>Example – New Jersey Barrier between the Hot Lanes</i>		
3.2 Assets and area between the HOT Lanes where the HOT Lanes carriageways separate at I-66 and the Dulles Toll Road		
4. General		
4.1 Communications links between the HOT Operations Center and VDOT (STC / PSTOC) will be a shared responsibility with VDOT taking existing links and the Operator all new links		
4.2 Communications links between the HOT operations Center and VDOT SmartTag center		
4.3 Communications links between the HOT Operations Center and the Interagency ring		
4.4 Power connections will be a shared responsibility with the Operator being responsible for service to the tolling systems and HOT Lane signs and VDOT being responsible for all other services		

APPENDICES

Appendix 1	Typical Cross Section Dimensions and Clearances
Appendix 2	Reference Design
Appendix 3	Concept of Operations – Tolling and Enforcement
Appendix 4	Concept of Operations – Operations and Traffic Management
Appendix 5	Concept of Operations – Maintenance
Appendix 6	Geotechnical Investigations
Appendix 7	Directional Signage
Appendix 8	Environmental Documents
Appendix 9	Maintenance Boundaries

Appendix 1 Typical Cross Section Dimensions and Clearances

Project cross section dimensions and clearances are shown on the following drawings attached to the appendix:

- I-495 Typical Section sheet 1 of 2
- I-495 Typical Section sheet 2 of 2

Appendix 2 Reference Design

The Reference Design for the Project is defined by the following documents, in order of precedence in terms of their design development:

- A. 2015 Build Following Operational Review Modifications – Roll Plots
- B. Updated Bridge List
- C. Design Sheets approximately equivalent to 30% design status along with the Department’s comments
- D. Conceptual Review 1:100 Roll Plots

A. The 2015 Build Following Operational Review Modifications – Roll Plots.

B. Bridge List: (495 bridge list - Rev 3 - 11-15-07.xls)

C. The Design Sheets approximately equivalent to 30% design status are identified on the list titled “495 HOT Lanes Drawing List (post 2-2-07 Submission)” attached to the appendix.

- The drawing list sheet count is shown in Table S2-2 (Reference Design Sheet Count - February 2)

Design Section	Total Sheets
Section 1-Springfield Area	86
Section 2-Braddock Rd	224
Section 3-Little River Turnpike	313
Section 4-Gallows Rd & Arlington Blvd.	325
Section 5-I66 Interchange	545
Section 6-Leesburg Pike	258
Section 7-Chain Bridge Rd & Dulles Toll Rd	448
Springfield Interchange Phase VIII	103
Total Sheets	2,302

E. Conceptual Review 1:100 Roll Plots

Appendix 3

Concept of Operations – Tolling and Enforcement

The “Concept of Operations – Tolling and Enforcement”, version draft rev 3.4 dated November 30, 2007, is attached to the appendix.

Appendix 4

Concept of Operations – Operations and Traffic Management

The “Concept of Operations – Operations and Traffic Management”, version draft rev 2.3 dated November 30, 2007, is attached to the appendix.

Appendix 5 Concept of Operations – Maintenance

The “Concept of Operations – Maintenance”, version draft rev 1.2 dated November 30, 2007, is attached to the appendix.

Appendix 6

Geotechnical Investigations

- 6.1 The preliminary geotechnical investigation is documented in the report titled “Report of Preliminary Investigation”, dated April 18, 2006.
- 6.2 The “Report of Preliminary Investigation” is supplemented with the following documents attached to the appendix:
 - S5.2.1 Letter titled “Preliminary OCELL and PDA Test Recommendations”, dated February 26, 2007
- 6.3 “Pavement Notes: I-495 Widening and HOT Lanes 10-1-01 (Rev. 1)”

Appendix 7 Directional Signage

Appendix 8 Environmental Documents

A CD-ROM containing the following documents is attached to the appendix:

- The Final Environmental Impact Statement (dated April 18, 2006)
- The Re-evaluation to the Record of Decision (dated May 9, 2007)

Appendix 9 Maintenance Boundaries
