AECOM

Morteza Farajian, Project Manager,
Office of Transportation Public-Private Partnerships
600 E. Main Street, Suite 2120
Richmond, VA 23219
morteza.farajian@vdot.virginia.gov

November 25, 2013

Response to Request for Information

Interstate 66 Corridor Improvements

From US 15 in Prince William County to Interstate 495 in Fairfax County

AECOM
2101 Wilson Boulevard
Suite 800
Arlington, Virginia 22201
www.aecom.com

703.340.3050 tel
703.682.5001 fax

November 25, 2013

Morteza Farajian, Project Manager
Office of Transportation Public-Private Partnerships
600 E. Main Street, Suite 2120
Richmond, VA 23219

Re: Response to Request for Information – Interstate 66 Corridor Improvements
From US 15 in Prince William County to Interstate 495 in Fairfax County

Dear Mr. Farajian:

AECOM is pleased to respond to your Request for Information (RFI) in order to assist the Office of Transportation Public-Private Partnerships (OTP3) with the evaluation of potential options for development, financing, procurement and delivery of the subject Project.

AECOM has ventured in this response to provide you with our insights and experience as a leader in Public-Private Partnerships (P3), having participated in more than 80% of the P3 projects delivered in North America and more than 650 P3 projects globally. Our experience spans all project structures and payment mechanisms, as evidenced through key roles on benchmark projects across North America.

Please do not hesitate to contact me at sia.kusha@aecom.com or 813.240.6190 if you have any questions.

Yours sincerely,

AECOM

Sia Kusha, PE, FACEC
Senior Vice President
Director Alternative Delivery

a. General

1.Please describe your firm, its experience in relation to public-private partnership projects, and its potential interest in relation to the Project (e.g., design/ engineering firm, construction firm, operations and maintenance firm, lender, equity investor, etc.)?

AECOM is a new kind of consultancy aligning creative, analytical and technical expertise to enhance and sustain the world's built, natural and social environments. AECOM's staff of nearly 45,000 professionals work collaboratively to address complex challenges at all scales. A *Fortune 500* company, AECOM designs and delivers infrastructure programs, plans for the management of open space and natural systems, creates distinctive buildings and public spaces, and regenerates urban areas and metropolitan regions. AECOM's work helps realize the aspirations of clients and communities in more than 100 countries.

We are a leading global provider of design, engineering, program management, construction management, operations and maintenance support, and technical assistance. AECOM's capabilities include:

- Transportation
- Building Engineering
- Design + Planning
- Economics
- Environment
- Energy
- Government Services
- Global Program Management
- International Development
- Architecture
- Water

AECOM Transportation: AECOM is a global company providing policy, planning, design, and management services in the transportation market. We are the flagship transportation company of AECOM with more than 80 years as a leader in the transportation industry, and consistently ranked by the *Engineering News-Record* as "No. 1 in transportation" nationwide. AECOM offers a unique blend of global reach, local knowledge, innovation and technical excellence. Our transportation staff of more than 4,000 professionals includes experienced planners, engineers, and economic and financial strategists that possess the necessary skill sets for a wide variety of projects.

AECOM Representative P3 Project Experience

AECOM is a leader in Public-Private Partnerships (P3), having participated in more than 80% of the P3 projects delivered in North America and more than 650 P3 projects globally. Our experience spans all project structures and payment mechanisms, as evidenced through key roles on benchmark projects such as the North Tarrant Express toll revenue risk project, and the Availability Payment backed I-595 Tolled Managed Lanes in Fort Lauderdale and Port of Miami Tunnel projects. AECOM has the capability to serve as a contractor, designer, technical advisor and financier for the full spectrum of P3 structures. The following is a select list of relevant projects:

Design-Build-Finance-Operate (DBFO)	
River Usk Bridge, Wales	14,000,000
North Tarrant Express	2,100,000,000
Cross Israel Highway	1,400,000,000
Highway 104	113,000,000
I-595	1,800,000,000
	$5,427,000,000
Design-Build-Finance-Maintain (DBFM)	
Calgary North East Stoney Trail	650,000,000
A30 Montreal	1,200,000,000
Edmonton North West Anthony Henday Drive	1,400,000,000
Edmonton North East Anthony Henday Drive	1,600,000,000
Kicking Horse Pass	300,000,000
Vancouver Sky Train Millennium Lin	270,000,000
Port of Miami Tunnel VMF	1,000,000,000
Sea and Sky Highway	600,000,000
	$7,020,000,000
Design-Build-Operate-Maintain (DBOM)	
Confederation Bridge	740,000,000
New Jersey Transit River LINE	$804,000,000
Tren Urbano - Phase I Metropolitan	2,500,000,000
	$4,044,000,000
Design-Build (DB)	
Route 288	236,000,000
Bang Na/Ban Pli/Ban Pakong Expressway	850,000,000
Intercounty Connector	479,000,000
I-405 Widening	19,300,000
Denver Union Station	350,000,000
Ringling Causeway Bridge	56,000,000
I-70, Phase 2D	38,000,000
WMATA Dulles Corridor Phase 2	1,200,000,000
SH 161	417,000,000
SR 519	60,000,000

11th Street Bridge	260,000,000
Delhi Metro Rail Corridor	200,000,000
I-81 Truck Climbing Lanes	71,000,000
LA Metro Gold Line	898,800,000
Indian River Inlet Bridge	150,000,000
North Gayton Road Extension	48,400,000
Carolina Bays Parkway	232,000,000
Route 1 (Monroe Avenue) Bridge	50,000,000
E-470/I-70 Fly By Interchange	40,000,000
I-405 (SR 502 to SR 522)	47,000,000
183A Turnpike	238,000,000
WMATA Blue Line Extension	96,000,000
Route 9 of Edison Bridge	60,000,000
I-17	81,000,000
Dey Street Concourse	140,000,000
Newark Liberty International Airport	70,000,000
Route 128 Intermodal Facility	43,300,000
Coalfields Expressway	1,600,000,000
SR 54/125 Gap and Connector	140,000,000
Taiwan High Speed Rail	500,000,000
Secure Access Lane Remote Delivery Facility	10,000,000
T-Rex Southeast Corridor	1,600,000,000
US 17 Washington Bypass	192,000,000
SH 130 Segment 1-4	1,380,000,000
SH 130 Segment 5-6	23,000,000
Mineta San Jose International Airport	513,000,000
Highway 407 ETR Central	962,000,000
York University Busway	30,000,000
VIVA Bus Rapid Transit	600,000,000
Highway 407 ETR East and West Extension	600,000,000
GO Hagerman Rail	55,000,000
Circle Drive Saskatoon	300,000,000
Texas TTC-35 and SH 130	900,000,000
York-Peek Feedermain	107,000,000
Green Lane - Newmarket	10,000,000
Orangeville Bypass	14,000,000
Portuguese High Speed Rail	1,800,000,000
Air Rail Link	130,000,000
	$17,906,800,000

The private sector, and AECOM specifically, are interested in pursuing this unique and challenging project along I-66 project for various reasons, including:

Size of project. Any time there is a project of this size, especially an alternative delivery project, the private sector firms that specialize in this type of construction and delivery method will strongly consider the opportunity. The project will then be reviewed for such high level issues of Owner experience with P3s, financial feasibility, and status of third party issues (i.e. permits, right-of-way, public's desire for project), and likely rank the project as a high target pursuit until procurement details are made known.

Owner experience. Based on industry experiences across the US, some Owners struggle with alternative delivery pursuits, especially P3s. There is a relatively long history of Owners delaying or extensively modifying pursuits, if not canceling them altogether. The worst scenario for all parties is cancelling a P3 procurement very late in the process. In such an environment, Owners with recent and successful experience in bringing P3 projects to financial close are very attractive to the private sector. VDOT has demonstrated itself to be a strong leader within North America through its commitment to deliver large-scale P3 projects. Virginia has a robust pipeline of candidate and proposed P3 projects in development and has recent success on both I-495 and I-95 projects in the NOVA area and in Hampton Roads with US 460.

AECOM interest. In responding to this RFI, AECOM is looking to partner with a concessionaire/contractor team to not only lead the design, we are also reviewing this potential project as one where we can participate as an equity partner with the developer, bringing our significant global resources to benefit VDOT and the project. Specific to design we believe we have developed a solution that addresses the Purpose and Need which has been identified in the Tier I Document, while minimizing impact to adjacent private property, provides additional managed lane capacity, additional general purpose lane capacity, a dedicated transit option, opportunity for Transit Oriented Development, as well as inter connectivity with potential circular bus systems within the project corridor. The AECOM-devised solution proposal will be outlined in more detail later in this response.

2. Are there any particular concerns with any of the information that has been provided in this RFI, the Detail-Level Project Screening Report or the DEIS? Please explain any concerns and provide any proposed solutions or mitigations to address those concerns.

The Tier 1 Draft EIS defines existing and future transportation conditions and needs within the study corridor, identifies a range of transportation improvement concepts that would serve those needs, and evaluates the potential effects of the concepts on the natural and human environment. Under the current Draft EIS, VDOT is considering six options for capacity improvements:

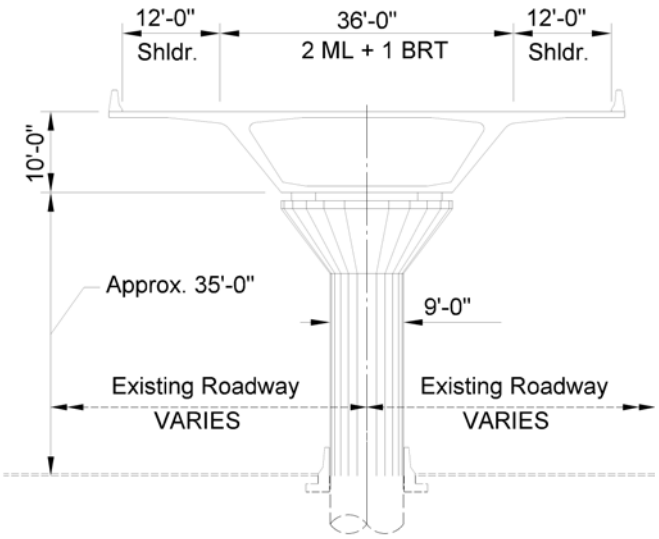
1. **General Purpose Lanes:** Construct additional highway lanes open to all traffic.
2. **Managed Lanes:** Convert existing HOV lane to Managed Lane(s) where only high-occupant vehicles would be exempt from paying a toll.
3. **Metrorail Extension**: Extend Metrorail service from Vienna to either Centreville or Haymarket.
4. **Light Rail Transit:** Extend Light Rail service from Vienna to either Centreville or Haymarket.
5. **Bus Rapid Transit:** Construct a separate guideway bus rapid transit facility from Vienna to Haymarket; service could extend east of Vienna.
6. **VRE Extension:** Extend existing VRE service from Manassas to Haymarket.

There are four other non-capacity options that still meet some aspects of the Purpose and Need for the project. They are:

7. **Improve Spot Locations/Chokepoints:** Construct improvements that address operational constraints at discrete locations or “chokepoints”.
8. **Intermodal Connectivity:** Incorporate a full range of travel modes within the corridor, including connections between travel modes.
9. **Safety Improvements:** Build safety improvements that address both location-specific and corridor-wide safety concerns.
10. **Transportation Communication and Technology:** Enhance the Intelligent Transportation Systems (ITS) technology for all modes in the corridor.

The final option is No-build, which does not meet the purpose and need for the project. Also, none of these Build Improvement Concepts will individually satisfy the purpose and need of this project.

The peak travel demands along the corridor will require transportation solutions that can carry a large number of people in a limited space. A solution that is a mix of General Purpose Lanes, Managed Lanes and Bus Rapid Transit is the best solution. We understand the desire for a multi-modal solution, and recognize that the DEIS clearly states that most of the corridor already does not provide sufficient width for a fixed rail extension west of Vienna Metro Station. AECOM believes that given all the geometric, lateral space, right-of-way, regional land use, stormwater and other concerns, **an elevated, 3-lane reversible, AET facility with a dedicated lane for BRT and two dedicated HOT Managed Lanes** will provide a holistic solution that will meet the Purpose and Need for this project. Elevating the two HOT lanes will allow the existing HOV lane to be converted to a General Purpose lane, thus improving the capacity of the existing roadway without the need to extensively expand the footprint.



Typical Reversible Elevated Facility

Based on our preliminary assessments, this 25-mile facility can be constructed in the existing median, approximately 1/4 at grade and 3/4 elevated. This elevated section would be supported on deep foundation piers supporting a superstructure that would accommodate three lanes plus shoulders, with a footprint in most places no larger than the diameter of the drilled shaft needed to support the piers.

AECOM’s proposed elevated facility will provide direct connect on and off ramps to the existing I-495 HOT Lanes, thereby creating a regional system of managed lanes.

3. What, if any, advantages will the Commonwealth potentially gain by entering into an agreement in which operations and maintenance, lifecycle responsibility, and/or traffic and revenue risk are transferred to the private sector?

There are many benefits to procuring the project as a P3, most of which are facilitated through private sector innovation and an optimized approach to risk sharing. While design-build drives up-front innovation, it leaves the Owner at risk for all future operations, maintenance, lifecycle and revenue/financial considerations. Design-build delivery can also complicate the process of testing, commissioning and transitioning a new asset and service into operation, potentially resulting in a longer and more onerous transition than under a P3 where a single private entity is responsible for all such obligations in addition to project delivery.

P3 structures that include the private sector in planning for budgeting and meeting long term obligations can help Owners lower their overall expenditures, transfer the risk of unplanned future cost increases and deliver a guaranteed level of service to users of the new facility. We note that these benefits typically have a higher yield for projects where a "new" service is being delivered through a dedicated asset – which is particularly true in relation to AECOM's concept for the project. Under this concept, the private partner could potentially be bound by long term, fixed price, performance based O&M and lifecycle cost obligations for either the entire project corridor or just the new elevated/managed lanes portion. Obligations could extend to the physical and/or operational components of a future BRT service in addition to toll collection and customer service for operation of the managed lanes. Additional benefits of this approach are that:

- the different members of a P3 private-sector team each bring their own expertise, but are required to make joint risk assessment decisions as a group based on what is best for the overall team and the Owner;
- competitive DBFOM procurement puts the onus of designing for efficiency, constructability and operability directly on the private partner;
- DBFOM procurement enables the Owner to view and assess a number of alternative solutions to the tasks of operating and maintaining the project over the long term - all of which have been stress tested for feasibility and cost, and some of which may appeal to project stakeholders and/or address major constraints; and
- once procurement is over, the Owner knows exactly what the asset will cost over the complete contract term (a multi-decade project agreement) and what condition it will be in at handback, improving the reliability of long range budgets.

Traffic and revenue risk is a more complex consideration – one we encourage to be decided by policy rather than private sector preferences. In the event that this risk is not retained by the private sector but tolls are still applied and used to support the project's funding and Availability Payments, we recommend that all tolling related construction, operations, maintenance and customer service obligations – on a level consistent with past VDOT DBFOM projects – be included within the "master" DBFOM procurement (to the extent that this would comply with VDOT's policy goals and procurement rules).

How do you assess the likely magnitude of such advantages?

The levels of expected advantages to the public Owner are best assessed by comparing the historical performance of relevant past P3 projects. Benefits typically manifest in relation to: lower than forecast Capital expenditures; more transparent/Net Present Value optimized lifecycle maintenance; and increased efficiency in relation to Operations, Maintenance and toll collection – in addition to reduced leakage of uncollected tolls. For example, in a recent study AECOM performed for the Washington State Joint Transportation Committee, it was found that the State is currently paying credit card fees of up to 6% of gross toll revenues on State operated toll lanes, more than double the private sector norm of 2-3%. Similarly, public sector toll agencies typically struggle to exceed single asset operational EBITDA margins of 60%, while private sector benchmarks can reach 90% or higher (equating to O&M efficiency savings of 30% or higher on an apples to apples level of service comparison). We note that in order to realize these savings the Owner must limit the use of prescriptive requirements and rely more on performance based/output specifications, enabling the private sector to innovate.

The most widely known P3 "saving" relative to a forecast Public Sector Comparator (PSC – typically assuming DBB delivery) relates to construction price, where winning P3 bids have come in as much as 50% lower than the PSC e.g. the Port of Miami Tunnel. We note that this level of saving can largely be tied to construction schedule, and is less significant when DB delivery is used for the PSC – as may be the case with this project. This form of analysis is only

possible in conjunction with a pre-procurement Value for Money (VfM) assessment. It is anticipated that VDOT will undertake some form of VfM study for the project which should consider and compare the relative costs of delivery, procurement and Owner support, long-term capital maintenance and O&M including cost and revenue forecasts specific to toll operations, ITS and any transit operations that may be apportioned to the private partner.

What are the potentially offsetting disadvantages?

Cost of procurement – which is relatively high for both public and private sector under P3 delivery, and must be offset by overall public sector savings; and an acceptable return on investment for the private sector (potentially including stipends for unsuccessful teams).

Private sector aversion to uncontrolled risks – in particular any risk associated with right-of-way acquisition; permits and approvals; public opposition; any political action that could terminate the project or procurement, or undermine the project's sources of funds; or any other uncontrollable schedule risks. For projects where these risks are likely and material, P3 delivery is not always the best option (noting that this is not the case for this project which has an advanced approvals process and is located in an existing highway corridor).

Loss of detailed specifications – in line with the recommended focus of performance based/output specifications rather than proscriptive requirements (e.g. specifying minimum pavement IRI at all times rather than the specific type and mix of new pavement), some Owners may perceive a loss of control relative to traditional procurement. Given VDOT's extensive experience with alternative delivery and P3 approaches this issue is not anticipated to be of concern for the project.

Traffic and revenue manipulation – revenue risk toll roads have performed poorly in recent years due to a range of overly optimistic forecasts by bidders. Although the public sector owners and users of these assets have not been adversely affected, the overall time and opportunity cost of dealing with such failures is detrimental to the industry.

b. Procurement Process

4. Do you have any particular concerns with or major observations about the milestone schedule provided in this RFI? Please provide your views on proposed solutions to address these concerns?

We made two observations when reviewing the Completed Activities and Anticipated Milestones presented in the RFI. One, the Tier 1 process took two years, but the Tier 2 analysis, which will be much more detailed in its scope and potentially controversial in its conclusions, is shown as only taking 16 months. While such an aggressive schedule is possible to achieve, it will take significant effort on OTP3, VDOT and DRPT to muster the cooperation necessary to drive the process to conclusion in such a short period of time. Two, while we concur that it is dependent upon FHWA and not the Commonwealth to release the Tier 1 Record of Decision (ROD), the fact that it has not been released yet nor has Tier 2 been initiated, could lead some in the industry to question how likely this project is to move forward. However, we recognize that OTP3 has a solid record in the validity and viability of their project pipeline. We anticipate that with an RFI now out for industry comment, that FHWA and VDOT are waiting to release the Tier 1 ROD and will initiate Tier 2 with a scope of study that incorporates many of the industry's ideas on how best to accomplish the project goals and objectives while meeting the Purpose and Need.

However, we appreciate OTP3's preliminary approach to advancing the start of procurement and accelerating the procurement itself as much as possible, as described in your preliminary schedule. Any accelerated procurement has to be weighed against the best value for Virginia on the project, that being a reasonable timeframe for a procurement to maximize competition and innovation by the private sector, and subsequently VDOT reaping the benefits of the lowest costs in the process. There are many variables that are unknown at this time in terms of what will be in the procurement requirements (i.e. committed finance at bid time vs. seeking a debt competition afterwards), but the schedule presented on the next page would be a high level accelerated P3 procurement schedule that would generally match what has been seen in the P3 market not only in North America but within Virginia through its successful financial closure of several recent transportation projects.

RFQ to industry	June 2014
SOQ responses due (+2 months)	August 2014
Owner evaluation of SOQ's; shortlist (+1 month)	September 2014
Preliminary Findings of NEPA Tier 2	Spring 2015
Owner release of Draft RFP to SL firms	Spring 2015
Expected NEPA Tier 2 Completion	June 2015
Owner release Final RFP (+1 month) • This includes a binding stipend agreement so the private sector will be expected to commence incurring costs on financial and technical to pursue project	June 2015
Owner conduct ATC & one-on-one meetings with bidders • Recommend at least 3 months to gain the benefit of private sector innovation and incorporation into process, and VDOT to review contract matters with all teams prior to bidding	July – Sept 2015
Finalize bid Recommend overall 9+ months from RFP to bid date Potentially longer if committed financing will be required	Mar 2016
Owner evaluation/selection and Award (+2 months)	May 2016
Commercial/Financial Close (+3 months will be required)	August 2016

5. What are the critical path items for the procurement of this Project and why?

As discussed in the response to Question #4, a timely start and aggressive completion of Tier 2 NEPA work is critical to shaping a future RFP for the industry to propose upon.

6. Looking ahead over the next two to three years, do you believe your firm will be interested in submitting a committed proposal for the development of the Project (any or all of the build concepts)? Are there any particular concerns that may prevent your firm from getting engaged in the project development? How might those concerns be resolved?

As OTP3 is fully aware, P3 pursuits are extremely expensive and time-consuming for all parties in such a pursuit, requiring a case by case business decision for each member of the pursuit team. In other words, does the private sector have stronger risk/reward situations with other pursuits/opportunities, including those without shortlists and lower cost of pursuit? Similarly, concession/equity groups compare each and every P3 pursuit against each other with similar risk/reward analysis and decide if they want to pursue a particular one.

Therefore, we suggest OTP3 look at market conditions for both shortlist and stipends for P3 and design-build projects across the industry to compare against. We suggest you consider a shortlist of bidders after the RFQ process, to limit the number of bidders to no more than three. The benefit is that the Owner gets the strongest and most qualified teams to bid on the project. If the number of shortlisted teams is more than this, the Owner runs the risk, as seen on other large alternative delivery projects, of shortlisted firms subsequently making a decision not to pursue due to a higher shortlist number, a lower stipend value, or a combination of both.

On a related matter, we suggest OTP3 pay a stipend to compliant shortlisted proposers who are unsuccessful in the RFP bid phase or if the project is cancelled by OTP3 prior to proposal date, in the range of 0.5-0.6% of the capital value of the project per bidder for a P3 procurement.. These ranges are significantly less than what private sector proponents spend on such procurements, but are important to the private sector. Stipends show that the Owner is committed to completing the procurement with a contract, and represents a financial commitment to the procurement similar to what each proponent is committing to the procurement with their resources.

This type of procurement would include design-build contracting methods in the proposal, and would hence provide significant opportunity for innovation, including means and methods of construction. The best design-build entities pride themselves on innovative and alternate methods to reduce costs. The ability of a P3 proponent to win work is largely based on their ability to secure the least costly financing and the implementation of the least costly construction means and methods. The innovations will naturally occur in the competitive atmosphere of a design-build procurement, assuming the rules of engagement in the procurement and the contract documents itself are set-up to facilitate these innovations.

To promote the most innovation possible, the procurement process should include a strictly confidential ATC (Alternative Technical Concept) process where proponents can submit "better or equal" type approaches and solutions that could bring extensive value for money to the taxpayers. This would mandate that the base concept of

the project does not change, but that different methods to bring about the same operational and performance measures of the overall project are not reduced. The process should include formal and confidential ATC submissions and formal reviews of the preliminary concept by the Owner's team, such that the concept can be formally approved or rejected, putting the risk of final design and final approval of details on the proponents. If formal approvals of preliminary designs during the procurement phase are not given, the proponents are less likely to invest time and money on ATC concepts, let alone include them in the bid thus providing the public with the pricing benefit

7. What is the minimum amount of time that your firm requires to develop and submit a committed detailed proposal for the Project after issuance of potential RFP?

Typically, a project of this complexity and magnitude normally would require between nine to twelve months to develop a comprehensive response. Given the length of time for Tier 2 NEPA to conclude, we have suggested that a draft RFP could be provided to the shortlisted firms once preliminary findings of the Tier 2 study are known but before public hearings are held. We have accounted for such a time frame in the proposed schedule noted in the response to Question #4 above.

c. Technical Challenges and Creative Solutions

8. Based on your experience in the development of similar projects and characteristics of the I-66 corridor, please explain the technical challenges that may be encountered with the highway and transit improvement concepts described in the Tier 1 DEIS. Please provide recommendations for mitigating or overcoming those challenges.

Key Technical Challenges and Opportunities

Major project challenges include: right-of-way, noise/sound walls, environmental impacts, WMATA Metro Rail Line and Stations, stormwater management, structures, and maintenance of traffic during construction. This area of Fairfax and Prince William Counties has populations that are anticipated to be active participants during improvements to the I-66 corridor. This level of public engagement could be a positive force supporting project implementation. That same force can be a detriment to overall project advancement, so the regional and community impacts need to be managed very closely. It is likely the public's highest interest issues will be centered on ROW impacts, noise/sound walls, maintenance of traffic and environmental issues/impacts.

Right-of-Way

Right-of-way (ROW) in the I-66 corridor is extremely constrained. It is unlikely that significant ROW could be acquired along the corridor to support additional capacity at-grade along the outside of the current roadway corridor–spot ROW acquisition may be possible depending on the location. Most of the corridor is lined with dense residential and commercial/office development that abuts the ROW. Additionally, the numerous local, regional and National parks, particularly the Federally owned Manassas National Battlefield Park will be areas where ROW is extremely difficult to obtain. Any work at the historic sites in the project area must comply with Section 106 and 110(f) of the National Historic Preservation Act.

Noise/Sound walls

This project is located in a highly developed area of Northern Virginia. In many locations high density development is immediately adjacent to the ROW of I-66. Sound walls already exist along most sections of the corridor. It is anticipated that significant construction of new sound walls and reconstruction of existing sound walls will be required for any options which expand the width of the corridor. (As a point of reference, significant sound wall construction was required along the I-495 Capital Beltway HOT Lanes and has been a significant part of the comments received on the I95/395 HOT Lanes projects).

WMATA Metro Rail Line and Stations

Active WMATA service is present in the median of I-66 from the eastern project limit to the Vienna Station. In addition to the Vienna Station, the project also encompasses the Dunn Loring Metro Station. Travel to and from these stations will need to be maintained during the project.

The Vienna Metro Station is located in the median of I-66 and is accessed via pedestrian bridges that cross both the east and west bound travel lanes. The station is supported with significant structure and retaining walls that will require heavy investment to modify and extensive coordination with WMATA to construct. Additionally, the station footprint itself limits options for any additional lanes in the area.

Having worked for WMATA for many years, AECOM is well aware of the high level of commitment that the agency has to its ridership in terms of minimizing impacts to their travel experience. There will be significant inter-agency dialogue and coordination required in order to accomplish the collective goals of the agencies involved in developing a

holistic solution to the multi-modal challenges presented in this project.

Stormwater Management

The Virginia Stormwater Management Program (VSMP) permit regulations will require the treatment and management of stormwater for this project. Per VDOT Stormwater Program Advisory SWPA 12-03 (Dated: August 10, 2012),*"….For those land disturbance activities regulated under of the VSMP Regulations, Part II of the regulations adopted by the State Water Control Board (SWCB) on May 11, 2011 with an implementation date of September 13, 2011(4VAC50-60-62 et. seq.) contains both the "new" technical criteria (Part IIB) and the "old" technical criteria (Part IIC) for water quality and stream channel erosion and flood protection requirements…."*

From the statement above and the expected dates of construction, it is assumed this project will not be grandfathered back to Part IIC (4VAC50-60-93 et. seq.) within the new statewide VSMP permit. As a result, the project will be subject to Part IIB (4VAC50-60-62 et. seq.) and thus will require which require significantly more stormwater management facilities for quality and quantity control. Compliance with the water quality design criteria within Part IIB will be determined using the new Virginia Runoff Reduction Method. Additional coordination with surrounding VSMP authorities (localities) will also likely be required.

Locating each stormwater management facility will be challenging given the very limited available undeveloped ROW along the corridor as well the projects proximity to several crossing streams and parallel water courses. In Prince William County, Cub Run parallels the corridor for approximately two miles. Innovative stormwater management facilities to address water quality and quantity will likely be required given the constraints of the project.

Structures

A number of bridges span the I-66 corridor. In many locations insufficient clearance exists between bridge piers to accommodate additional at grade travel lanes or fixed. Also, several bridges carry I-66 over secondary roadways and railway ROW. These structures would need to be widened to accommodate additional lanes. Innovative design approaches will be required as limited right-of-way exists to accommodate widening the corridor typical section.

Connection to the I-495 HOT lanes will be a particularly challenging structural design. Preliminary analysis suggests that any additional lanes with the ability to provide improved connection to the I-495 Express Lanes would require a fly-over or deck-over of the existing roadway at the Vienna Station.

Maintenance of Traffic (MOT)

MOT will be a significant issue. I-66 is one of the most critical and congested travel corridors in the region and the expectation will be that the facility remains open to traffic, Additionally, the construction of substructures for widening of structures carrying I-66 could require MOT on secondary roads – limited closures may be possible in the overnight hours.

For any work affecting WMATA, there are only limited overnight non-revenue service hours to perform work within their right-of-way. For both the I-95/395/495 Interchange, 495 Capital Beltway HOT Lanes and the Route 1 Interchange projects – VDOT required that all mainline travel lanes remain open to traffic during construction. Successful MOT concepts will be a significant component of any VDOT evaluation and equally critical for public approval and continued support.

Market Challenges and Opportunities

Market analysis creates a challenge as well as an opportunity. Review and determination of travel markets and catchment areas can inform the design of the ML and or combination ML/transit facility. Critical outcomes of market analysis are: anticipated volumes that would use managed lanes, estimated transit passenger and vehicle volumes and distribution of trips by needs. The location and number of access and egress points will affect potential volumes and, correspondingly, revenue for a tolled facility. A sound understanding of trip origins, destinations, and periods of travel also will inform the length, location, and design configuration of managed lanes. The objective is to design a facility that will both affect the greatest benefit related to congestion mitigation – in this case, reduction of volumes and delay on the mainlanes – and result in higher revenues. The long-term capital and operating costs of a longer facility may not be justified based on the marginal increase in volumes and revenue. A parallel analysis should be conducted to determine the additional cost to implement a 3-lane as opposed to a 2-lane facility. The market analysis will provide information on likely trips allowing assessment of alternative facility designs.

9. Do you believe a bifurcated highway system along the I-66 corridor is technically feasible? Please provide any experience and supportive information that you may be able to share from similar projects.

Yes it is feasible. The highway geometry, terrain and overall bridge size for I-66 elevated HOV viaduct is well suited for segmental bridge design and construction. The 20-mile elevated viaduct provides the economy of scale needed to make segmental construction extremely cost-effective. The number of precast segments required for this project will make it very cost effective to set up a casting yard on-site and provide the erection equipment necessary to construct segmental structures. Additionally, this type of construction lends itself well to build-from-above schemes, which will help reduce impact to I-66 and WMATA. Precast segments can be delivered over previously completed portions of bridge and erected from above without impacting traffic and transit operations.

This concept is not new; it has been implemented successfully in Tampa, FL by the Tampa, Hillsborough Expressway Authority, with construction and erection engineering performed by AECOM. The project has received international accolades for its form, function and efficiency. In addition, AECOM has designed, provided construction management, construction engineering inspection and on-site technical oversight for numerous segmental bridges and viaducts across North America. We are very knowledgeable of the critical components of segmental structures, geometry control of pre-cast segments, inspection of match casting segments, superstructure erection including overhead gantry and under-slung truss systems, post-tensioning installations, and proper grouting procedures to prevent corrosion of the tendons. Some of our other recent and relevant projects include:

- **Central Artery/Third Harbor, Boston MA.** 15,000 LF of segmental bridges (ramps, interchanges, and viaducts of varying span lengths) over roadways, railroads and water. This urban viaduct successfully and economically met all of the challenges associated with an urban viaduct.
- **Tren Urbano, San Juan, PR.** design, construction management and on-site technical oversight for 7-miles of segmental viaduct. This urban project had all of the key aspects of an urban viaduct including: complex superstructure geometry; special substructure - C-Piers, straddle bents, large diameter single drilled shaft foundations; and construction through the highly congested city of San Juan

10. What are the most significant cost drivers in the development and operation of the ML and BRT concepts along the I-66 corridor? How can these concepts be implemented in such a way as to preserve the potential for rail extension?

Right-of-way costs, ramps for direct access and egress, interchange reconfiguration, grade separations, stormwater management, accommodation of a future Metrorail extension, and parking for transit facilities drive capital costs. A managed lane solution constructed as an elevated facility in a small footprint as suggested in this response, has high potential for significant cost savings over other traditional capacity improvement concepts, such as those outlined in the DEIS. Operating and maintenance costs are affected by the number of lanes, size of ancillary facilities, electronic tolling and surveillance, enforcement, insurance, roadway pavement and infrastructure, and emergency management.

11. What, if any interoperability issues do you foresee with the current tolling system on I-495 Express Lanes?

There are several issues that need to be addressed in developing and implementing a cohesive regional express lane network (i.e., I-66, I-495, I-95) within the Northern Virginia region. Specifically, clarification will be needed on the following issues:

Congestion Tolling Strategies – Alternative tolling strategies may be applied such as trip-based, segment-based or zone-based for each component of the network. Each have their advantages and disadvantages and should be compared based on a diverse range of factors including public acceptance, operational impacts, signing, human factor issues, software requirements, costs, throughput impacts, revenue impacts and policy. The selected strategy would then need to be integrated with the existing congestion tolling strategy being used along I-495 and the future I-95 Express lanes to make it seamless from the users' perspective.

Dynamic Pricing – Alternative dynamic pricing algorithms would need to be developed based on VDOT policy and requirements. These algorithms may be developed focusing on the optimization of travel time reliability, throughput capacity or revenue maximization and may be applied for different segments of the network under difference operational scenarios (e.g., special events, incident management, recurring congestion).

Signage – Consistent signage (i.e., static and dynamic), and lane use management systems, is necessary to provide real-time information so that motorists can safely make "on-the-

fly" decisions on whether or not to use different segments of the regional express lanes network.

Business Rules – Business rules will need to be addressed and resolved if I-66 will differ from I-495 and I-95 express lanes. Such business rules may apply to vehicle eligibility (e.g., HOV 3+, alternative fuel vehicles, buses, motorcycles); access / egress (e.g., spacing, buffer, flyovers); pricing (e.g., rate caps, discounts); etc.

Operations – A consistent concept needs to be developed to provide interoperability in terms of TMC operations, reversible lane gate control operations, Safety Service Patrol operations, incident management, emergency management, disaster recovery plans, special event management, fail-over redundancy (center-to-center communications), back office operations and the customer service center. This will require compatibility with the Advanced Traffic Management System software, Active Traffic Management system (under construction along I-66) as well as the tolling software. Furthermore, I-66 operations should be interoperable with the Metropolitan Area Transportation Operations Coordination (MATOC) Program, 511 Virginia, Regional Integrated Transportation Information System (RITIS), Capital Wireless Information Net Program (CapWIN) and I-95 Corridor Coalition.

Public Education and Outreach – A consistent approach to public education and outreach should be defined and implemented to enable the motorists to understand how to use and benefit from the I-66 Express lanes as well as the regional express lane network. The marginal utility of the I-66 Express lanes for both HOV and HOT consumers will require explanation to ensure that the concept of dynamic pricing can be fully understood by consumers. From a traffic management standpoint the public will need to be educated in the information available via the dynamic message signs associated with driver information and toll rates; and the meaning of information presented on the lane control signs (if applied). A public awareness campaign will also be required to introduce users to the method of access to the I-66 Express lanes.

Violations – A consistent violation enforcement strategy should be developed and implemented to protect the integrity of the regional express lanes network and minimize revenue leakage while not placing undue burden on Virginia State Police troopers. This strategy needs to also be consistent in terms of what triggers a violation and the penalty provisions as well as consider technology advances regarding automatic occupancy detection and violation alert systems.

Transponders – E-ZPass/IAG compliant transponders should be interoperable on a regional and national level, using multi-protocol readers, to conform to MAP-21 requirements (i.e., Alliance for Toll Interoperability).

Performance Measures – Consistent performance measures should be established on a regional express lanes network basis to address travel time reliability (i.e., > 45 mph at least 90% of the time during peak periods for a rolling average 180 days); system availability of express lanes; incident response and clearance times; etc. Performance measures can be defined as absolutes, in this case a requirement for a specific level of service or minimum speed, or relative where allowable speed is function of the adjacent mainlane speeds. From the transit perspective, capacity utilization and passengers per hours may be used as measures.

The above interoperability issues should be addressed, resolved and documented in a clear Concept of Operations (ConOps) that will serve as the basis for developing the functional requirements and systems design in accordance with the systems engineering process. This ConOps may also be used in developing the Comprehensive Agreement between VDOT and the successful concessionaire. As AECOM is currently providing Traffic Control Room Operations for Transurban on the I-495 Express, and future I-95 Express, our staff has valuable hands-on knowledge to develop an interoperable ConOps based on our working relationship with stakeholders in the Northern Virginia region.

12. What suggestions do you have for better coordination between this Project and other projects currently under design or construction along the I-66 corridor?

Projects in Long Range Planning. VDOT is currently studying options for congestion reduction strategies in the I-66 corridor. A Metrorail extension in the corridor is likely to be one of the evaluated projects. Other options may include HOV/HOT lane and technology solutions. AECOM is leading the analysis effort for VDOT's Evaluation and Rating of Significant Transportation Projects in Northern Virginia. The Northern Virginia Transportation Authority (NVTA) and the Commonwealth Transportation Board (CTB) will be proposing projects for evaluation in February of 2014. Including the strategy proposed by this project as one of the alternatives evaluated in the VDOT Tier 2 EIS would be highly desirable and potentially far more effective in

addressing congestion on I-66 than many of the other strategies being considered by NVTA or CTB.

WMATA is currently developing a Regional Transit System Plan (RTSP) to propose and coordinate new transit investments between now and 2040. Over the last three years, the RTSP studies conducted by AECOM have considered major alternatives to address Metrorail core capacity constraints in downtown Washington and a wide variety of mode and route extensions into suburban markets. Most alternatives include a Metrorail extension in the I-66 corridor between Vienna and Centreville or Gainesville. **The most recent plan is proposing to down grade the I-66 Metrorail extension to LRT or BRT modes.** A BRT option would be compatible with the designs proposed by this response. A LRT or Metrorail extension would significantly complicate this proposal. Close coordination between this project and WMATA will be important in formulating a mutually acceptable solution.

Projects in Active Design or in Procurement

- I-66 at US 15 Interchange – continue procurement/selection of Design-Builder. A future capacity improvement can be integrated with the as-built condition of this new ramp configuration.
- Vienna Metro Station – recommend to suspend or delay this procurement, as the nature of the physical improvements contemplated in the concepts being advanced are in conflict with a future capacity improvement along the I-66 mainline, whether it be built at-grade or elevated.

Projects in Active Construction

- I-66 ATMS – project should continue forward, as a new capacity solution can be integrated with the GP/ML roadway improvements developed with the ATMS project.
- I-66 Widening – project should continue forward, as a new capacity solution can be integrated with the GP/ML roadway improvements developed with the widening project.

13. What challenges are associated with managing the lifecycle costs for the improvement concepts as described in the Tier 1 DEIS? What measures would you suggest to mitigate these risks?

The two main factors affecting the project's lifecycle costs and associated risks are (a) the design solution that is ultimately selected and (b) the form of lifecycle maintenance that is funded and implemented (this being either preventative or reactive).

In terms of design, relevant factors include the physical makeup of the asset (proportion of structures or elevated sections, number of lanes, extent that uniformity will promote economies of scale); technical complexity in particular the inclusion of any new or non-typical technology or control systems; maintenance of traffic constraints; pavement mix; bridge details; drainage design; treatment of utilities and easements; quality of ancillary elements such as signage and noise walls; and many other factors. The best way to ensure a holistic consideration of lifecycle costs in the planning and design of these details is through a DBFOM approach which is performance based and enables the private sector to innovate, and leverage its economies of scale and relevant experience in dealing with these issues on relevant past projects. With regard to the improvement concepts described in the Tier 1 DEIS – it is noted that the use of a broad framework for potential design solutions is a very positive first step in capitalizing on the benefits described above.

In relation to preventative versus reactive maintenance; DBFOM delivery enables a similarly definitive solution to this issue by placing responsibility for these obligations (and risks) on the private sector under what is essentially a long-term, fixed price, performance based contract. VDOT has in-depth knowledge of these issues and their applicability to different project types – where benefits are catalyzed by output specification/performance based metrics rather than through the use of over-proscriptive design, operations and maintenance standards and procedures.

14. What adjustments to the Project scope, or development strategies (including potential phasing of project elements) would you consider/recommend to reduce the upfront capital costs and/or the lifecycle costs of the overall project costs?

Staging of Project Scope. Under P3 delivery, the private sector can derive and pass on significant value from the deferral of capital expenditures (noting that delayed expenditures can be discounted for financing purposes by approximately 5% per year). By extension, any asset components for which delivery can be postponed can potentially improve the project's financial outlook. Specific improvements that could be deferred include:

- any improvements to existing free lanes (which also detract from project revenues under a tolled solution);
- any transit components that do not have a

practical implementation schedule i.e. improvements that rely on third party commercial agreements, approvals or operational funding commitments which are subject to approval independent of project delivery; and/or

- any capacity improvements that are surplus to current needs. This could potentially include part or all of the westernmost portion of the project – subject to detailed traffic simulations/analysis of any associated impacts on the project as a whole, consideration of socioeconomic equity and other policy goals.

Management of Project Risks and Resulting Efficiencies. A key benefit of P3 is its contractual incorporation of long-term project risks (operations, maintenance, rehabilitation, and handback). This ensures that the private sector will plan for these long-term risks on Day 1, such that the most cost effective way to meet the long-term performance requirements and manage associated risks is targeted. One of the major costs in long-term O&M is rehabilitation (milling/repaving, etc.) that the asset will require during the term of the concession contract. Performance based payment mechanisms (i.e. loss/reduction of availability payments if the road does not perform appropriately or is closed, etc.) incentivizes long-term performance of the asset, and hence the private sector will not only plan for these activities well in advance, but will regularly monitor the condition of the asset and continuously update the best long-term path forward for the duration of the concession period. Methods of optimizing the project's lifecycle costs through contractual mechanisms are described further in response to question 3.

We note that it is also important for the Owner to provide clear up-front definition of any operational interfaces affecting the project i.e. the boundaries for O&M obligations of the new facility's on and off ramps (and if a blockage occurs who is responsible for clearing it); any interfaces in relation to tolling operations, customer service, violations processing etc; and any interface between the facility operator and any relevant third party transit providers.

15. Please explain in detail any alternative technical solutions that may enhance the development of the Project. Identify the risks associated with the alternative technical solutions and discuss the potential cost of each technical solution.

Flat versus distance-based tolling can affect volumes and revenue. This could skew the number of managed lanes users as many would seek to decrease personal costs and remain in general purpose lanes as much as possible. Further expansion of roadway and improvements along alternate routes could decrease volumes and revenue. Value engineering exercises may be justified to identify the most appropriate cross-section for the short and long-term; this could decrease the capital and operating/maintenance cost of the facility while maintaining most revenues. Safeguarding a right-of-way for a future Metrorail or other transit facility may include a future decrease in general purpose lanes, assuming that volumes would transition to managed lanes and to transit. Careful examination should be made as to whether a fixed rail alternative will ever become reality all the way to Haymarket. Decreasing lanes for transit may be politically difficult.

d. Commercial and Financial Structure

16. Please explain your firm's interest in the improvement concepts discussed in the Tier 1 DEIS. What is your recommended approach for financing the capital cost of each concept?

As discussed in response to Question 13, we support the use of a broad framework for potential design solutions presented in the Tier 1 DEIS. Our familiarity with the project and independent due diligence have led us to a conceptual solution that we believe will provide maximum benefits to VDOT, project stakeholders, users of the corridor and proponents of sustainable, cost-effective transit solutions. Our interest in implementing this or any final suite of improvement concepts is grounded in our firm's desire to participate as a lead design/engineering service provider, contractor and/or equity investor in relation to the project.

With regard to "financing the capital cost of each concept" – this question is closely tied to VDOT's project funding options and policy preferences in relation to tolling. Firstly, we recommend that VDOT would get best value by grouping all the project's financing requirements under a single umbrella, rather than splitting any complex financing of different project components into separate contracts. Secondly, the optimal form of financing (essentially the solution with the lowest cost of capital and least risk to the State's credit rating etc.) will depend on VDOT's available assets where:

- the cheapest form of finance may involve VDOT paying (with available funds not debt) for a portion of the project up front through milestone payments under a single P3 contract, or paying for the whole project on a staged upfront basis through a series of segmental DBF contracts

- available funds could include any Federal, State or local contributions, or direct contributions from benefiting Transit Agencies;
- under DBF or an availability payment backed P3 – any initial funding shortfall could potentially be supplemented by VDOT issuing debt backed by future toll revenues (likely affecting the State's Debt Capacity and at its own risk)
- While a revenue risk P3 could potentially enable the project to be financed at no risk to the State and off-balance sheet, the private sector will demand higher rates of return under this approach resulting in a higher overall cost of finance.

Ultimately, VDOT's selection of a project financing approach should be subject to detailed Value for Money analysis that weights each of these factors in context with and in addition to the other pros and cons of various delivery models i.e. risk costs, cost of delivery, lifecycle costs and potential revenues.

17. Please discuss your firm's interest in:

a. Accepting traffic and revenue risk in a toll concession

b. Accepting performance risk in an availability structure

In relation to traffic and revenue risk: AECOM has extensive experience in relation to relevant past projects in the US and internationally. From a design, construction, operations and maintenance perspective we see the inclusion of tolling obligations within the contract aligning with our core competencies and value-add areas of expertise. From an investment standpoint we have not yet considered a direct investment role in the project, although our preference would be more strongly aligned with an availability payment backed P3 than a toll revenue risk project.

Regarding the acceptance of performance risk under an availability structure: we understand these risks and their importance in ensuring public and private interests are aligned. As such, we are willing to accept these risks at all levels (as an investor, contractor or service provider) subject to VDOT's incorporation of an adequate commercial, contractual and technical negotiation process as part of the procurement.

18. What is a reasonable concession term for a ML or a BRT concept? Why?

Under an availability payment approach, concession lengths are typically optimized by comparing gains from private industry efficiencies and financial costs to the public. As such we recommend an AP concession period of 30-35 years, in line with other recent US availability payment projects. This term normally allows the private sector to deliver value by handing back an asset that is well into its useful life but still in sound condition, and is within the practical limits of currently available financial products.

Under a revenue risk managed lanes project, concession length is tied directly to the term over which the private sector believes it needs to collect revenues in order to guarantee a return on its investment. We recommend that VDOT assess the likely "break-even" term for the project based on conservative assumptions as part of a business case assessment of a revenue risk project. We also recommend that in considering these issues and how they may be tied to the project's commercial structure and contract – VDOT consider the toll revenue risk models currently favored in Chile and Mexico, which are focused on prioritizing the alignment of long-term public and private sector interests through flexible concession terms and toll rates. These models have helped to avoid "overheated" bid phase competitions that ultimately result in bankruptcy of the concessionaire (numerous recent and future US examples) or excessive return on investment and the risk of public scrutiny (e.g. 407 ETR in Toronto).

The inclusion of BRT and other free categories of traffic should be given thorough attention mainly since it could erode service to the revenue generating patrons. In an availability project the same considerations apply, except those will not directly concern the private investor. In terms of an impact on concession term, we anticipate that BRT services would be operated by a third party Transit Operator such as WMATA who will work with VDOT to predefine all relevant design and performance specifications that the private partner will be required to comply with. In other words any DBFOM project agreement would limit the private partner's BRT obligations to include DBFM only which would not have significant bearing on the overall concession term.

e. Additional Considerations

19. If your firm is a Disadvantaged Business Enterprise ("DBE") or a Small, Women-owned, and Minority-owned Business ("SWaM"), please provide any suggestions or comments on how OTP3, VDOT or DRPT can help to develop teaming opportunities with prime contractors.

AECOM is not SWaM or DBE but has participated in numerous outreach programs in the past. Meaningful

SWaM/DBE participation in large projects is a win-win for the client and the contractors. However, the VDOT should establish realistic participation goals on the project. Unrealistic goals transfer significant risk to the prime and drive costs higher as the prime must serve as the backstop for the SWaM/DBEs and must build this risk into their price.

Outreach events within the local community and surrounding area have proven to be successful elsewhere. Inviting potential primes to host a table where the SWaMs and DBEs can meet and discuss their capabilities with the prime contractors has led to enhanced participation.

20. Based on characteristics of the I-66 corridor, suggest the number of persons per vehicle that should be required to qualify as a high-occupant vehicle. Explain why selecting this number may be in public interest and beneficial to comply with the federal Clean Air Act of 1990? Please provide quantitative and qualitative evidence to supports your arguments.

The current HOV2 policy on I-66 is effective in encouraging carpooling and reducing single occupant vehicles in the corridor. This provides air quality benefits and helps the region conform to Clean Air Act requirements. The combination of buses and HOV2+ vehicles in the HOV lane on I-66 is carrying more passengers per lane mile than the general purpose lanes during the peak hours. There are, however, segments of the HOV facility that experience speed reductions during peak periods due to congestion and entry and exit capacity constraints. These problems will only increase as the overall traffic on I-66 increases in the future. If the HOV lanes cannot maintain a substantial travel time advantage over the general purpose lanes, the ability of the HOV facility to encourage travelers to form carpools will decrease and the overall benefit will be reduced. At some point the HOV policy should be changed from HOV2+ to HOV3+ to maintain a travel time advantage and encourage higher vehicle occupancies. The overall goal of an HOV facility is to maintain near free flow conditions as much as possible. Setting the occupancy level and adjusting the hours of operation to maintain high travel speeds and maximize overall peak period throughput in the HOV lane is the primary objective.

HOV occupancy polices become considerably more complex in a HOT lane scenario. In this case, the HOV policy determines which vehicles can use the HOT lane for free and which vehicles need to pay the tolls. The HOT lane operator must adjust the HOV policy and the toll rates such that the total traffic on the HOT lane exceeds a minimum travel speed most of the time. This requires a careful balancing of HOV and toll-paying traffic to maintain a system performance standard while collecting sufficient revenue to pay for capital and operating costs. Depending on the financing mechanism, VDOT can choose to support higher HOV volumes on the HOT lane by subsidizing the toll operator or allow the toll operator to manage both traffic streams through dynamic pricing and policy decisions.

21. What additional challenges or risks should OTP3, VDOT, DRPT or CTB be aware of in regard to Project's scope, procurement process, delivery method, term of contract, technical and financial feasibility, etc.?

As discussed within various responses in this document, thorough and informed analysis of the opportunities relative to the needs and demands of various markets – rail travel, transit, through vs. local vehicular travel – are essential to allow the proposed solution to be shaped into one which is right-sized for the mutual benefit of the public and private sectors.

22. Other than the answers that you have already provided, what information would help your firm to make the business decision to engage in the development of the Project?

AECOM will participate in the development of this unique and challenging project as part of a vertically integrated team.

About AECOM

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural and social environments. A Fortune 500 company, AECOM serves clients in more than 140 countries and had revenue of $8.2 billion during the 12 months ended Sept. 30, 2013. More information on AECOM and its services can be found at www.aecom.com. Follow AECOM on Twitter at @AECOM.

AECOM

2101 Wilson Boulevard
Suite 800
Arlington, VA 22201