

**EXHIBIT LL-2**

**FORM OF OPITZ BOULEVARD RAMP TMS CONTRACT**

[SEE ATTACHED]

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**TURNKEY LUMP-SUM  
DESIGN-BUILD CONTRACT**

**RELATING TO THE OPITZ BOULEVARD RAMP OF THE I-95/395 HOV/HOT  
LANES TOLLING AND TRAFFIC MANAGEMENT SYSTEM**

**BETWEEN**

**95 EXPRESS LANES LLC,  
AS CONCESSIONAIRE**

**AND**

**TRANSURBAN (USA) INC.,  
AS CONTRACTOR**

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**DATED AS OF AUGUST \_\_\_\_,  
2022**

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## EXHIBITS

Exhibit A	—	Form of Notice to Proceed
Exhibit B	—	Form of Contractor’s Final Lien Waiver
Exhibit C	—	Form of Subcontractor’s Final Lien Waiver
Exhibit D	—	Form of Contractor’s Interim Lien Waiver
Exhibit E	—	Form of Subcontractor’s Interim Lien Waiver
Exhibit F	—	Form of Change Directive
Exhibit G	—	Form of Scope Change Order
Exhibit H	—	Form of Letter of Credit
Exhibit I	—	Seminary Road Change Directive
Exhibit J	—	Project Right of Way
Exhibit K	—	Reserved
Exhibit L	—	Payment and Values Schedule
Exhibit M	—	Reserved
Exhibit N	—	TMS Special Provisions
Exhibit O	—	TMS Interface Plan
Exhibit P	—	Scope of Work
Exhibit Q	—	Reserved
Exhibit R	—	Reserved
Exhibit S	—	Reserved
Exhibit T	—	Reserved
Exhibit U	—	Reserved
Exhibit V	—	Federal Requirements and Civil Rights Requirements
Exhibit W	—	Form of Opitz Boulevard Ramp Service Commencement Certificate
Exhibit X	—	Form of Opitz Boulevard Ramp Final Completion Certificate
Exhibit Y	—	Insurance Requirements
Exhibit Z	—	Technical Requirements ( <i>same as Comprehensive Agreement Exhibit C-6</i> )

THIS TURNKEY LUMP-SUM DESIGN-BUILD CONTRACT RELATING TO THE OPITZ BOULEVARD RAMP OF THE I-95/395 HOV/HOT LANES TOLLING AND TRAFFIC MANAGEMENT SYSTEM, dated as of August \_\_, 2022, is made by and between 95 Express Lanes LLC, a Delaware limited liability company, as “**Concessionaire**,” and Transurban (USA) Inc., a Delaware corporation, as “**Contractor**.”

W I T N E S S E T H:

WHEREAS, Concessionaire and the Department (as defined below) have entered or will enter into the Third Amended and Restated Comprehensive Agreement (as defined below as the “**Comprehensive Agreement**”) which sets out general requirements for the Opitz Boulevard Ramp Project (as defined below);

WHEREAS, Concessionaire and Construction Contractor have entered or will enter into the Opitz Construction Contract whereby Construction Contractor agrees to fulfill certain of Concessionaire’s design-build construction obligations under the Comprehensive Agreement for the design, development and construction of the Opitz Boulevard Ramp Project; and

WHEREAS, in order to fulfill certain of Concessionaire’s obligations under the Comprehensive Agreement, Contractor desires to supply to Concessionaire and Concessionaire desires to obtain from Contractor certain turnkey design, engineering, demonstration, testing and related services relating to certain elements of the overall traffic management systems for which Concessionaire is responsible under the Comprehensive Agreement, all of which shall be provided on a lump sum, fixed price basis in accordance with the terms and conditions herein specified.

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained and for other good and valuable consideration, the receipt of which is hereby acknowledged, the Parties hereto, intending to be legally bound, hereby agree as follows:

**ARTICLE 1**

**DEFINITIONS**

1.1 **Definitions.** As used in this Agreement, the following terms shall have the meanings indicated (such meanings as necessary to be equally applicable to both the singular and plural forms of the terms defined).

“**Additional Contractor Delay Payments**” shall have the meaning set forth in Section 7.2.2.

“**Affiliate**” when used to indicate a relationship with a specified Person, means a Person that, directly or indirectly, through one or more intermediaries has a ten percent (10%) or more voting or economic interest in such specified Person or controls, is controlled by or is under common control with such specified Person, and a Person is deemed to be controlled by another Person, if controlled in any manner whatsoever that results in control in fact by that other Person (or that other Person and any Person or Persons with whom that other Person is acting jointly or in concert), whether directly or indirectly and whether through share ownership, a trust, a contract or otherwise.

“**Agreement**” means this Turnkey Lump-Sum Design-Build Contract Relating to Opitz Boulevard Ramp Project of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, all written amendments, modifications and supplements hereto, and all Exhibits attached hereto, all of which by this reference are incorporated herein.

“**Agreement Date**” means the date on which this Agreement is executed and delivered by the Parties.

“**Applicable Standards**” means those standards, special provisions and reference guides (including all supplements, errata, revisions and interims) applicable to the TMS Work listed in Attachment 1.5a to the Technical Requirements in such versions in effect as of the date hereof or as otherwise noted in Attachment 1.5a to the Technical Requirements; provided, however, that if any portion of such standards, special provisions and reference guides conflicts with or is less stringent than Laws or other requirements in this Agreement or Comprehensive Agreement as applicable, such conflicting or less stringent portions of such standards, special provisions and reference guides shall not be deemed “applicable,” unless expressly provided by this Agreement.

“**Bank Rate**” means the prime rate of interest announced publicly by The Wall Street Journal (or its successors) as the so-called “prime rate.”

“**Business Day**” means any day on which the Department is officially open for business.

“**CA Compensation Event**” has the meaning given to the term “Compensation Event” as defined in the Comprehensive Agreement.

“**CA Compensation Event Notice**” has the meaning set forth in Section 12.6.1.1 hereof.

“**CA Delay Event**” has the meaning given to the term “Delay Event” as defined in the Comprehensive Agreement, except the term “Force Majeure Event” (as defined in the Comprehensive Agreement) shall be replaced with Excused Performance Event as defined herein.

“**CA Delay Event Notice**” has the meaning set forth in Section 12.5.1.1 hereof.

“**Change Directive**” has the meaning set forth in Section 12.3 hereof.

“**Change in Law**” means (a) the enactment of any Law after the Agreement Date or (b) any change, amendment to, repeal or revocation of any Law or in the interpretation or application thereof by any Governmental Authority after the Agreement Date; excluding, however, any change in or new Law enacted but not yet effective as of the Agreement Date.

“**Change Order Proposal**” has the meaning set forth in Section 12.2 hereof.

“**Claim**” means any and all claims, disputes, disagreements, causes of action, demands, suits, proceedings, damages, injuries, liabilities, obligations, losses, costs and expenses.

“**Commencement Date**” has the meaning set forth in Section 2.3.1 hereof.

**“Commercially Reasonable Efforts”** means efforts which are reasonably within the contemplation of the Parties at the time of executing this Agreement and which do not require the performing Party to expend any funds other than expenditures which are customary and reasonable in transactions of the kind and nature contemplated by this Agreement in order for the performing Party to satisfy its obligations hereunder.

**“Commissioning”** means the systematic verification, as required in the Commissioning program established pursuant to Section 6.1 hereof, that each component or system of the TMS Project in question is physically complete, checked, calibrated and safe for initial operation. To “commission the TMS Work” or “commission the TMS Project” means to provide Commissioning thereof.

**“Comprehensive Agreement”** means that certain Third Amended and Restated Comprehensive Agreement Relating to the I-95/395 HOV/HOT Lanes Project, dated as of August \_\_\_\_, 2022, entered into by and between Concessionaire and the Department, and all exhibits and schedules thereto, as supplemented, restated or amended from time to time.

**“Concessionaire”** means 95 Express Lanes LLC, a Delaware limited liability company, and its successors and permitted assigns as Concessionaire hereunder.

**“Concessionaire-Caused Delay”** means a delay or failure by Concessionaire in the performance of its obligations under this Agreement, in the performance of its obligations under the Opitz Construction Contract, or any contractor, agent or representative of Concessionaire (or anyone other than Contractor or any Subcontractor acting at the direction thereof, including Construction Contractor), in each case that is not permitted under or excused by this Agreement, as applicable, and in each case only if the performance of the TMS Work by Contractor is actually delayed as a result of such delay, failure or interference or if the cost to Contractor to perform the TMS Work is increased as a result of such delay, failure or interference. Delays or failures by Concessionaire that are attributable to the failure of Contractor (or any Subcontractor) to perform its obligations in accordance with this Agreement shall not constitute Concessionaire-Caused Delays. For the avoidance of doubt, no CA Compensation Event or CA Delay Event shall be deemed to constitute a Concessionaire-Caused Delay.

**“Concessionaire Default”** means any of the events set forth in Section 15.3.1 hereof.

**“Concessionaire Indemnitee”** means Contractor, its subsidiaries and Affiliates, and the directors, officers, agents, employees, successors or assigns of each of them.

**“Concessionaire’s Approval”** means the right of Concessionaire to review and approve the items set forth on the Deliverables List or another matter as expressly provided in this Agreement or the Technical Requirements (which approval by Concessionaire may be contingent upon its receipt of the Department’s approval to the extent required under the Comprehensive Agreement, or as otherwise designated on the Deliverables List). Subject to Section 2.11, Contractor shall submit items of TMS Work subject to Concessionaire’s Approval by the date specified in this Agreement, the Technical Requirements, or if a date is not specified, as agreed between Concessionaire and Contractor, and in all cases allowing for at least five (5) Business Days for Concessionaire’s review (unless a longer period is specified elsewhere in this Agreement)



before any submittals to the Department, and Concessionaire shall provide its written approval or disapproval thereof or otherwise respond within thirty (30) days of such submission, unless another time period is specified in the Technical Requirements or in this Agreement. If Concessionaire determines to deny its approval, it shall provide a summary in reasonable detail of the reasons for its determination. If Concessionaire does not respond within the time allotted, Concessionaire's Approval shall be deemed to have been given unless otherwise provided in the Technical Requirements or in this Agreement with respect to the approval of such item. In the event of deemed disapproval, Concessionaire will provide, within fourteen (14) days after a request by Contractor therefor, its rationale for such deemed disapproval in reasonable detail. Except as otherwise specified in this Agreement or the Technical Requirements and subject to Section 2.11, if Concessionaire denies its approval, Contractor shall as promptly as reasonably possible resubmit items subject to Concessionaire's Approval, and Concessionaire shall provide its written approval or denial thereof within fourteen (14) days of such re-submission, unless another time period is specified in the Technical Requirements or in this Agreement. Unless the Parties expressly agree otherwise in writing, Concessionaire's Approval of any aspect of the TMS Work (whether deemed or actual) shall not affect Contractor's obligation to provide the complete TMS Project in accordance with the requirements of this Agreement or any of Contractor's other obligations hereunder, or change the scope of TMS Work set forth in the Scope of Work, or reduce, increase or waive Contractor's obligations under this Agreement and its independent responsibility for performance of the TMS Work hereunder or for any acts or omissions of the Contractor's design professionals or other Subcontractors engaged by Contractor to perform the TMS Work, or constitute a waiver of Concessionaire's rights with respect thereto. Each of Concessionaire's Approval is given by Concessionaire in reliance upon, and subject to, full and satisfactory performance by Contractor of its obligations hereunder.

**“Concessionaire's Project Director”** has the meaning set forth in Section 5.1 hereof.

**“Concessionaire's Punch List”** means an itemized list of TMS Work prepared (and periodically revised) by Concessionaire, and submitted to Contractor, setting forth the items of TMS Work which remain to be completed after Opitz Boulevard Ramp Service Commencement has been achieved and before Opitz Boulevard Ramp Final Completion, the existence, correction and completion of which will have no material or adverse effect on the normal, uninterrupted and safe use and operation of the TMS Project, or the Opitz Boulevard Ramp Project.

**“Concessionaire's Review”** means the right of Concessionaire to review the items set forth on the Deliverables List or inspect any aspect of the TMS Work or another matter specified in this Agreement (which review may include review or inspection by the Department to the extent required under the Comprehensive Agreement, or as otherwise designated on the Deliverables List). Contractor shall submit items of TMS Work subject to Concessionaire's Review to Concessionaire by the applicable date specified in this Agreement, or if a date is not specified, as agreed between Concessionaire and Contractor), and in all cases allowing for at least fourteen (14) days for Concessionaire's review (unless a longer period is specified elsewhere in this Agreement) before any submittals to the Department) and Concessionaire shall provide its comments thereon, if any, within thirty (30) days of such submission, unless another time period is specified in this Agreement. If Concessionaire fails to respond within the time allotted, Concessionaire's Review shall be deemed to have been made, unless otherwise provided in this Agreement with respect to such item. Except as otherwise specified in this Agreement, the

Deliverables List or the Technical Requirements and subject to Section 2.11, if Concessionaire's response requires re-submittal, Contractor shall as promptly as reasonably possible resubmit items subject to Concessionaire's Review, and Concessionaire shall provide its written response thereto within fourteen (14) days of such re-submission, unless another time period is specified in the Technical Requirements or in this Agreement. Unless the Parties expressly agree otherwise in writing, Concessionaire's Review of any aspect of the TMS Work (whether deemed or actual) shall not affect Contractor's obligation to provide the complete TMS Project in accordance with the requirements of this Agreement or any of Contractor's other obligations hereunder, or change the scope of TMS Work set forth in the Scope of Work, or reduce, increase or waive Contractor's obligations under this Agreement and its independent responsibility for performance of the TMS Work hereunder or for any acts or omissions of the Contractor's design professionals or other Subcontractors engaged by Contractor to perform the TMS Work, or constitute a waiver of Concessionaire's rights with respect thereto.

**"Concessionaire-Supplied Equipment and Facilities"** means those items for which Concessionaire is responsible for providing pursuant to the Scope of Work.

**"Concessionaire's Work Representative"** has the meaning set forth in Section 5.1 hereof.

**"Contract Sum"** has the meaning set forth in Section 4.1 hereof.

**"Contract Sum Adjustment"** has the meaning set forth in Section 12.6.2.1 hereof.

**"Contractor"** means Transurban (USA), Inc., a Delaware corporation, and its permitted successors and assigns as contractor hereunder.

**"Contractor Default"** means any of the events set forth in Section 15.2.1 hereof.

**"Contractor Indemnitee"** means Concessionaire, the State Indemnitees, each of their subsidiaries and Affiliates (excluding the Contractor), and the directors, officers, agents, employees and successors of each of them.

**"Contractor Marks"** has the meaning set forth in Section 2.1.8.4 hereof.

**"Contractor Party"** means Contractor and any Affiliate and any agents, Representatives, officers, directors, employees, Subcontractors, suppliers and materialmen of the Contractor or any Affiliate, excluding Concessionaire.

**"Contractor's Punch List"** means an itemized list of TMS Work prepared (and periodically revised) by Contractor, and submitted to Concessionaire, setting forth the items of TMS Work which remain to be completed with respect to the TMS Project after Opitz Boulevard Ramp Service Commencement has been achieved and before Opitz Boulevard Ramp Final Completion, the existence, correction and completion of which will have no material or adverse effect on the normal, uninterrupted and safe use and operation of the TMS Project.

**"Contractor Required Coverage"** means the insurance coverages that Contractor and Subcontractors are required to provide at their own expense as set forth in Exhibit Y, and in compliance with Article 14 of this Agreement.

**“Contractor TMS Equipment”** means the transportation management system equipment, communications equipment, and all associated hardware and physical infrastructure and other computer hardware and software necessary to meet the performance specifications for TMS, other than performance specifications required for Concessionaire-Supplied Equipment and Facilities. For the avoidance of doubt, the Contractor TMS Equipment excludes the Concessionaire-Supplied Equipment and Facilities.

**“CPI”** means the “Consumer Price Index – U.S. City Averages for all Urban Consumers, All Items” (not seasonally adjusted), or its successor, as published by the U.S. Department of Labor, Bureau of Labor Statistics, or its successor; provided, that if the CPI is changed so that the base year of the CPI changes, the CPI will be converted in accordance with the conversion factor published by the U.S. Department of Labor, Bureau of Labor Statistics, or its successor. If the CPI is discontinued or substantially altered, the applicable substitute index will be that chosen by the Secretary of the Treasury for the Department of Treasury’s Inflation-Linked Treasuries as described at 62 Fed. Reg. 846-847 (Jan. 6, 1997), or if no such securities are outstanding, will be determined by the Parties in accordance with general market practice at that time.

**“Critical Path”** means the longest chain(s), in terms of time, of logically connected activities on the TMS Work Schedule ending with Opitz Boulevard Ramp Final Completion.

**“Dale Boulevard Slip Ramp Opening”** means the opening of the Dale Boulevard Slip Ramp after completion of the TMS Work with respect thereto, as more fully described in the TMS Interface Plan.

**“Dale Boulevard Slip Ramp TMS Turnover”** means the turnover of the Dale Boulevard Slip Ramp by the Construction Contractor to the Contractor as more fully described in the TMS Interface Plan.

**“DBE”** means disadvantaged business enterprise.

**“DBE/SWaM Plan”** means the plan developed by Contractor that defines the Contractor’s approach to meeting the DBE participation goals set forth herein, as described in more detail in the Technical Requirements.

**“Deliverables List”** means the list of documentary deliverables for review and/or approval by the Concessionaire (and where indicated, the Department), which will identify each such submittal, and other information reasonably requested by the Concessionaire.

**“Demobilization Costs”** means the amount necessary to reimburse the reasonable out-of-pocket and documented costs and expenses incurred by Contractor as result of the occurrence of a Significant Force Majeure Event, including its reasonable costs to demobilize and terminate Subcontracts between Contractor and third parties or Affiliates, excluding Concessionaire, for performance of TMS Work, excluding Contractor’s non-contractual liabilities and indemnity liabilities (contractual or non-contractual) to third parties or Affiliates, excluding Concessionaire.

**“Department”** means the Virginia Department of Transportation, an agency of the State, and any other state agency succeeding to the powers, authorities and responsibilities of the Department invoked by or pursuant to the Comprehensive Agreement.

**“Department-Caused Delay”** means:

(a) a delay or failure by the Department in performing any of its material obligations pursuant to the Comprehensive Agreement; or

(b) performance of work by the Department or its Contractors (other than Concessionaire and Concessionaire’s contractors, unless Contractor or its Subcontractors are Contractors of the Department) within or immediately adjacent to the HOT Lanes (as defined in the Comprehensive Agreement) or the Project Right of Way that causes physical damage to the HOT Lanes, the TMS Work or the work of the Construction Contractor or limits access to the Right of Way, and such physical damage or limited access delays the TMS Work;

provided, however, that a Department-Caused Delay shall specifically exclude a delay attributable to:

(1) the submission of incomplete documentation by Contractor or the Construction Contractor (directly or through Concessionaire) for the Department’s review under the Comprehensive Agreement;

(2) required review of Governmental Approvals from other Governmental Authorities necessary or appropriate to the Department’s review;

(3) failure by the Department to obtain appropriation and allocation of public funds;

(4) submittals or requests that are “deemed approved” under the Comprehensive Agreement if no response is provided within the applicable timeframe; or

(5) an Excused Performance Event.

**“Department Change”** means (a) a change to the work of the Construction Contractor or TMS Work pursuant to a “Change Order” (as defined in the Comprehensive Agreement) or a Directive Letter issued pursuant to the Comprehensive Agreement and (b) any other event that the Comprehensive Agreement expressly states will be treated as a Department Change.

**“Construction Contractor”** means Shirley Contracting Company, LLC, a Virginia limited liability company.

**“Design Documentation”** means such plans, drawings, specifications and other design documentation (including design standards, design or durability reports, models, samples and calculations) in computer readable and written formats prepared by or on behalf of Contractor for the purposes of the performance of the TMS Work or any component thereof in accordance with this Agreement (including the Technical Requirements).

**“Document Management Plan”** means the plan developed by Contractor to define the document management approach for all Work Product, consistent with Concessionaire’s document management plan.

**“Dollar”** or **“\$”** shall mean the legal currency of the United States of America.

“**Escrow Agent**” has the meaning set forth in the Comprehensive Agreement.

“**Escrow Agreement**” means the Fourth Amended and Restated Escrow Agreement dated as of August \_\_\_, 2022 among the Concessionaire, the Department and the Escrow Agent, as it may be amended or supplemented from time to time.

“**ETTM**” means electronic toll and traffic management.

“**ETTM Facilities**” means the administration/operations building, toll gantries and technical cabinets, utility connections, lighting facilities and other facilities associated with electronic toll and traffic management.

“**ETTM System**” means the ETTM Facilities, the Concessionaire-Supplied Equipment and Facilities, the Contractor ETTM Equipment and the Software which monitors, controls or executes operation of the Contractor ETTM Equipment, all of which will meet the minimum performance criteria established by the Technical Requirements.

“**Excluded Operations**” means operations conducted away from the Project Right of Way, as well as certain on-site activities including transport, pickup, delivery, or loading or unloading of materials, personnel, parts or equipment or any other items or persons to or from the Project Right of Way by parties who do not otherwise work at the Project Right of Way. Each enrolled party is required to provide its own insurance for losses arising out of Excluded Operations, and is required to report such claims to its own insurance carriers.

“**Excused Performance Event**” shall have the meaning set forth in Section 11.1 herein.

“**Federal Requirements**” means the provisions required to be part of federal-aid construction contracts relating to highway projects and applicable to the Opitz Boulevard Ramp Project, including the provisions set forth in Exhibit V.

“**FHWA**” means the Federal Highway Administration or any successor agency.

“**Final As-Built Drawings and Documentation**” means all drawings, specifications and other documentation, as further described in Section 17.2 hereof, prepared in accordance with the standard of performance described in Section 2.4 hereof, which accurately and completely represent in detail the physical placement of all TMS Project components and systems as installed or constructed and as they exist at the time of Opitz Boulevard Ramp Final Completion.

“**Final Payment**” has the meaning set forth in Section 4.3 hereof.

“**FM Termination Payment**” has the meaning set forth in Section 15.4 hereof.

“**General Warranty**” has the meaning set forth in Section 10.1.1 hereof.

“**Good Faith Efforts**” means the adequate demonstrated effort required by Contractor to achieve the DBE and SWaM goals or other requirements in Article 24.

**“Good Industry Practice”** means the industry practices and standards that would be exercised by a prudent and experienced designer, engineer or contractor, engaged in the same kinds of undertakings and under similar circumstances as those applying to the TMS Work.

**“Governmental Approvals”** means all local, regional, state and federal agreements, studies, findings, permits, approvals, authorizations, certifications, consents, decisions, exemptions, filings, leases, licenses, registrations, rulings and other governmental authorizations required to be obtained or completed under Law prior to undertaking any particular TMS Work activity contemplated by this Agreement or a Scope Change Order. The term “Governmental Approvals” includes the NEPA Documents.

**“Governmental Authority”** means any court, federal, state or local government, department, commission, board, bureau, agency or other regulatory or governmental authority, but it does not include the Department.

**“GP Lanes”** means the general purpose traffic lanes (in either or both directions) along the Original Corridor.

**“Guaranteed Dale Boulevard Slip Ramp Opening Date”** means the date that is one hundred twenty (120) days after the date of Dale Boulevard Slip Ramp TMS Turnover.

**“Hazardous Substances”** means, but is not limited to, any solid, liquid, gas, odor, heat, sound, vibration, radiation or other substance or emission which is or could be considered a contaminant, pollutant, dangerous substance, toxic substance, Hazardous Waste, solid waste, hazardous material or hazardous substance which is or becomes regulated by Laws or which is classified as hazardous or toxic under Laws.

**“Hazardous Waste”** means a waste that is (a) listed as a hazardous waste in 40 CFR Section 261.31 to 261.33, and (b) exhibits one of the following characteristics: ignitability, corrosivity, reactivity or toxicity, or is otherwise defined as a hazardous waste by Law.

**“Health and Safety Plan”** means the plan developed by Contractor that defines the health, safety and security activities required during the TMS Project, as described in more detail in the Technical Requirements, and consistent with Concessionaire’s health and safety plan.

**“HOT Lanes”** means the high occupancy toll lanes and the associated entry and exit ramps within the Project Right of Way that are separated from the adjacent GP Lanes, and including, for the avoidance of doubt, the Opitz Boulevard Ramp HOT Lanes (as defined in the Comprehensive Agreement), and the use of which is restricted pursuant to Section 5.01 of the Comprehensive Agreement.

**“HOT Operations Center”** means the HOT Lanes operations center as the same may be modified by Contractor pursuant to the terms of Shared Facilities Agreement.

**“Indemnifying Party”** has the meaning set forth in Section 13.3.1 hereof.

**“Indemnitee”** means any of the Contractor Indemnitees or the Concessionaire Indemnitees.

**“Intellectual Property”** means the ETTM books and records, toll setting and traffic management algorithms, escrow documents, copyrights (including moral rights), trademarks (registered and unregistered), designs (registered, including applications, and unregistered), patents (including applications), circuit layouts, Source Code and Source Code Documentation, plant varieties, business and domain names, inventions, trade secrets, proposals, copyrightable works, customer and supplier lists and information, and other results of intellectual activity, copies and tangible embodiments of all of the foregoing (in whatever form or medium) and licenses granting any rights with respect to any of the foregoing (to the extent assignable), in each case, relating to the TMS Project.

**“ITS”** means intelligent transportation system.

**“Late Completion Payments”** has the meaning set forth in Section 7.2 hereof.

**“Late Dale Boulevard Slip Ramp Opening Payment”** has the meaning set forth in Section 7.2 hereof.

**“Late Opitz Boulevard Ramp Final Completion Payment”** has the meaning set forth in Section 7.2 hereof.

**“Late Opitz Boulevard Ramp Service Commencement Payment”** has the meaning set forth in Section 7.2 hereof.

**“Law”** means all laws, treaties, ordinances, judgments, Federal Requirements, decrees, injunctions, writs and orders of any Governmental Authority, and all rules, regulations, orders, formal interpretations and permits of any Governmental Authority having jurisdiction over performance of the TMS Work, or operation of the TMS Project, or the health, safety or environmental condition of the TMS Project or the Project Right of Way, as the same may be in effect from time to time.

**“Letter of Credit”** means an irrevocable, unconditional letter of credit in favor of Concessionaire (with the Department as permitted transferee), in form and content reasonably acceptable to Concessionaire, substantially in the form of Exhibit H.

**“Losses”** means, with respect to any Person, any losses, liabilities, judgments, damages, fees, penalties, fines, sanctions, charges or out-of-pocket and documented costs or expenses actually suffered or incurred by such Person, including as a result of any injury to or death of persons or damage to or loss of property.

**“Maximum Cumulative Drawdown Schedule”** means the schedule setting forth the Maximum Cumulative Payment stated as of any month during the TMS Work Period.

**“Maximum Cumulative Payment”** means a cap, designated on the Maximum Cumulative Drawdown Schedule, on the aggregate amount of payments that can be made to Contractor hereunder as of any month during the TMS Work Period, as it may be modified from time to time pursuant to terms hereof.

**“Monthly Progress Report”** means a progress report containing the following information: (a) a narrative description of Contractor’s and all Subcontractors’ activities and design and engineering progress as compared with the TMS Work Schedule (including an updated TMS Work Schedule), (b) the information required in Section 2.1.1.2 hereof, (c) a detailed description of the TMS Work which has been completed, including a comparison of actual and planned progress, (d) the current status of the TMS Project and any deviations from scheduled performance, (e) critical Contractor and Construction Contractor issues requiring prompt resolution, (f) safety activities and environmental compliance activities, (g) all other applicable information required by Section 1.4.4 of the Technical Requirements and (h) all other information reasonably requested by Concessionaire relating to the TMS Work.

**“NEPA Documents”** means the Categorical Exclusion approved by FHWA for the Opitz Boulevard Ramp Project.

**“Non-Permitted Closure”** has the meaning set forth in Section 7.5 hereof.

**“Notice of Opitz Boulevard Ramp Final Completion”** has the meaning set forth in Section 6.6.2 hereof.

**“Notice to Proceed”** has the meaning set forth in Section 2.3.1 hereof.

**“Open Book Basis”** means allowing the Department or Concessionaire to review all underlying assumptions and data associated with each net revenue impact, net cost saving, pricing or compensation or adjustments thereto relating to the TMS Work, including assumptions as to costs of the TMS Work, schedule, composition of equipment spreads, equipment rates, labor rates, productivity, estimating factors, design and productivity allowance, contingency and indirect costs, risk pricing, discount rates, interest rates, inflation and deflation rates, and other items reasonably required by the Department or Concessionaire to satisfy itself as to the reasonableness and accuracy of the amount.

**“Opitz Boulevard Ramp Baseline Schedule”** has the meaning set forth in the Comprehensive Agreement and shall be consistent with the “Baseline Schedule” as updated and agreed to under the Opitz Construction Contract.

**“Opitz Construction Contract”** means the agreement for the construction of the Opitz Boulevard Ramp Project, by and between Concessionaire and Construction Contractor, and any other parts, exhibits and schedules thereto, as in effect on the Agreement Date.

**“Opitz Boulevard Ramp Final Completion”** means the satisfaction by Contractor of the requirements set forth in Section 6.6.1 hereof.

**“Opitz Boulevard Ramp Final Completion Certificate”** means, a certificate of Contractor in the form of Exhibit X, delivered to Concessionaire certifying that Opitz Boulevard Ramp Final Completion of the entire TMS Project has occurred.

**“Opitz Boulevard Ramp Guaranteed Final Completion Date”** has the meaning set forth in Section 6.6.3 hereof.



**“Opitz Boulevard Ramp Guaranteed Service Commencement Date”** means the date set forth in the Opitz Boulevard Ramp Baseline Schedule, as such date may be extended hereunder; provided that a new Opitz Boulevard Ramp Guaranteed Service Commencement Date may be established pursuant to the Opitz Boulevard Ramp Service Commencement Recovery Plan proposed by Contractor and approved by (i) Concessionaire pursuant to Section 6.8 hereof, and as such date may be extended for CA Delay Events from time to time in accordance with the terms of the Comprehensive Agreement.

**“Opitz Boulevard Ramp Long Stop Date”** means the date that is 365 days after the Opitz Boulevard Ramp Guaranteed Final Completion Date, as such date may be extended.

**“Opitz Boulevard Ramp Project”** has the meaning given to such term in the Comprehensive Agreement.

**“Opitz Boulevard Ramp Service Commencement”** means the opening of the Opitz Boulevard Ramp Project for normal and continuous operations and use by the travelling public, after occurrence of all the events and satisfaction of all the conditions therefor set forth in Section 9.02(h) of the Comprehensive Agreement.

**“Opitz Boulevard Ramp Service Commencement Certificate”** means, a certificate of Contractor in the form of Exhibit W, delivered to Concessionaire certifying that Opitz Boulevard Ramp Service Commencement has been achieved.

**“Opitz Boulevard Ramp Service Commencement Date”** means the date on which Opitz Boulevard Ramp Service Commencement is achieved under the Comprehensive Agreement.

**“Opitz Boulevard Ramp Service Commencement Recovery Plan”** shall have the meaning set forth in Section 6.8.

**“Original Corridor”** has the meaning set forth in the Comprehensive Agreement.

**“OS&S Contractor”** means the Person that Concessionaire designates to operate the Opitz Boulevard Ramp Project.

**“Owner Controlled Insurance Program”** or **“OCIP”** shall have the meaning set forth in Section 14.2 hereof.

**“Party”** or **“Parties”** means, respectively, a party or both parties to this Agreement.

**“Payment and Values Schedule”** means the schedule of values of various items of TMS Work based upon which Scheduled Payments of the Contract Sum will be made by Concessionaire as set forth in Exhibit L hereto, as the same may be adjusted pursuant to this Agreement.

**“Performance Test”** means the operation of the equipment and applicable systems included in the TMS Work necessary for operation of the HOT Lanes by Contractor in accordance with the Test Strategy and the provisions of Article 6 hereof for the purposes of determining the TMS Project’s level of achievement of the conditions to Opitz Boulevard Ramp Service

Commencement set forth in Section 6.5, and Opitz Boulevard Ramp Final Completion set forth in Section 6.6 hereof.

“**Person**” means any individual, corporation, partnership, association, joint stock company, trust, unincorporated organization, joint venture, government or political subdivision or agency thereof.

“**Project Manager**” means a person employed by Contractor to administer and act under this Agreement on behalf of Contractor.

“**Project Right of Way**” means the real property identified in Exhibit J, including the parcels that are identified therein for acquisition.

“**Proposal Request**” has the meaning set forth in Section 12.2 hereof.

“**Proprietary Intellectual Property**” means any Intellectual Property that is patented or copyrighted by Concessionaire, Contractor, or any of its Subcontractors, or, if not patented or copyrighted, is created, held and managed as a trade secret or confidential, proprietary information by Concessionaire, Contractor or any of its Subcontractors, but excludes any item of Intellectual Property that is produced for multiple purposes and is not unique to the technology that is being applied to or for the TMS Project.

“**Quality Manager**” means a person employed by Contractor who is responsible for overseeing quality assurance and quality control of the TMS Work and for ensuring that the TMS Work conforms with the requirements of this Agreement, the Comprehensive Agreement and the Opitz Construction Contract.

“**Quality Plan**” means the plan developed by Contractor that defines the quality management systems during the execution of the TMS Project, as described in more detail as Quality Management System Plan in the Technical Requirements, and is consistent with Concessionaire’s Quality Management requirements for the Opitz Boulevard Ramp Project.

“**Rating Agencies**” means any nationally recognized statistical rating organization, such as Moody’s Investor Service, Inc., Fitch Ratings, or Standard & Poor’s Rating Service, a division of The McGraw-Hill Companies, Inc., or any similar entity, or any of their respective successors.

“**Representative**” means, with respect to any Person, any director, officer, employee, official, lender (or any agent or trustee acting on its behalf), partner, member, owner, agent, lawyer, accountant, auditor, professional advisor, consultant, engineer, contractor, other Person for whom such Person is, under Law, responsible or other representative of such Person and any professional advisor, consultant or engineer designated by such Person as its “Representative.”

“**Response**” has the meaning set forth in Section 2.11.1 hereof.

“**ROW Acquisition and Relocation Plan**” has the meaning as such term is used in the Comprehensive Agreement.

“**Scheduled Payments**” has the meaning set forth in Section 4.2 hereof.

“**Scope Change**” has the meaning set forth in Section 12.1 hereof.

“**Scope Change Order**” means a written order to Contractor, in the form of Exhibit G hereto, issued and signed by Concessionaire in accordance with the provisions of Article 12 hereof after the execution and delivery of this Agreement, authorizing a Scope Change and, if appropriate pursuant to the terms hereof, an adjustment in one or more of the Scope of Work, the Contract Sum, the TMS Work Schedule, the Opitz Boulevard Ramp Guaranteed Service Commencement Date, the Opitz Boulevard Ramp Guaranteed Final Completion Date, the Opitz Boulevard Ramp Long Stop Date, the Payment and Values Schedule, the Maximum Cumulative Drawdown Schedule, or any other amendment of the terms and conditions of this Agreement, the Opitz Construction Contract and Comprehensive Agreement as applicable.

“**Scope of Work**” means the general description of the TMS Work to be performed by Contractor as set forth in Exhibit P hereto.

“**Seminary Road Change Directive**” has the meaning set forth in Section 12.14 hereof.

“**Shared Facilities Agreement**” means the Shared Facilities Agreement dated as of July 31, 2012 between the Concessionaire and Capital Beltway Express, LLC, as amended or supplemented from time to time.

“**Significant Force Majeure Event**” has the meaning set forth in the Comprehensive Agreement.

“**Software**” means (a) computer instructions, including programs, routines and databases and applications supplied, procured or developed by Contractor or its Subcontractors in connection with the TMS Work, including but not limited to that which monitors, controls or executes on Contractor TMS Equipment included as a part of the TMS Work or ITS equipment or hardware, and (b) all modifications, updates and revisions made to the matter described in clause (a) above, including those made to correct errors or to support new models of computer equipment or new releases of operating systems.

“**Source Code and Source Code Documentation**” mean Software written in programming languages, such as C and Fortran, including all comments and procedural code, such as job control language statements, in a form intelligible to trained programmers and capable of being translated into object or machine readable code for operation on computer equipment through assembly or compiling, and accompanied by documentation, including flow charts, schematics, statements of principles of operations, architectural standards, and commentary, explanations and instructions for compiling, describing the data flows, data structures, and control logic of the software in sufficient detail to enable a trained programmer through study of such documentation to maintain or modify the Software without undue experimentation. Source Code and Source Code Documentation also include all modifications, additions, substitutions, updates, upgrades and corrections made to the foregoing items prior to Opitz Boulevard Ramp Final Completion.

“**Source Code Escrows**” has the meaning set forth in Section 24.12.2.

**“Standard of Care”** means the performance of the TMS Work in accordance with prudent industry practices, methods, techniques and standards, and using the degree of care, skill and diligence, that would be expected to be exercised by a prudent, skilled and experienced contractor engaged in the same types of undertakings as the TMS Project under the same or similar circumstances and conditions as those applying to the design and development of the TMS Project, all Laws (including, without limitation, the State’s right to work Laws, and to the extent applicable, with all Federal Requirements and Laws applicable to a transportation project that has received or receives federal-aid funds), all Governmental Approvals, all Applicable Standards, Good Industry Practice, the requirements of the Comprehensive Agreement (including the Technical Requirements), the requirements of insurance policies required to be maintained in accordance with this Agreement so as not to knowingly void or omit to take any action that would void any such policy or limit the coverage of any such policy in a way that materially and adversely affects Concessionaire, and the other requirements specified or referred to herein, the Opitz Construction Contract or Comprehensive Agreement as applicable.

**“State”** means the Commonwealth of Virginia.

**“State Highway”** means any highway designated a State Highway pursuant to Title 33.2, Chapter 1, Sections 25, 48 and 67, Code of Virginia.

**“State Indemnitees”** means the State, the Commonwealth Transportation Board, the Department or any other agency, instrumentality or political subdivision of the State and their respective Representatives.

**“Subcontract”** means a contract between Contractor and a Subcontractor for the performance or supply of a portion of the TMS Work by such Subcontractor.

**“Subcontractor”** means a vendor, supplier, materialman, consultant or subcontractor of any tier providing equipment, materials or services directly or indirectly to Contractor in connection with the TMS Work.

**“SWaM”** means small, women and minority-owned businesses.

**“Taxes”** has the meaning set forth in Section 2.1.19 hereof.

**“Technical Requirements”** means the Technical Requirements attached as Exhibit Z hereto, as the same may be revised by any Technical Requirements Revisions pursuant to the Comprehensive Agreement, and shall be consistent with, to the extent applicable, the Technical Requirements attached as Exhibit C-6 to the Comprehensive Agreement.

**“Technical Requirements Revisions”** has the meaning set forth in the Comprehensive Agreement.

**“Termination For Cause”** has the meaning set forth in Section 15.2.2 hereof.

**“Termination Payment”** has the meaning set forth in Section 4.4 hereof.

“**Test Strategy**” means plan developed by Contractor and approved by Concessionaire, for the conduct of Performance Tests.

“**Third Party Claims**” means any Claim asserted against an Indemnitee by any Person who is not a party to this Agreement or an Affiliate of such party.

“**TIA**” or “**Time Impact Analysis**” means a time impact analysis, (a) establishing the influence of an event on the TMS Work Schedule, and will include a fragmentary network, and for events that have not yet occurred (such as proposed changes), the fragmentary network will demonstrate how Contractor proposes to incorporate such event in the TMS Work Schedule, and (b) demonstrating: (i) the time impact based on the date the event occurred or notice of a proposed change is given to Contractor, (ii) the status of the TMS Work at such point of time; and (iii) the time computation of all affected activities.

“**TMS**” means traffic management system.

“**TMS Interface Plan**” means the TMS Interface Plan attached hereto as Exhibit O governing the schedule and manner in which the Contractor and Construction Contractor shall perform their respective responsibilities to timely complete the Opitz Boulevard Ramp Project.

“**TMS Project**” means that part of the Opitz Boulevard Ramp Project included in the TMS Work but excludes such portion of the Opitz Boulevard Ramp Project that is expressly excluded from the TMS Work by the terms of this Agreement and in accordance with the Scope of Work attached as Exhibit P.

“**TMS Special Provisions**” means the TMS Special Provisions attached hereto as Exhibit N containing requirements in addition to the Technical Requirements applicable to the TMS Project.

“**TMS Work**” has the meaning set forth in Section 2.1 hereof.

“**TMS Work Period**” means the date commencing on the Commencement Date and ending on the date Opitz Boulevard Ramp Final Completion occurs under this Agreement.

“**TMS Work Schedule**” means the schedule prepared by Contractor under the provisions of Section 2.1.1 hereof, which is to be consistent with the Opitz Boulevard Ramp Baseline Schedule, as adjusted pursuant to this Agreement.

“**TMS Work Site**” means the area required by Contractor for the performance of the TMS Work and shall be within the Project Right of Way.

“**USDOT**” means the United States Department of Transportation.

“**Utility**” means any public, private, cooperative, municipal or government line, facility or system used for the carriage, transmission or distribution of cable television, electric power, data or other telecommunications, telephone, telegraph, water, gas, oil, petroleum products, steam, chemicals, sewage, storm water not connected with the highway drainage and similar substances that directly or indirectly serve the public. The term “Utility” specifically excludes (a) storm water

lines connected with the highway drainage, and (b) traffic signals, street lights, and electrical systems for the Opitz Boulevard Ramp Project ramp.

“**VA Code**” means the Code of the Commonwealth of Virginia of 1950, as amended.

“**Warranty Period**” has the meaning set forth in Section 10.1.3 hereof.

“**Work**” means collectively, the finance, development, planning, design, acquisition, installation, construction, completion, management, equipment, operation, repair and maintenance and any other services identified in the Comprehensive Agreement to be performed by Concessionaire under the Comprehensive Agreement.

“**Work Order**” has the meaning set forth in Section 12.8 hereof.

“**Work Product**” means all the data, information, documentation and other work product produced, prepared, obtained or deliverable by or on behalf of Contractor for the TMS Project, including but not limited to designs, drawings, plans and specifications, record and as-built plans and specifications, engineering documents, analyses, reports and records, agreements and documents (including records of payment and related correspondence, title policies, parcel diaries and all construction documents relating to the TMS Work), engineers’ and inspectors’ diaries and reports, traffic and revenue studies, and other feasibility data, analyses, studies and reports, correspondence and memoranda relevant to design or construction decisions, contracting plans, mitigation studies and reports, data, assessments, studies and reports regarding Hazardous Substance investigations, testings, borings, monitoring and analyses, manifests regarding handling, storage or transportation of Hazardous Substances, correspondence and agreements relating to Governmental Approvals, change orders, final quantities, pile driving records, records of accidents and traffic management, field test records and reports, concrete pour records, surfacing depth check records, grade and alignment books, cross-section notes, drainage notes, photographs, false work and form plans, records of construction materials, Contractor TMS Equipment and ETTM Facilities records and reports to the extent relating to the TMS Work, and any other documents which can be reasonably described as technical or engineering documents. Work Product expressly excludes, however, documents and information which Concessionaire and Contractor mutually agree in writing, or which a court determines, to be exempted or protected from public disclosure and which is not conceived or first reduced to practice for the Opitz Boulevard Ramp Project purposes, such as proprietary financial and pricing information of Contractor.

## ARTICLE 2

### CONTRACTOR’S TMS WORK AND OTHER OBLIGATIONS OF CONTRACTOR

2.1 TMS Work to be Performed. Except as otherwise expressly set forth in this Agreement, and subject to the specific provisions of and exclusions set forth in the Scope of Work, Contractor shall perform or cause to be performed any and all work and services required or appropriate in connection with (A) [reserved], (B) the design, engineering, and completion of that portion of the ETTM System included within the Scope of Work (and for avoidance of doubt, excluding the Concessionaire-Supplied Equipment and Facilities), (C) Commissioning, start-up,

demonstration and testing of the ETTM System, (D) any modifications to the HOT Operations Center included within the Scope of Work and shall provide all materials, equipment, machinery, tools, labor, supervision, transportation, administration, training and other services and items required to complete and deliver to Concessionaire that portion of the ETTM System included in the Scope of Work, all on a lump-sum, fixed-price, turnkey basis in accordance with the requirements of this Agreement, Laws and Applicable Standards, and (E) Progress design and coordination of TMS infrastructure needs with Construction Contractor in accordance with the TMS Interface Plan, TMS Special Provisions and TMS Work Schedule (collectively, the “**TMS Work**”). Notwithstanding the foregoing, the fact that Contractor exercised the Standard of Care shall not excuse Contractor from a breach of any express obligation hereunder or the General Warranty. The TMS Work does not include the items expressly excluded from the TMS Work by the terms of this Agreement, or any items excluded from the responsibility of Contractor by the Scope of Work. Contractor shall perform or cause to be performed activities necessary to complete the TMS Project generally described in the TMS Interface Plan, this Agreement or reasonably inferable from the Comprehensive Agreement. Without limiting the foregoing, Contractor shall perform the following as part of the TMS Work:

#### 2.1.1 Scheduling and Milestones.

2.1.1.1 TMS Work Schedule. Contractor shall, within thirty (30) days after the Agreement Date, submit for Concessionaire’s Approval a detailed TMS Work Schedule, which shall be consistent with the “Initial Baseline Schedule” (as defined in the Opitz Construction Contract) and include, among other things: (i) the order in which Contractor proposes to carry out the TMS Work, including each stage of design, software development, testing and Commissioning, (ii) applicable information required by the Technical Requirements, (iii) the times when submissions and Concessionaire’s Approvals are requested, (iv) schedule design requirements related work to support the Initial Baseline Schedule process and (v) the Deliverables List. Such proposed TMS Work Schedule shall be submitted by Contractor to Concessionaire for approval, in the form of one (1) electronic version in the Primavera proprietary exchange format and in any other form requested by Concessionaire. Contractor shall perform the TMS Work in accordance with the TMS Work Schedule and shall coordinate and incorporate the schedules of all Subcontractors into the TMS Work Schedule as they become available.

2.1.1.2 Schedule Updates. Following the conclusion of the process outlined in Section 2.1.1.1, as part of each Monthly Progress Report and in conjunction with the monthly progress meetings required in accordance with Section 2.1.10 hereof, Contractor shall provide Concessionaire with updates to the TMS Work Schedule meeting the applicable requirements of [Section 1.4.3] of the Technical Requirements. If Concessionaire believes that the TMS Work Schedule needs a specific revision, either in logic, activity duration, TMS Work breakdown structure, manpower or cost, Concessionaire will request Contractor in writing to make such revisions. Contractor shall respond in writing within five (5) days or such other timeframe as mutually agreed by the Parties, either agreeing with Concessionaire’s proposed revision, and henceforth including it in the next TMS Work Schedule update, or providing justification why it should not be accomplished. If revisions cannot be agreed upon either through written correspondence or subsequent meetings, Concessionaire and Contractor shall agree to attempt to resolve the issues through the dispute resolution process set forth in Article 19 hereof. If Concessionaire and Contractor cannot agree on any revisions to the TMS Work Schedule,

Contractor shall proceed under the previously approved schedule, subject to the dispute resolution process set forth in Article 19.

2.1.1.3 Schedule Update Format. Contractor shall submit to Concessionaire the TMS Work Schedule update and narrative in the form of one (1) electronic version in Primavera proprietary exchange format and in any other standard or customary form reasonably requested by Concessionaire. This process shall continue until Opitz Boulevard Ramp Final Completion.

2.1.1.4 Opitz Boulevard Ramp Service Commencement Recovery Plans. If any Monthly Progress Report shows that Opitz Boulevard Ramp Service Commencement is projected to occur thirty (30) days later than the then-current Opitz Boulevard Ramp Guaranteed Service Commencement Date, Contractor will, subject to Section 6.8, submit a Opitz Boulevard Ramp Service Commencement Recovery Plan for Concessionaire's Review concurrent with the next monthly TMS Work Schedule update. Such recovery schedule shall (i) include a list of all activities changed, added or deleted along with all logic or sequence changes and an accompanying narrative explaining the nature of the changes as required by Section 1.4.7 of the Technical Requirements and (ii) set forth a revised TMS Work Schedule that shall be subject to Concessionaire's Approval. Contractor shall respond to Concessionaire's comments in accordance with the process outlined in Section 2.1.1.2 until Concessionaire has approved the revised TMS Work Schedule. Concessionaire's Review of a recovery plan and Concessionaire's Approval of a revised TMS Work Schedule shall not affect any of Concessionaire's rights or Contractor's obligations under this Agreement, including Contractor's obligations to pay Late Completion Payments. Once a revised TMS Work Schedule is reviewed and approved by Concessionaire hereunder, it shall become the TMS Work Schedule and be used as the basis for subsequent Monthly Progress Reports.

2.1.1.5 Opitz Boulevard Ramp Final Completion Recovery Plan. If any Monthly Progress Report shows that Opitz Boulevard Ramp Final Completion is projected to occur thirty (30) days later than the then-current Opitz Boulevard Ramp Guaranteed Final Completion Date, Contractor will submit a written recovery plan for Concessionaire's Review concurrent with the next monthly TMS Work Schedule update. Such recovery schedule shall (i) include a list of all activities changed, added or deleted along with all logic changes and an accompanying narrative explaining the nature of the changes as required by Section 1.4.7 of the Technical Requirements and (ii) set forth a revised TMS Work Schedule that shall be subject to Concessionaire's Approval. Contractor shall respond to Concessionaire's comments in accordance with the process outlined in Section 2.1.1.2 until Concessionaire has approved the revised TMS Work Schedule. Concessionaire's Review of a recovery plan and Concessionaire's Approval of a revised TMS Work Schedule shall not affect any of Concessionaire's rights or Contractor's obligations under this Agreement, including Contractor's obligations to pay Late Completion Payments. Once a revised TMS Work Schedule is reviewed and approved by Concessionaire hereunder, it shall become the TMS Work Schedule and be used as the basis for subsequent Monthly Progress Reports.

2.1.2 Engineering and Design. Contractor shall perform all engineering and design services for completion of the TMS Work in conformity with the requirements of this Agreement. All engineering work of Contractor requiring certification shall be certified, and all



Design Documentation requiring sealing shall be sealed, by professional engineers licensed and properly qualified to perform such engineering services in all appropriate jurisdictions, which engineers and their qualifications shall be subject to the review and approval procedures set forth in Section 2.1.5.1.

2.1.2.1 Design. Contractor is responsible for the design of the TMS Work. Contractor shall also develop and provide the complete ETTM System specification. Design work shall include specification and design for that portion of the ETTM System within the Scope of Work, preparation of drawings and specifications in accordance with the Scope of Work, and coordination of data systems with the Department and the OS&S Contractor. Contractor expressly acknowledges and agrees that while the Scope of Work sets forth a general guide as to the requirements of the TMS Project, Contractor shall have full responsibility for the adequacy, safety and stability of the design for the TMS Work and methods of development, maintenance, testing, Commissioning and completion of the TMS Project in accordance with this Agreement, the Comprehensive Agreement and the Standard of Care, such that the whole of the TMS Project is Commissioned and operational.

2.1.2.2 Design Documentation. Contractor shall prepare all Design Documentation in computer readable and written formats in full compliance with Applicable Standards, Governmental Approvals and Laws and shall submit those set forth on the Deliverables List for Concessionaire's Review or Concessionaire's Approval (which may include review and approval by Concessionaire or the Department as provided in the Deliverables List). Contractor's obligations with respect to the Design Documentation include fulfilling the obligations of Concessionaire with respect to the TMS Project under the Comprehensive Agreement solely as they pertain to the Design Documents for the TMS Work, and Contractor shall coordinate with Concessionaire as appropriate such that Concessionaire may timely and fully perform such obligations. Notwithstanding anything to the contrary in this Agreement, Concessionaire's Review or Concessionaire's Approval (as the case may be) of Design Documentation shall be only a determination whether such documents (and the portions of the TMS Work represented thereby) on their face meet the standards for the TMS Work set forth in this Agreement, and shall not be considered an evaluation or determination that such documents and the portions of the TMS Work represented thereby in fact meet the standards for the TMS Work or are otherwise satisfactory for their intended purpose. As the drawings and specifications for the TMS Project are issued and, if applicable, receive Concessionaire's Approval, they shall be clearly identified as Design Documentation. Contractor may, with Concessionaire's Approval, apply for approvals from the Department of interpretive engineering decisions concerning the meaning, scope, interpretation and application of the Technical Requirements. All applications for such approvals shall be in writing. Contractor acknowledges that the Department may issue a written approval of Contractor's proposed interpretive engineering decision, if any (upon which Concessionaire and Contractor may rely), may issue its own interpretive engineering decision, or may disapprove any interpretive engineering decision Contractor proposes.

2.1.2.3 [Reserved].

2.1.2.4 Document Management Plan. The Contractor shall provide the Document Management Plan, to the Concessionaire for the Concessionaire's approval, no later than thirty (30) days prior to the issuance of the Notice to Proceed. In the event the Concessionaire

request any changes to the Document Management Plan, the Contractor shall make such changes and return to Concessionaire within ten (10) days of such request.

2.1.3 Procurement. To the extent required, Contractor shall procure and pay for, in Contractor's name as an independent contractor and not as agent for Concessionaire, all materials, equipment, supplies, consumables, transportation, labor, supervision and other necessary services (whether on or off the Project Right of Way), which are not expressly specified to be furnished by Concessionaire or Concessionaire's other contractors in this Agreement, to complete the TMS Work in accordance with the Comprehensive Agreement. Contractor shall be responsible for obtaining all customs clearances required in connection with the provision of equipment, materials and supplies necessary to complete the TMS Work in accordance herewith, including any temporary clearances for testing equipment and other items to be used in the TMS Work.

2.1.4 [Reserved].

2.1.5 Labor Matters.

2.1.5.1 Contractor's Personnel. Contractor shall provide all labor and personnel required in connection with the TMS Work, including: (a) professional engineers licensed to perform engineering services in each jurisdiction where the performance of the TMS Work requires such licensing; (b) a lead engineer, cost and schedule engineer(s), and start-up and training supervisors, all of whom have had extensive experience in projects of similar technology and magnitude; (c) the Project Manager; and (d) the Quality Manager and other quality assurance personnel.

2.1.5.2 Facilities and Other Personnel Requirements. Concessionaire may conduct periodic searches of employees and other persons present at the Project Right of Way, and Contractor may conduct such searches of employees and other persons present at the TMS Work Site, in each case, including personal and professional possessions, automobiles, trucks, briefcases, lunchboxes and persons for the presence of firearms, alcohol and illegal drugs. Contractor shall immediately notify Concessionaire's Project Director if firearms, alcohol or illegal drugs are found on the TMS Work Site. Concessionaire shall have the right to require the immediate removal and permanent expulsion from the Project Right of Way and from any work associated with the TMS Work of any Person that at any time is found in possession of firearms, alcohol or illegal drugs. In addition, Contractor will comply, and to the extent required by the Comprehensive Agreement will cause its Subcontractors to comply, with the provisions set forth in this Agreement and the then current DBE/SWaM Plan related to labor, employment and DBE/SWaM-related matters.

2.1.5.3 Labor Relations. Contractor shall be responsible and liable for all labor relations matters of Contractor and Subcontractor personnel relating to the TMS Work and shall at all times use Commercially Reasonable Efforts to maintain harmony among the unions (if any) and other personnel employed in connection with the TMS Work and act in a reasonable, professional and courteous manner with Concessionaire, Concessionaire's Contractors and Concessionaire's subcontractors. Contractor shall, at all times, use all Commercially Reasonable

Efforts and judgment as an experienced contractor to adopt and implement policies and practices designed to avoid TMS Work stoppages, slowdowns, disputes and strikes.

2.1.6 TMS Work Site. Contractor shall maintain any part of the ETTM Facilities of which it takes sole or shared possession until care, custody and control is transferred to Concessionaire in accordance with the terms of this Agreement.

2.1.7 Governmental Approvals. Contractor shall procure and maintain in full force and effect throughout the term hereof all Governmental Approvals necessary for the TMS Work, excluding only those Governmental Approvals designated as Concessionaire's responsibility in the Scope of Work. Contractor shall provide copies of all Governmental Approvals and modifications to such Governmental Approvals to Concessionaire upon receipt and shall comply with other requirements related to the permitting applicable to the TMS Work set forth in the Technical Requirements.

2.1.8 Ownership of Intellectual Property; Royalties and License Fees; Contractor's Marks. Contractor shall pay all applicable and required initial royalties and license fees (it being understood that Contractor is not responsible for ongoing maintenance and support fees) and shall procure for the benefit of Concessionaire or the Department, as applicable, at Contractor's sole expense (other than ongoing maintenance and support fees), the appropriate rights, licenses, agreements and permissions for materials, methods, processes and systems incorporated into the TMS Project as part of the TMS Work. In performing the TMS Work hereunder, Contractor shall not incorporate into the TMS Project any materials, methods, processes or systems which involve the use of any confidential information, intellectual property or proprietary rights which Concessionaire, the Department or Contractor does not have the right to use or which may result in Claims or suits against Concessionaire, the Department or Contractor arising out of Claims of infringement of any domestic or foreign patent rights, copyrights or other proprietary rights, or applications for any such rights, or use of confidential information. Any such rights held by Contractor with respect to items incorporated in the TMS Work shall be assigned or licensed to the Department or Concessionaire, as applicable, at no additional cost to the Department or Concessionaire, in connection with the use or operation of the TMS Project.

2.1.8.1 All Proprietary Intellectual Property of Contractor shall remain exclusively the property of Contractor, notwithstanding any delivery of copies thereof to Concessionaire. Upon the expiration or earlier termination of, or any assignment by the Concessionaire of its rights under, this Agreement for any reason whatsoever, Concessionaire and the Department shall have a nonexclusive, nontransferable, irrevocable fully paid up license to use the Proprietary Intellectual Property of Contractor solely in connection with the Opitz Boulevard Ramp Project. Concessionaire shall not at any time sell any such Proprietary Intellectual Property or use or allow any party to use any such Proprietary Intellectual Property for any purpose whatsoever other than in connection with the Opitz Boulevard Ramp Project (except as permitted in accordance with Section 2.1.8.2). Concessionaire shall not disclose any Proprietary Intellectual Property of Contractor (other than to contractors, subcontractors, employees, attorneys and agents in connection with the development and operation of the Opitz Boulevard Ramp Project who agree to be bound by any confidentiality obligations of Concessionaire relating thereto) and Concessionaire shall enter into a confidentiality agreement reasonably requested by Contractor with respect to any such Proprietary Intellectual Property. Contractor shall continue to have a full

and complete right to use any and all duplicates or other originals of its Proprietary Intellectual Property in any manner it chooses.

2.1.8.2 Contractor agrees that the Department shall have the right to purchase from Contractor a nonexclusive, nontransferable, irrevocable, fully paid up license to use the Proprietary Intellectual Property of Contractor on any other tolled State Highway owned and operated by the Department or other State agency on commercially reasonable terms.

2.1.8.3 With respect to any Proprietary Intellectual Property owned by a Person other than Contractor, Concessionaire or the Department, Contractor shall obtain from such owner, concurrently with execution of any contract, subcontract or purchase order with such owner, for Concessionaire and the Department, nonexclusive, nontransferable, irrevocable, fully paid up (other than with respect to ongoing maintenance and support fees) licenses to use such Proprietary Intellectual Property solely in connection with the Opitz Boulevard Ramp Project, of at least identical scope, purpose, duration and applicability as the licenses granted by Section 2.1.8.1 above; provided, that the foregoing requirement will not apply to standard, pre-specified manufacturer licenses of mass-marketed products (including software products) or equipment where the license cannot be extended to the Department or Concessionaire using Commercially Reasonable Efforts or to other licenses of products or equipment where the products or equipment are not reasonably necessary for the operation or maintenance of the Opitz Boulevard Ramp Project. Contractor shall use Commercially Reasonable Efforts to obtain from such owner a right in favor of the Department to purchase from such owner a nonexclusive, nontransferable, irrevocable, fully paid up (other than with respect to ongoing maintenance and support fees) license to use such owner's Proprietary Intellectual Property on any other tolled State Highway owned and operated by the Department or other State agency on commercially reasonable terms. The limitations on sale and disclosure by Concessionaire set forth in Section 2.1.8.1 above shall also apply to Concessionaire's and the Department's licenses in such Proprietary Intellectual Property.

2.1.8.4 Contractor's name or other trademarks, service marks and trade names owned by Contractor (the "**Contractor Marks**") may appear on some of the TMS Work-related assets, including supplies, materials, stationery and similar consumable items at the Project on the last day of the term hereof. The Parties agree that Contractor shall remain the owner of the Contractor Marks at the end of the term hereof, and Contractor may remove, at its expense, the Contractor Marks prior to the end of the term. If Contractor fails to do so, Concessionaire or the Department will be entitled to remove the Contractor Marks and, in such case, Concessionaire will be entitled to payment from Contractor of its reasonable documented costs (or Concessionaire's costs or the Department's "Allocable Costs" (as defined in the Comprehensive Agreement), as applicable) in so doing. Concessionaire acknowledges and agrees that it shall have no right, title, interest or license in the Contractor Marks.

2.1.8.5 Contractor shall comply with Concessionaire's reasonable direction, and agrees to execute further agreements as may be required, in order that Concessionaire may fulfill its obligations under the Comprehensive Agreement, including to escrow Source Code and Source Code Documentation which is Proprietary Intellectual Property of Contractor.

2.1.9 Inspection and Expediting. Contractor shall perform all inspection, expediting and quality surveillance that are required for performance of the TMS Work on a timely basis. Contractor's responsibilities under this Section 2.1.9 shall include, without limitation, inspecting all Contractor-supplied materials and equipment, both on and off the Project Right of Way that comprise or will comprise the TMS Project or that are to be used in performance of the TMS Work hereunder. Contractor shall perform a detailed inspection of all TMS Work in progress at appropriate intervals off the Project Right of Way as is necessary to ensure that such TMS Work is proceeding in accordance with this Agreement, the Opitz Construction Contract and the Comprehensive Agreement, and to protect Concessionaire against defects and deficiencies in such TMS Work. On the basis of such inspections, Contractor shall keep Concessionaire continuously informed of the progress and quality of all TMS Work and shall provide Concessionaire with written reports of deficiencies revealed through such inspections and of measures proposed by Contractor to remedy such deficiencies. Contractor shall use all reasonable efforts to secure for Concessionaire and the Department or their respective representatives the option of being present at all inspections of the TMS Work Site. In the event that the progress and quality of the TMS Work is not proceeding in accordance with this Agreement, the Opitz Construction Contract or the Comprehensive Agreement, Concessionaire shall be entitled to make recommendations to Contractor for the purpose of remedying such deficiencies. Contractor shall provide Concessionaire with a detailed list of materials and equipment inspection points. Contractor shall provide Concessionaire and the Department with at least five (5) days' prior written notice of all inspections and on a monthly basis, Contractor shall advise Concessionaire and the Department of inspections planned for the forthcoming month. Concessionaire and the Department, and each of their designated representatives, shall have the right to be present at and participate in all inspections of the TMS Work or the TMS Work Site undertaken by Contractor. No inspection performed or failed to be performed by Concessionaire or the Department or any recommendation from Concessionaire or the Department in connection therewith, shall be a waiver of any of Contractor's obligations hereunder or be construed as an approval or acceptance of any TMS Work hereunder and shall not relieve Contractor of independent responsibility for performance of the TMS Work hereunder or for any acts or omissions of the Contractor's design professionals or other Subcontractors engaged by Contractor to perform the TMS Work.

2.1.10 Monthly Progress Meetings. Contractor shall conduct regularly scheduled, monthly progress meetings at the TMS Work Site throughout design, development, and completion of the TMS Project beginning the month after the Commencement Date to thoroughly discuss the progress and status of completion with Concessionaire's Work Representative and any other representatives of Concessionaire that Concessionaire desires or the Department may request. Such meetings shall be attended by Contractor's Project Manager, Concessionaire's representatives and other appropriate representatives of Contractor's staff, and during such meetings, progress during the prior month, as presented in the Monthly Progress Report, shall be reviewed and Contractor shall report information from any key Subcontractors responsible for the TMS Work completed during the specified duration and the TMS Work scheduled during the upcoming reporting duration. Concessionaire shall be responsible for preparing, maintaining and distributing minutes of the monthly progress meetings to all attendees for review and approval. In addition, under the Comprehensive Agreement, Concessionaire and the Department are to conduct monthly progress meetings in accordance with the Technical Requirements and Contractor shall attend all such meetings unless otherwise directed by Concessionaire. The Parties acknowledge that all direction to Contractor will be provided by Concessionaire.

2.1.11 [Reserved].

2.1.12 [Reserved].

2.1.13 [Reserved].

2.1.14 [Reserved].

2.1.15 [Reserved].

2.1.16 [Reserved].

2.1.17 [Reserved].

2.1.18 Progress Reports. Contractor shall submit a Monthly Progress Report to Concessionaire together with each request for payment made pursuant to Section 4.2.1 hereof. In addition, Contractor, whenever required by Concessionaire, shall provide a general written description of the arrangements and methods which Contractor proposes to adopt for the execution of the TMS Work. No significant alteration to such arrangements or methods shall be made without informing Concessionaire.

2.1.19 Taxes. Contractor shall administer and pay all sales and use taxes, gross receipts, customs duty, import duty and other taxes and contributions imposed by any taxing authority upon the sale, purchase or use of materials, supplies, equipment, services or labor incorporated in the TMS Project or used in the TMS Work, as well as taxes measured by Contractor's receipts hereunder or measured by wages earned by employees of Contractor or any Subcontractor (together with sales and use taxes, but excluding any taxes due on or payable with respect to income received by Contractor or any Subcontractor, "**Taxes**"), and shall promptly furnish to the appropriate taxing authorities all required information and reports in connection with such Taxes. Taxes are included within the Contract sum, and Contractor shall not be entitled to an adjustment to the Contract sum in the event the amount of Taxes payable by Contractor exceeds the amount estimated by Contractor, but the foregoing shall not preclude Contractor from recovering amounts payable as Taxes as otherwise expressly provided in this Agreement. Contractor shall cooperate with Concessionaire to minimize Concessionaire's obligation to pay sales and use taxes in connection with the TMS Work. Contractor shall maintain all cost and other records necessary to distinguish taxable from nontaxable items, and shall assist Concessionaire in determining the appropriate amounts of sales and use taxes and any available exemptions therefrom.

2.1.20 Employee Identification. All employees of Contractor and its Subcontractors shall be identified by the use of a distinctive badge approved by Concessionaire, which approval shall not be unreasonably withheld.

2.1.21 [Reserved].

2.1.22 Protection of Property. Notwithstanding Section 5.2, Contractor shall provide and shall require that each Subcontractor provides proper and ample protection from damage or loss to the Contractor TMS Equipment, materials, equipment and tools during its

performance of the TMS Work hereunder. Where ingress and egress to and from the Project Right of Way requires the traverse of public or private lands, Contractor shall limit the movement of its crews and equipment and of all Subcontractors so as to cause as little damage as possible to crops or other property and shall use all reasonable efforts to avoid marring such lands, and shall in all respects comply with all obligations of and any restrictions imposed on Concessionaire by the Project Right of Way. Contractor shall not be reimbursed by Concessionaire for costs associated with loss of or damage to property, whether on or off the Project Right of Way, caused by Contractor or Subcontractors arising in connection with the TMS Work hereunder.

2.1.23 Coordination with Concessionaire and Other Contractors. Contractor shall cooperate with Concessionaire and any of its contractors, including the Construction Contractor, to coordinate and schedule the TMS Work with the work of any of Concessionaire's contractors working in the Project Right of Way. Contractor's obligations include supporting Concessionaire's coordination and scheduling obligations under the Technical Requirements in connection with the TMS Work. If invited, Contractor shall attend any negotiations or meetings that Concessionaire has with a third party, including the Department, on a matter which is or shall become Contractor's responsibility hereunder, including a meeting of Contractor's Project Manager, the Concessionaire's Work Representative and the Concessionaire's Project Director within fourteen (14) days after the Commencement Date, to discuss issues affecting the administration of the TMS Work and to implement the necessary procedures, including those relating to submittals and approvals, to facilitate the ability of the Parties to perform their obligations under this Agreement. Contractor agrees that if any such a negotiation or meeting occurs without a presence of a Contractor's representative, such event shall not constitute a breach of this Agreement unless such events occur repeatedly due to Concessionaire's intentional exclusion of Contractor from such negotiations or meetings.

2.1.24 Coordination with Construction Contractor. In addition to the coordination required above, the Contractor acknowledges that the Opitz Boulevard Ramp Project's success is dependent upon the ability of Construction Contractor and the Contractor to perform their respective obligations in a cooperative, collaborative and integrated manner. To help accomplish this, Concessionaire, Construction Contractor and Contractor agree to follow all aspects of the TMS Special Provisions and the TMS Interface Plan attached hereto as Exhibit N and Exhibit O and will reasonably cooperate with each other to achieve timely completion of the Opitz Boulevard Ramp Project.

2.1.25 Electronic Document Management System. Contractor shall maintain a one record copy of all of this Agreement and the Comprehensive Agreement, in good order and marked currently to record all changes, and a complete set of all working drawings required to be maintained for the TMS Project pursuant to Laws. These shall be available upon request of Concessionaire and the Department. Contractor shall utilize Concessionaire's electronic document management system for submittals and other documents as required by this Agreement.

2.1.26 Commissioning. Commencing as soon as practicable prior to start-up operations, but in any event in accordance with the TMS Work Schedule, Contractor shall commission the TMS Project as more specifically provided in Section 6.1 hereof.

2.1.27 [Reserved].

2.1.28 Start-up and Initial Operation. The TMS Work shall include the start-up of components, calibration of controls, initial operation of the ETTM System and each portion thereof, total system function and verification tests and all other start-up and initial operation functions pertaining to the ETTM System.

2.1.29 Quality Management System. In accordance with Laws, Applicable Standards and this Agreement, Contractor shall be responsible for all quality assurance and quality control activities necessary to manage the development, design and completion of the TMS Project and shall develop and provide to Concessionaire the Quality Plan in accordance with the Deliverables List as a condition precedent to issuance of the Notice to Proceed. Contractor shall provide the Quality Plan to Concessionaire, in a form to be approved by Concessionaire no later than thirty (30) days prior to the issuance of the Notice to Proceed. In the event the Concessionaire request any edits, deletions or additions made to the Quality Plan, the Contractor shall make such edits, deletions or additions and return to Concessionaire in a timely manner. Contractor shall fully observe and implement, and cause all Subcontractors to fully observe and implement, the Quality Plan (including the provisions thereof relating to the non-conforming work) until Opitz Boulevard Ramp Final Completion. Contractor shall provide oversight and management of the TMS Project to control the scope, quality, cost, and on-time delivery of the TMS Work and if the TMS Work is not being performed in compliance with the Quality Plan, Contractor shall increase and improve its management and oversight efforts such that repair or replacement of non-conforming items does not require any increase in Concessionaire's oversight of the TMS Project. The Parties acknowledge that, pursuant to the Comprehensive Agreement, the Department has the right to review Contractor's Quality Plan, including the right to inspect TMS Work or activities and to verify the accuracy and adequacy of quality management documentation. Contractor agrees to provide, and cause its Subcontractors to provide, the access and assistance as the Department may reasonably require conducting such reviews. All tests, inspections and quality assurance procedures required by this Agreement, or recommended by Subcontractors, shall be in addition to, and not in lieu of, applicable Quality Plan activity. Contractor shall regularly document and report to Concessionaire its compliance with the Quality Plan in accordance with the procedures contained therein.

2.1.30 Public Information. During the design and construction of the Opitz Boulevard Ramp Project, Contractor will assist Concessionaire with providing information relating to the TMS Work for dissemination to the public concerning the Opitz Boulevard Ramp Project in accordance with the plan therefor to be developed by Concessionaire.

2.1.31 Further Assurances. Contractor shall execute and deliver all further instruments and documents, and take all further action, including but not limited to assisting Concessionaire in filing a notice of commencement and a notice of completion with the appropriate state and local lien recording offices, that Concessionaire may reasonably request in order to enable Contractor to complete performance of the TMS Work or to effectuate the purposes or intent of this Agreement, the Opitz Construction Contract and the Comprehensive Agreement.

2.2 Contractor's Assumption of Risk for Project Site Conditions; No Concessionaire's Warranties for Site Information.



2.2.1 Contractor's Assumption of Risk of Site Conditions. Other than with respect to failure of the Concessionaire-Supplied Equipment and Facilities to meet the requirements of this Agreement, Concessionaire expressly disclaims any responsibility for, and Contractor expressly waives its right to seek any increase in the Contract Sum or extension to the Opitz Boulevard Ramp Guaranteed Final Completion Date for, any conditions at or on the TMS Work Site except as expressly provided in this Agreement.

2.2.2 No Concessionaire's Warranties for Site Information. Concessionaire makes no warranties or representations as to any surveys, data, reports or other information provided by Concessionaire, the Department or other Persons to Contractor concerning surface or subsurface conditions, the existing condition of the roadway and other "Assets" (as defined in the Comprehensive Agreement), drainage, the presence of Utilities, Hazardous Substances, contaminated ground water, archeological, paleontological and cultural references and endangered and threatened species, affecting the TMS Work Site or surrounding locations. Without prejudice to Contractor's right to claim a Scope Change Order under Sections 12.5 and 12.6, Contractor acknowledges that such information is for Contractor's reference only and has not been verified by Concessionaire or the Department.

### 2.3 Commencement of the TMS Work.

2.3.1 Notice to Proceed. Contractor shall commence performance of the TMS Work on the date specified by Concessionaire in a written notice that shall be delivered to Contractor in the form set forth as Exhibit A hereto (the "**Notice to Proceed**"), the date specified in such Notice to Proceed shall constitute the "**Commencement Date**".

#### 2.3.2 Reserved.

2.4 Standard of Performance. With respect to Contractor's performance of the TMS Work, subject to the terms and conditions of this Agreement, (i) Contractor shall comply with, and shall cause the TMS Work and the TMS Project and all components thereof (including the specification, design, engineering, integration, testing and start-up of the TMS Project and all equipment included within the TMS Project) to comply with, the Standard of Care, Laws, Applicable Standards, the Technical Requirements, the Comprehensive Agreement and any other provisions of this Agreement, and (ii) all engineering and design services shall be provided in accordance with the Comprehensive Agreement, Laws, Applicable Standards, the Technical Requirements and the Standard of Care. Except as otherwise expressly provided in this Agreement, the standard of performance set forth in this Section 2.4 shall apply to all aspects of the TMS Work, and this Section 2.4 shall be deemed to be incorporated by reference into each provision of the Comprehensive Agreement describing the TMS Work, Contractor's obligations to perform the TMS Work, or referring to the "requirements of this Agreement" or words of similar effect.

2.5 Compliance with Laws. Contractor shall comply with and shall cause the TMS Work and the TMS Project and all components thereof (including without limitation the design, engineering and completion of the TMS Project) to comply with all Laws as they may be in effect at the time of Contractor's performance hereunder. Notwithstanding the foregoing, the effect of any Change in Law (excluding therefrom any change in Governmental Approvals resulting from

the acts or omissions of Contractor or any Subcontractor) shall be determined under Sections 12.5 and 12.6. In addition, Contractor shall maintain all licenses required by Law.

2.6 Reserved.

2.7 Safety Precautions.

2.7.1 General Requirements. Contractor recognizes the importance of performing the TMS Work in a safe manner so as to prevent damage, injury or loss to: (i) all individuals at the Project Right of Way, whether working or visiting; (ii) the TMS Work, including materials and equipment incorporated into the TMS Work or stored on-TMS Work Site or off-TMS Work Site; and (iii) all other property at the Project Right of Way or adjacent thereto. Contractor assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the TMS Work. Contractor and Subcontractors shall comply with: (i) all Laws relating to safety; (ii) Contractor's Health and Safety Plan; and (iii) any Concessionaire-specific safety requirements set forth in the Scope of Work; provided that such Concessionaire-specific requirements do not violate any Laws. Contractor will immediately report in writing any safety-related injury, loss, damage or accident arising from the TMS Work to Concessionaire's Work Representative and, to the extent mandated by Laws, to all Governmental Authorities having jurisdiction over safety-related matters involving the TMS Project or the TMS Work. Contractor shall provide, for Concessionaire's Review, the Health and Safety Plan program within thirty (30) days of the Opitz Boulevard Ramp Service Commencement Date.

2.7.2 No Relief. Contractor's responsibility for safety under this Section 2.7 is not intended in any way to relieve Subcontractors of their own contractual and legal obligations and responsibility for: (i) complying with all Laws, including those related to health and safety matters; and (ii) taking all necessary measures to implement and monitor all safety precautions and programs to guard against injury, Losses or accidents resulting from their performance of the TMS Work.

2.8 Federal and State Requirements. In performing the TMS Work Contractor shall comply, and cause all Subcontractors to comply, with all Laws applicable to the Opitz Boulevard Ramp Project including the applicable Federal Requirements and Civil Rights Requirements attached as Exhibit V. Contractor acknowledges and agrees that the USDOT will have certain approval rights with respect to the Opitz Boulevard Ramp Project, including the right to provide certain oversight and technical services with respect to the Work. Contractor will (i) cooperate with USDOT and provide such access to the TMS Project and information as USDOT may request in the exercise of USDOT's duties, rights and responsibilities in connection with the Opitz Boulevard Ramp Project and (ii) upon Concessionaire's request, provide to Concessionaire data and other information regarding the TMS Project. Furthermore, in accordance with Section 2.2-4311.1 of the VA Code, Contractor hereby certifies that it does not and agrees that it will not, during the term hereof, knowingly employ an unauthorized alien as defined in the Federal Immigration Reform and Control Act of 1986. Contractor further agrees that it will require all of its Subcontractors to certify that they do not and will not knowingly employ an unauthorized alien as defined by such Act.

2.9 Ethical Standards. Contractor shall comply with and enforce, and cause its directors, members, officers and supervisory and management personnel, and require those of its Subcontractors to adhere to and enforce, the written policies adopted by Concessionaire. Without limiting the foregoing, Contractor further agrees: (i) no gifts, gratuities, or favors of any nature whatsoever will be given or offered by it to personnel of the Department; and (ii) it will not employ any personnel of the Department for any services during the TMS Work Period without the prior written consent of the Department. If the Department determines, after investigation, that Contractor or any of its employees, representatives, or agents of any person acting in its behalf have violated this provision, Contractor may, at the discretion of the Department, be disqualified from bidding on future contracts with the Department for a period of six (6) months from the date of the Department's determination of such a violation. Any implicated employees, agents, or representatives of Contractor may be prohibited from working on any contract awarded by the Department for the period of disqualification.

2.10 Concessionaire's Right to Carry Out TMS Work. If Contractor defaults or neglects to carry out the TMS Work in accordance with the requirements of this Agreement or if there are defects or deficiencies in the TMS Work that Contractor refuses or neglects to repair, in each case after giving effect to and without limiting Contractor's right to cure or repair or correct performance as provided in this Agreement, and Contractor fails within thirty (30) days after receipt of written notice from Concessionaire to commence and continue correction of such default, neglect, defect or deficiency with diligence and promptness, Concessionaire may, without prejudice to any other remedy Concessionaire may have, correct same or cause it to be corrected in accordance with this Agreement. In the event Concessionaire exercises its rights hereunder, an appropriate Scope Change Order shall be issued by Concessionaire deducting from the payments then or thereafter due Contractor the reasonable, documented, out-of-pocket cost of correcting such default, neglect, defect or deficiency. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Concessionaire within thirty (30) days after Concessionaire issues an invoice for such amount together with supporting documentation.

2.11 Concessionaire Approvals; Technical Requirements.

2.11.1 In all cases where an approval, review, comment, consent, notification, determination, decision or other response (a "**Response**") is required to be provided hereunder, such Response will not be withheld or delayed unreasonably and such determinations will be made reasonably (and not unreasonably delayed) except in cases where a different standard (such as, by way of example only, sole discretion) is specified in this Agreement or the Deliverables List. In cases where sole discretion is specified for an approval, consent, determination or other decision, the decision will not be subject to the dispute resolution procedures hereunder; in other cases, Contractor may refer the matter to the dispute resolution process set forth in Article 19. Concessionaire will provide within nineteen (19) days after a request by Contractor its rationale (including Concessionaire's rationale), in reasonable detail, for any disapproval or deemed disapproval of any matter where Concessionaire has sole discretion to approve or disapprove.

2.11.2 Concessionaire's review of a resubmittal or request will be limited to the issue, condition or deficiency which gave rise to the Concessionaire's disapproval and will not extend to other aspects for which a notice of disapproval was not previously provided to Contractor

unless the issue, condition or deficiency which gave rise to Concessionaire's disapproval reasonably relates to Concessionaire's disapproval for which notice was previously provided. Where the Technical Requirements or the Scope of Work imposes an obligation on Concessionaire to act by or within a specified time and Contractor is obligated as part of the TMS Work to fulfill such obligation on behalf of Concessionaire, Contractor shall fulfill such obligation within the time specified by the Technical Requirements or the Scope of Work, and, unless this Agreement or the Deliverables List provides otherwise with respect to a given item.

2.12 Department and Concessionaire Oversight. Contractor acknowledges that Concessionaire and the Department have the right to oversee the Work, including the TMS Work, and Contractor shall cooperate with Concessionaire and Department to facilitate their conduct of such oversight of the TMS Work. If a failure by Concessionaire to perform its obligations under the Comprehensive Agreement is a result of Contractor's failure to perform its obligations hereunder, then Contractor will, on behalf of Concessionaire if Concessionaire is required by the Comprehensive Agreement, compensate the Department for all "Allocable Costs" incurred by the Department as a result of any increased level of monitoring from and after the date on which such increased level of monitoring begins, not to exceed two hundred fifty thousand dollars (\$250,000) in the aggregate. If the increased monitoring is due to a delay in achieving Opitz Boulevard Ramp Service Commencement, Contractor will submit a cure plan to the Department (through Concessionaire) describing specific actions Contractor will undertake to improve its performance and avoid the need for increased monitoring, which the Department may accept or reject under the Comprehensive Agreement, and if the Department accepts a cure plan, the Department has agreed under the Comprehensive Agreement not to increase its monitoring or other oversight services unless Concessionaire (or Contractor for the purposes of this Agreement) fails to diligently pursue such cure plan. In addition, Contractor shall, on behalf of Concessionaire, accommodate the Department's and FHWA's rights under the Comprehensive Agreement with respect to the TMS Work, including, but not limited to, the right of access to the TMS Work Site and the right to inspect the TMS Work-related records subject to and in accordance with the requirements of the Comprehensive Agreement. Notwithstanding anything to the contrary in this Agreement, this Agreement shall not impose any obligations, duties or liabilities upon Concessionaire or the Department beyond those obligations, duties, or liabilities expressly assumed by the Concessionaire or the Department under the Comprehensive Agreement and Concessionaire under this Agreement. Further, nothing in this Agreement shall create any direct cause of action by Contractor against Concessionaire or the Department.

## ARTICLE 3

### SUBCONTRACTS

3.1 Opitz Boulevard Ramp Project Subcontractors. Contractor may enter into Subcontracts for any portion of the TMS Work. Further, substitutions of equipment are not allowed without Concessionaire's Approval. Contractor will not enter into any Subcontract with any Person if that Person or any of its affiliates (as "affiliate" is defined in 29 CFR § 98.905), or any of their respective officers, directors and employees, (i) is then suspended or debarred, subject to a proceeding to suspend or debar it, or subject to an agreement for voluntary exclusion, from bidding, proposing or contracting with any federal or State department or agency, (ii) has been convicted, pled guilty or nolo contendere to a violation of Law involving fraud, conspiracy,

collusion, bribery, perjury, material misrepresentation, or any other violation that shows a similar lack of moral or ethical integrity or (iii) is then barred or restricted from owning, operating or providing services for the Opitz Boulevard Ramp Project under Law, including the Foreign Investment and National Security Act of 2007, 50 USC App. 2170 (HR556). Payments to Subcontractors. From and after the Commencement Date, Contractor shall be solely responsible for paying each Subcontractor and any other Person to whom any amount is due from Contractor for services, equipment, materials or supplies in connection with the TMS Project. Pursuant to VA Code § 2.2-4354, Contractor agrees that, within seven (7) days following receipt of monies from Concessionaire for TMS Work performed by any Subcontractor, Contractor shall either: (a) pay the Subcontractor for the proportionate share of the total payment received from Concessionaire attributable to the TMS Work performed by the Subcontractor (excluding contractual retainage); or (b) notify Concessionaire and Subcontractor, in writing, of Contractor's intention to withhold all or a part of the Subcontractor's payment, specifying the reason for the non-payment. Contractor also agrees that it shall include in all of its Subcontracts a provision that: (a) obligates Contractor to pay interest to Subcontractors on all amounts owed by Contractor that remain unpaid after seven (7) days following receipt of monies from Concessionaire for TMS Work performed by any Subcontractor, except for amounts withheld as allowed in this Section 3.2; (b) states, "Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month."; and (c) obligates each Subcontractor to include or otherwise be subject to the same payment and interest requirements as specified in this Section 3.2 with respect to each lower-tier Subcontractor. Contractor's obligations to pay an interest charge to a Subcontractor shall not be construed to be an obligation of Concessionaire, nor shall any modification to this Agreement be allowed for the purpose of providing reimbursement for the interest charge. Cost reimbursement Claims shall not include any amount for reimbursement for the interest charge. Subcontractor Warranties. Subject to Section 10.1.5, Contractor shall, for the protection of Concessionaire and the Department, obtain from all Subcontractors guarantees and warranties on all machinery, equipment, services, materials, supplies and other items used and installed hereunder, and such guarantees and warranties shall not be amended, modified or otherwise discharged without the prior written consent of Concessionaire. Contractor shall use Commercially Reasonable Efforts to cause such guarantees and warranties from Subcontractors having Subcontracts for amounts in excess of \$500,000 to cover periods of not less than two (2) years from the date of Opitz Boulevard Ramp Final Completion and to include parts, shipping, service and labor for all warranty repairs with respect thereto. Contractor shall enforce guarantees and warranties to the fullest extent thereof on behalf of Concessionaire and the Department until expiration of the Warranty Period. Subject to Section 10.1.5, at Concessionaire's request or, if later, upon the expiration of the Warranty Period, Contractor shall assign to Concessionaire all guarantees and warranties of all Subcontractors then remaining in effect; provided, however, that (i) such assignment shall not relieve Contractor of its warranty obligations under either the Comprehensive Agreement or this Agreement and (ii) Contractor shall have the prior right to enforce the guarantees and warranties of Subcontractors to the extent necessary to enforce any claims of Contractor against such Subcontractor and to assure satisfaction of Contractor's warranty obligations to Concessionaire under this Agreement or the Comprehensive Agreement. Neither Contractor, nor any Subcontractor or any Person under Contractor's control, shall take any action which could release, void, impair or waive any warranties or guarantees on equipment, materials or services that it procures from others.

3.4 No Privity. Concessionaire shall not be deemed by virtue of this Agreement to have any contractual obligation to or relationship with any Subcontractor.

3.5 Subcontracts. In addition to the requirements set forth in Section 3.2, each Subcontract that Contractor executes for the performance of the TMS Work will:

(i) include a provision requiring the Subcontractor to maintain all licenses required by Law;

(ii) contain or incorporate by reference the essential terms of this Agreement;

(iii) provide that such Subcontract may be freely assigned to Concessionaire upon the request of Concessionaire following termination of this Agreement; and

(iv) name the Department as third-party beneficiaries of all Subcontractor's representations and warranties contained in such Subcontract; provided, that the Department has agreed under the Comprehensive Agreement that it will only exercise its rights under such representations and warranties only so long as Contractor or Concessionaire is not pursuing remedies under such Subcontract.

3.6 Review and Approval not Relief of Contractor's Liability. Concessionaire's Review and Concessionaire's Approval of the identity of vendors supplying equipment in accordance with Section 3.1 above shall not relieve Contractor of any of its duties, liabilities or obligations under this Agreement or the Comprehensive Agreement. Any inspection, review or approval by Concessionaire or any other Person permitted under this Agreement or Comprehensive Agreement of any portion of the TMS Work or of any TMS Work in progress by Contractor or Subcontractors shall not relieve Contractor of any duties, liabilities or obligations under this Agreement or the Comprehensive Agreement.

## ARTICLE 4

### PRICE AND PAYMENT

4.1 Contract Sum and Allowances. As consideration to Contractor for the full and complete performance of the TMS Work in accordance with the terms hereof and all costs incurred in connection therewith, Concessionaire shall pay, and Contractor shall accept, a firm, fixed-price, lump sum equal to One Million, Nine Hundred Ninety-eight Thousand, Eight Hundred Ninety-four Dollars and Zero Cents (\$1,998,894.00) to be paid in installments as set forth in Section 4.2 hereof (such amount, as it may be adjusted from time to time in accordance with this Agreement, herein referred to as the "**Contract Sum**"). Other than as expressly specified in this Agreement, the Contract Sum is not subject to adjustment for any reason other than pursuant to a Scope Change authorized by Concessionaire or to which Contractor is entitled to claim as specified herein.

4.2 Payment Schedule. The Contract Sum shall be paid by Concessionaire to Contractor in monthly installments ("**Scheduled Payments**") based on percentage completion of

the TMS Work as demonstrated by Contractor and verified by Concessionaire subject to the Maximum Cumulative Drawdown Schedule and in accordance with the Payment and Values Schedule, as may be adjusted from time to time pursuant to the terms of this Agreement.

4.2.1 Request for Payment. By no later than the tenth (10) day of each month, Contractor shall submit a draft invoice for Concessionaire's concurrence containing a brief and accurate description of all TMS Work performed as of the first day of such month. By no later than the fifteenth (15th) day of each month, Contractor shall submit to Concessionaire a mutually agreed upon request for payment consisting of (a) a final agreed upon invoice in the amount of the applicable Scheduled Payment; (b) a certificate signed by the Contractor that Contractor has achieved the appropriate percentage of completion required for such Scheduled Payment in accordance with the Payment and Values Schedule and attaching reasonable documentary evidence of the performance of the relevant portion of the TMS Work sufficient for Concessionaire and the Lenders' Technical Advisor, if applicable, to reasonably determine that such portion of the TMS Work has been properly performed; and (c) copies of the lien waivers specified in Section 4.5 or a bond meeting the requirements set forth in Section 4.5 with respect to any lien not waived. Notwithstanding anything to the contrary contained herein, Concessionaire shall not be obligated to make any payment to the extent that such payment, when added to all other previous payments, exceeds the total amount designated as the "**Maximum Cumulative Payment**" for the corresponding month on the Maximum Cumulative Drawdown Schedule. Also, with each payment request, Contractor shall furnish to Concessionaire all cost details relating to such payment request as necessary for Concessionaire to satisfy the legal requirements of all Governmental Authorities. Such information shall be subject to audit in accordance with Section 20.2 hereof. Concessionaire and Contractor shall use all reasonable efforts to cooperate with each other to cause each request for payment to be reviewed and certified by the end of each calendar month. No request for payment pursuant to this Section 4.2.1 shall be submitted prior to the issuance of a Notice to Proceed in accordance with Section 2.3.1.

4.2.2 Conditions to Scheduled Payments. Subject to the terms of this Agreement, and provided that Concessionaire has received Contractor's request for payment in accordance with Section 4.2.1 above, Concessionaire shall make, or cause to be made, the corresponding Scheduled Payment in compliance with VA Code § 2.2, et seq., which addresses prompt payment; provided, however, that Concessionaire may withhold all or part of any Scheduled Payment upon the occurrence of any of the following events, and provided, further, that, other than upon the occurrence of an event described in (i), (ii), and (vii) below, Concessionaire will only withhold such portion of the Scheduled Payment necessary to protect itself:

(i) Contractor's request for payment does not meet the requirements of Section 4.2.1(a), (b) and (c) hereof;

(ii) Contractor has not supplied Concessionaire with (A) the certification and the interim lien waivers as described in Section 4.5 hereof or (B) the Monthly Progress Report for the month for which the request for payment has been made as described in Section 2.1.18 hereof;

(iii) one or more third parties have filed a mechanics' lien or similar Claim against Concessionaire, the Opitz Boulevard Ramp Project or Project

Right of Way resulting from the actions or inactions of Contractor, any of its Subcontractor, or any person for whom Contractor is legally responsible, and Contractor has not furnished in respect thereof a bond meeting the requirements of the penultimate sentence of Section 4.5 hereof;

(iv) Contractor has failed to make timely payments to Subcontractors as required under applicable Subcontracts and Law; provided, however, that the foregoing shall not apply if Concessionaire has wrongfully withheld payments due to Contractor;

(v) Contractor fails to pay any amounts owing to Concessionaire under this Agreement or the Comprehensive Agreement;

(vi) any event which would permit a Termination For Cause of this Agreement by Concessionaire has occurred and is continuing beyond any applicable cure period; or

(vii) this Agreement is terminated before the Final Payment is made, in which event Concessionaire shall not be obligated to make further Scheduled Payments or other payments except in accordance with Section 4.4 or Section 15.2 hereof, as applicable.

4.2.3 Deferral of Scheduled Payments. Contractor shall re-invoice at the next regular monthly invoicing date any Scheduled Payment or portion thereof withheld under Section 4.2.2 once the cause for such withholding has been removed or resolved, and Concessionaire shall make such Scheduled Payment, other than any portion thereof in dispute, without interest, if all the conditions to the Scheduled Payment have been satisfied. Contractor shall continue to perform the TMS Work, notwithstanding a withholding by Concessionaire under Section 4.2.2.

4.2.4 Interest on Late Payments. Any undisputed amount not paid when due shall bear interest at the Bank Rate from the date such payment is due until the date it is actually paid. Any disputed amount which is ultimately determined to be payable shall bear interest at the Bank Rate from the date of such determination until the date it is actually paid.

4.3 Final Payment. Following Opitz Boulevard Ramp Final Completion, Contractor shall submit to Concessionaire its request for the unpaid balance of the Contract Sum (the “**Final Payment**”) consisting of (i) the countersigned Opitz Boulevard Ramp Final Completion Certificate, (ii) a final list and summary of the TMS Work performed by all Subcontractors, the amount due to each Subcontractor, and certification by Contractor that all undisputed amounts due to Subcontractors have been paid in full, (iii) a final lien waiver, in the form of Exhibit B, of all liens that Contractor may have against Concessionaire, the Opitz Boulevard Ramp Project and the Project Right of Way, (iv) final lien waivers in the form of Exhibit C (or, solely in the case of vendors providing materials or equipment valued at less than \$50,000 in the aggregate, other evidence reasonably satisfactory to Concessionaire demonstrating that such vendor has waived or is not entitled to place any lien on any part of the Opitz Boulevard Ramp Project or the Project Right of Way) from each Subcontractor with a Subcontract of more than \$50,000 in value (and



from such other Subcontractors as may be necessary such that the aggregate value of all Subcontracts for which a final release and waiver has not been obtained does not exceed \$1,000,000) or, if Contractor is unable to obtain all such waivers, a letter of credit or bond that has received Concessionaire's Approval to protect Concessionaire, the Department, the Opitz Boulevard Ramp Project and the Project Right of Way from any and all Claims made on account of such liens, (v) the satisfaction of all other conditions to a Scheduled Payment contained in this Agreement or to which Contractor has otherwise agreed and (vi) an invoice in the amount of the Final Payment. Concessionaire may withhold from the Final Payment the amount of all Subcontracts for which a final release and waiver has not been obtained or for which Contractor has not provided a satisfactory payment bond to protect the Opitz Boulevard Ramp Project, Department and Concessionaire. Concessionaire shall pay over to Contractor the relevant portions of such withheld amount when the statutory period by which any liens may be created has expired without such liens having been created.

4.4 Termination Payment. Upon a termination of this Agreement pursuant to Section 15.3 hereof, Contractor shall be entitled to receive a termination payment (the "**Termination Payment**") equal to the sum of (i) that portion of the Contract Sum, which is due and payable to Contractor by Concessionaire and applicable to the TMS Work completed up to the date of termination and which has not previously been paid to Contractor, (ii) the direct, out-of-pocket costs reasonably incurred by Contractor in withdrawing its equipment and personnel from the Project Right of Way and in otherwise demobilizing, and (iii) the direct, out-of-pocket costs reasonably incurred by Contractor in terminating contracts with Subcontractors. Representatives of Concessionaire and Contractor shall determine the Contract Sum amount referred to in clause (i) above in accordance with the Payment and Values Schedule, and Contractor shall document in detail the costs claimed under clause (ii) above to Concessionaire's reasonable satisfaction and shall supply Concessionaire with copies of the Subcontractor invoices covering amounts claimed under clause (iii) above. Contractor shall submit an invoice to Concessionaire for the Termination Payment with the supporting information and documents referred to above, and Concessionaire shall pay such invoice within thirty (30) days after its receipt of same subject to the provisions of this Section 4.4 and unless it disputes certain elements thereof, in which event only the undisputed portion of the Termination Payment need be made within such 30-day period and the dispute over the remainder of the claimed Termination Payment may be submitted to the appropriate dispute resolution process set forth in Article 19. The Termination Payment shall be subject to offset for amounts payable by Contractor to Concessionaire. As a condition precedent to receiving the Termination Payment, Contractor shall comply with all the provisions of Section 15.6 hereof. Payment of the Termination Payment shall be the sole and exclusive liability of Concessionaire, and the sole and exclusive remedy of Contractor, with respect to termination of this Agreement pursuant to Section 15.3 hereof, but it will not affect Contractor's right to receive amounts otherwise due and unpaid hereunder prior to termination. In no event shall Concessionaire have any further liability to Contractor in any such event for actual, incidental, consequential or other damages, notwithstanding the actual amount of damages that Contractor may have sustained in connection with a termination pursuant to Section 15.3 hereof. Calculation of the Termination Payment has been agreed upon and fixed hereunder because of the difficulty of ascertaining the exact amount of such damages Contractor will actually sustain in the event of a termination of the TMS Work pursuant to Section 15.3 hereof, and Concessionaire and Contractor agree that the calculation of the Termination Payment is reasonable. Notwithstanding

the forgoing, no Termination Payment will be due to Contractor under this Agreement unless Notice to Proceed has been issued pursuant to Section 2.3.1.

4.5 All Payments Subject to Release of Liens. At the time of each Scheduled Payment hereunder, Contractor shall (a) certify to Concessionaire that the Opitz Boulevard Ramp Project, the Project Right of Way and any and all interests and estates therein, and all improvements and materials placed on the Project Right of Way, are, to the extent of the most recent payment received by Contractor, free from any and all Claims, liens, security interests or encumbrances in the nature of mechanics', labor or materialmen's liens or otherwise, arising out of or in connection with performance by Contractor, or any Subcontractor, of the TMS Work, and (b) provide an interim lien waiver, in the form of Exhibit D hereto (or, solely in the case of vendors providing materials or equipment valued at less than \$50,000 in the aggregate, other evidence reasonably satisfactory to Concessionaire demonstrating that such vendor has waived or is not entitled to place any lien on any part of the Opitz Boulevard Ramp Project or the Project Right of Way), of Contractor's lien Claims, to the extent of the most recent payment received by Contractor, and interim lien waivers, in the form of Exhibit E hereto, from each Subcontractor with a Subcontract in excess of \$50,000, to the extent of the most recent payment received by Contractor, as are necessary to support Contractor's certificate. If any Claim, lien, security interest or encumbrance is filed or notification of withholding money for labor or material furnished under this Agreement is served on Concessionaire or the Department, Concessionaire may withhold from any Scheduled Payment or other amount payable to Contractor under this Agreement or otherwise, an amount sufficient to discharge any or all such liens or Claims, unless Contractor shall furnish a bond in form, substance and amount reasonably satisfactory to Concessionaire or the Department to protect Concessionaire, the Opitz Boulevard Ramp Project and the Project Right of Way against such liens or Claims, and, after thirty (30) days from the time such lien or Claim is made, unless Contractor shall have furnished a bond as described above, Concessionaire may discharge such lien or Claim with the moneys withheld, whereupon for purposes of this Agreement such moneys shall be deemed to have been paid to Contractor hereunder. In addition, Contractor shall deliver to Concessionaire a final release and waiver of liens, in the form of Exhibit B hereto with Contractor's final invoice to Concessionaire.

4.6 Payment or Use Not Acceptance. No Scheduled Payment or other payment to Contractor or any use of the TMS Project by Concessionaire shall alone constitute an acceptance of any of the TMS Work or relieve Contractor of any of its obligations or liabilities with respect thereto.

4.7 Set-Off. Concessionaire may deduct and set-off against any part of the balance due or to become due to Contractor under this Agreement, any amounts due from Contractor to Concessionaire under or in connection with this Agreement, including any Late Completion Payment due or to become due from Contractor to Concessionaire pursuant to Article 7.

4.8 Reserved

4.9 Letter of Credit. No later than 15 days following the Commencement Date, Contractor shall provide Concessionaire with a Letter of Credit in the form of Exhibit H hereto in an amount equal to one hundred percent (100%) of the Contract Sum as security for Contractor's performance of its obligations hereunder and will be subject to draw by Concessionaire for the

first two (2) years of the Warranty Period. If any General Warranty Claims remain unresolved as of the date the Letter of Credit (or applicable portion thereof) is otherwise permitted to expire pursuant to the preceding sentence, Contractor shall cause the Letter of Credit (or applicable portion thereof) to remain in effect through the date of resolution of such General Warranty Claims; provided that the amount of the Letter of Credit (or applicable portion thereof) shall be reduced following the end of the first two (2) years of the applicable Warranty Period to an amount equal to one hundred fifty percent (150%) of the total amount of such outstanding Claims. The items on Concessionaire's Punch List shall be completed by Contractor within sixty (60) days after the Opitz Boulevard Ramp Guaranteed Final Completion Date, and Concessionaire may draw on the Letter of Credit and use the proceeds of such drawing to provide for the prompt completion of the items remaining on Concessionaire's Punch List after such sixty (60) day period.

For so long as Contractor is obligated to maintain the Letter of Credit, not later than thirty (30) days prior to the stated expiration date of the Letter of Credit, Contractor shall renew, or cause the renewal of, outstanding Letter of Credit, or replace, or cause the replacement of, such Letter of Credit with one or more replacement Letters of Credit having a stated amount equal to that of the Letter of Credit being renewed or replaced (or in such lesser amount as may then be required under this Agreement). For so long as Contractor is obligated to maintain the Letter of Credit, in the event (i) the issuer of a Letter of Credit shall fail to be a commercial bank or trust company that (x) has a combined capital and surplus of at least \$1,000,000,000 U.S. Dollars, (y) is a national banking association, a state bank chartered in one of the states of the United States, or the U.S. branch of a foreign bank, and (z) is not an Affiliate of Contractor or Concessionaire or (ii) an issuer of a Letter of Credit shall fail to honor the beneficiary's properly documented request to draw on an outstanding Letter of Credit, then within five (5) Business Days thereafter Contractor shall provide a substitute Letter of Credit from an issuer other than the bank that has failed to honor the outstanding Letter of Credit; provided, that if the issuer of a Letter of Credit fails to maintain a credit rating of at least A- or its equivalent from at least two nationally recognized Rating Agencies (or such other credit rating as is acceptable to Concessionaire in its discretion and approved by it prior to the submission of the letter of credit), within thirty (30) days thereafter, Contractor shall provide a substitute Letter of Credit from an issuer other than the bank that has been downgraded. If Concessionaire does not receive a replacement Letter of Credit from an issuer within the applicable time specified in either of the two preceding sentences, it may draw on the full available amount of the Letter of Credit. Amounts drawn in such circumstances shall be held directly by Concessionaire and shall be available to be applied by Concessionaire under the conditions set forth in the Letter of Credit. In all cases, the costs and expenses of establishing, renewing, substituting, canceling, increasing, reducing or otherwise administering a Letter of Credit shall be borne by Contractor.

## ARTICLE 5

### CONCESSIONAIRE'S OBLIGATIONS

5.1 Representatives. Concessionaire shall designate a representative (the "**Concessionaire's Project Director**") to administer this Agreement on behalf of Concessionaire. Concessionaire's Project Director shall have the authority to (a) issue Concessionaire's instructions and other communications to Contractor, (b) determine achievement of milestones under the Payment and Values Schedule, (c) issue Concessionaire's determination regarding Opitz

Boulevard Ramp Service Commencement, Opitz Boulevard Ramp Final Completion, the Contractor's Punch List and the Concessionaire's Punch List, and (d) execute Proposal Requests and Scope Change Orders. Concessionaire's Project Director shall be the recipient of notices and other written communications from Contractor under this Agreement. In furtherance of his/her responsibilities described hereunder, Concessionaire's Project Director may conduct observations and inspections of the TMS Project throughout design, provided that no such observations or inspections shall relieve Contractor of any of its obligations under this Agreement. Concessionaire shall also designate a representative to observe the TMS Work on the TMS Work Site ("**Concessionaire's Work Representative**"). Concessionaire's Work Representative shall have the right to be present at the TMS Work Site at all times and to participate in weekly TMS Project status meetings conducted by Contractor, and to participate in coordination meetings between the Construction Contractor and Contractor. Concessionaire's Work Representative shall have the right to observe and inspect the progress of the TMS Project, and may offer advice to Contractor about the conformance of the TMS Work with this Agreement and the Comprehensive Agreement. However, Concessionaire's Work Representative shall not have the authority to make decisions or give instructions binding upon Concessionaire, except to the extent expressly authorized by Concessionaire in writing. In the event Concessionaire employs or designates a different Concessionaire's Project Director or Concessionaire's Work Representative, Concessionaire shall give Contractor written notice of the identity of the new Concessionaire's Project Director or Concessionaire's Work Representative. Concessionaire's Project Director or Concessionaire's Work Representative may delegate any or all of his/her authority to one or more delegates, but no such delegation shall be effective unless made in a written instrument from him/her delivered to Contractor naming the delegate, his/her tenure and the extent of his/her authority. In addition, Concessionaire shall have the right to retain one or more independent consultants to monitor and inspect the TMS Work at the TMS Work Site or specific portions of the TMS Work.

5.2 Project Right of Way; TMS Work Site. Concessionaire shall furnish Contractor access to the Project Right of Way. Construction Contractor shall be responsible for the TMS Work Site, including general security thereof, and the Project Right of Way. Contractor shall be responsible for the TMS Work Site and general security at the HOT Operations Center pursuant to the Shared Facilities Agreement.

5.3 Governmental Approvals. Concessionaire shall obtain or cause to be obtained all Governmental Approvals other than the Governmental Approvals that are designated as Contractor's responsibility pursuant to Section 2.1.7 hereof. Concessionaire shall cooperate with Contractor in connection with Contractor's efforts to obtain any Governmental Approvals that are designated as Contractor's responsibility herein.

5.4 Payments of Contract Sum. Concessionaire shall make all undisputed payments of the Contract Sum due to Contractor in accordance with Article 4.

5.5 Utilities. Concessionaire shall arrange, install and pay for the temporary and permanent Utilities required for the TMS Work as set forth in the Scope of Work.

5.6 Support Facilities. Concessionaire shall provide sufficient and appropriate first-aid facilities, sanitary facilities and potable water for the benefit of all personnel employed or expected

to be present at the Project Right of Way including Contractor's personnel, and all such facilities shall be maintained in a clean and orderly condition.

5.7 Concessionaire-Supplied Equipment and Facilities. Concessionaire shall cause to be provided the Concessionaire-Supplied Equipment and Facilities. In the event that Contractor's requirements or specifications for the Concessionaire-Supplied Equipment and Facilities materially differ from those requirements and specifications defined in the Scope of Work, Contractor shall compensate Concessionaire for any incremental cost in complying with such requirements or specifications.

## ARTICLE 6

### COMMISSIONING, COMPLETION AND ACCEPTANCE OF TMS PROJECT

6.1 TMS Project Commissioning. At least ninety (90) days before Commissioning of the TMS Project is scheduled to begin, and after significant discussion, interface and cooperation with the Construction Contractor, Contractor shall propose, for Concessionaire's Approval, a Test Strategy for the ETTM System, including a Commissioning schedule, an organization chart of Contractor's personnel conducting the Commissioning. Concessionaire through the Contractor shall coordinate with the Construction Contractor and OS&S Contractor for the provision of all labor necessary to start-up and Commission the ETTM System. Concessionaire shall provide its personnel or its Subcontractors' personnel as defined in the Test Strategy to participate in the commissioning of the Concessionaire-Supplied Equipment and Facilities. Concessionaire shall hand over Concessionaire-Supplied Equipment and Facilities in accordance with the requirements of the Test Strategy. Upon Concessionaire's acceptance of the Test Strategy for the ETTM System, Contractor shall proceed to commission the ETTM System.

6.2 TMS Project Start-Up. Contractor shall present to Concessionaire for Concessionaire's Approval a completed checklist of all documentation, equipment and systems reviewed during the Commissioning of the ETTM System. Following confirmation by Concessionaire that such checklist is complete and accurate and that Opitz Boulevard Ramp Service Commencement has been achieved, Contractor shall start up the TMS Project in accordance with the Standard of Care, this Agreement, the Comprehensive Agreement and a schedule of start-up procedures delivered by Contractor to, and approved by, Concessionaire at least ninety (90) days prior to start-up.

6.3 Performance Tests. Provided the TMS Project and all TMS Project systems included therein are capable of safe and continuous operation in accordance with the Standard of Care, the Comprehensive Agreement and any other provisions of this Agreement, subject to Concessionaire's Approval, Contractor shall conduct the Performance Tests. At least ninety (90) days prior to the date Contractor wishes to commence a Performance Test, Contractor shall provide to Concessionaire, for Concessionaire's Approval complete test procedures developed in accordance with the Test Strategy. Thereafter, Contractor shall give Concessionaire at least seven (7) Business Days' prior written notice of the date on which Contractor intends to commence each Performance Test. A Performance Test shall consist of the operation of the equipment and applicable systems included in the TMS Work in accordance with the Comprehensive Agreement, this Agreement and the Test Strategy. Concessionaire shall designate and make available qualified

and authorized representatives to observe the Performance Tests and to monitor the taking of measurements to determine the level of achievement of the conditions required to achieve Opitz Boulevard Ramp Service Commencement, all in accordance with the Comprehensive Agreement, this Agreement and the Test Strategy. Concessionaire and the Department may observe each Performance Test. The Department will be included in such Performance Tests for purposes of demonstrating effective information transfer across system interfaces, where applicable. Contractor shall not attempt to perform a Performance Test if any Commissioning, start-up or initial test procedures have not been completed as required prior to the Performance Test or any aspect of the TMS Project has not been completed sufficiently to assure the safe and continuous operation of all or any part of the TMS Project during the Performance Test in accordance with the Standard of Care, the Comprehensive Agreement, this Agreement and the Test Strategy.

6.4 Completed Performance Test. When Contractor believes it has successfully completed a Performance Test, Contractor shall provide Concessionaire a written report of the test results as part of the Opitz Boulevard Ramp Service Commencement delivered under Section 6.5 hereof. The performance results will be calculated in accordance with the Test Strategy guarantees, including any adjustments in the Test Strategy.

6.5 Opitz Boulevard Ramp Service Commencement of the TMS Project.

6.5.1 Conditions to Opitz Boulevard Ramp Service Commencement. Opitz Boulevard Ramp Service Commencement of the TMS Project shall be achieved hereunder if the following conditions have been met:

(i) the need for temporary traffic controls or for lane closures at any time which are part of the TMS Project has ceased (except for any then required for routine maintenance, and except for temporary lane closures during hours of low traffic volume in accordance with and as permitted by a Department-approved traffic management plan solely in order to complete Concessionaire's Punch List items);

(ii) Contractor has completed any required commissioning process described in the Technical Requirements, and the ETTM System is completed, has passed all demonstration and performance testing in accordance with the Technical Requirements, and is formally accepted and approved by the Department as ready for normal operation;

(iii) Contractor has concluded a Performance Test in which the TMS Project demonstrates a level of achievement deemed satisfactory in accordance with the Test Strategy;

(iv) Contractor has delivered either (i) (A) an interim lien waiver, in the form of Exhibit D hereto, of Contractor's lien Claims to the extent of most recent payment received by Contractor and (B) interim lien waivers, in the form of Exhibit E hereto, from each Subcontractor with respect to a Subcontract in excess of \$50,000, to the extent of the most recent payment received by such Contractor, as are necessary to support Contractor's certificate (or solely in the case

of vendors providing materials or equipment valued at less than \$50,000 in the aggregate, other evidence reasonably satisfactory to Concessionaire demonstrating that such vendor has waived or is not entitled to place any lien on any part of the Project Right of Way; or (ii) written evidence of posting of a bond by Contractor in the amount equal to the aggregate of amounts of all liens on any part of the Opitz Boulevard Ramp Project or the Project Right of Way that remain outstanding as of the Opitz Boulevard Ramp Service Commencement Date (or, if earlier, the date of the most recent payment to Contractor);

(v) Contractor has otherwise completed the TMS Work in accordance with this Agreement, including the Technical Requirements, the Comprehensive Agreement (including completion of any tasks within the Scope of Work necessary to satisfy the conditions set forth in Section 9.02(g) of the Comprehensive Agreement), such that the TMS Project is in a physical condition that it can be used for normal and safe vehicular travel in all lanes and at all points of entry and exit, except for any remaining items listed in Concessionaire's Punch List; and

(vi) as provided in Section 6.5.3, Contractor has delivered to Concessionaire the Opitz Boulevard Ramp Service Commencement Certificate for the TMS Work signed by Contractor and countersigned by Concessionaire.

6.5.2 Notice and Report of Opitz Boulevard Ramp Service Commencement of the TMS Project. At least thirty (30) days prior to the date when Contractor anticipates to achieve Opitz Boulevard Ramp Service Commencement, it shall deliver to Concessionaire a notice thereof (the "**Notice of Opitz Boulevard Ramp Service Commencement**"). The Notice of Opitz Boulevard Ramp Service Commencement shall contain a report of results of the Performance Test and a description of all TMS Work completed in a form reasonably acceptable to Concessionaire and with sufficient detail to enable Concessionaire to establish whether Opitz Boulevard Ramp Service Commencement has been achieved, as well as a Opitz Boulevard Ramp Service Commencement Certificate signed by Contractor.

6.5.3 Achievement of Opitz Boulevard Ramp Service Commencement of the TMS Project. Within fourteen (14) days after Contractor has provided the Notice of Opitz Boulevard Ramp Service Commencement to Concessionaire, then Contractor shall meet with Concessionaire (and the Department at Concessionaire's invitation) to confer and exchange information on a regular basis with the goal being Concessionaire obtaining concurrence from the Department in order to enable Concessionaire to countersign the Opitz Boulevard Ramp Service Commencement Certificate. Prior to the Opitz Boulevard Ramp Service Commencement Date, Concessionaire shall inspect the TMS Project and all TMS Work completed by Contractor, review the results of the Performance Test and the report submitted by Contractor, and either (a) deliver to Contractor the countersigned Opitz Boulevard Ramp Service Commencement Certificate, or (b) if reasonable cause exists for doing so (i.e., inability to obtain concurrence from the Department), notify Contractor that Opitz Boulevard Ramp Service Commencement has not been achieved stating in reasonable detail the reasons therefor. If Concessionaire notifies Contractor that Opitz Boulevard Ramp Service Commencement has not been achieved, Contractor shall promptly, at its own cost, take such action or perform such additional TMS Work as will permit

achievement of Opitz Boulevard Ramp Service Commencement, conduct another Performance Test, if necessary, and issue to Concessionaire a revised Opitz Boulevard Ramp Service Commencement Certificate signed by Contractor. For all purposes of this Agreement, the date of achievement of Opitz Boulevard Ramp Service Commencement shall be the date on which Concessionaire issues to Contractor such Opitz Boulevard Ramp Service Commencement Certificate that is countersigned by Concessionaire.

6.6 Opitz Boulevard Ramp Final Completion of the TMS Project. Opitz Boulevard Ramp Final Completion of the TMS Project may be achieved hereunder pursuant to Section 6.6.1 below.

6.6.1 Conditions to Opitz Boulevard Ramp Final Completion. Opitz Boulevard Ramp Final Completion of the TMS Project shall be achieved hereunder if the following conditions have been met:

- (i) the TMS Project is free and clear of all liens, Claims, security interests or encumbrances arising out of or in connection with the performance of the TMS Work by Contractor or any Subcontractor during the TMS Work Period;
- (ii) all items on Concessionaire's Punch List have been completed by Contractor in accordance with the Comprehensive Agreement and this Agreement;
- (iii) [reserved];
- (iv) Contractor has paid for all TMS Work required to achieve Opitz Boulevard Ramp Final Completion which was performed by third parties that Contractor is obligated to pay (other than disputed amounts and amounts that are not yet due and payable);
- (v) Contractor has delivered all certifications, if any, required under Section 2.1.2;
- (vi) Contractor has made all deliveries of Work Product to Concessionaire that are required to be made pursuant to this Agreement;
- (vii) Contractor has otherwise performed all of the TMS Work required by the Comprehensive Agreement and this Agreement;
- (viii) Opitz Boulevard Ramp Service Commencement has occurred in accordance with Section 6.6.3; and
- (ix) as provided in Section 6.6.3, Concessionaire has delivered to Contractor the Opitz Boulevard Ramp Final Completion Certificate signed by Contractor and countersigned by Concessionaire

6.6.2 Notice and Report of Opitz Boulevard Ramp Final Completion of the TMS Project. At least thirty (30) days prior to the date when Contractor anticipates achieving Opitz



Boulevard Ramp Final Completion, it shall deliver to Concessionaire a notice thereof (the “**Notice of Opitz Boulevard Ramp Final Completion**”). The Notice of Opitz Boulevard Ramp Final Completion shall contain a report in a form reasonably acceptable to Concessionaire and with sufficient detail to enable it to establish that Contractor has completely performed all of the TMS Work under the Comprehensive Agreement and this Agreement, including the items listed in Concessionaire’s Punch List, as well as a Opitz Boulevard Ramp Final Completion Certificate signed by Contractor.

6.6.3 Achievement of Opitz Boulevard Ramp Final Completion of the TMS Project. Within fourteen (14) days after Contractor has provided the Notice of Opitz Boulevard Ramp Final Completion to Concessionaire, then Contractor shall meet with Concessionaire (and the Department at Concessionaire’s invitation) to confer and exchange information with the goal being Concessionaire’s countersigning the Opitz Boulevard Ramp Final Completion Certificate. Prior to the Opitz Boulevard Ramp Final Completion Date Concessionaire shall inspect the TMS Project and all TMS Work hereunder and review the report submitted by Contractor and either (a) deliver to Contractor the countersigned Opitz Boulevard Ramp Final Completion Certificate, or (b) if reasonable cause exists for doing so (i.e., inability to obtain concurrence from Concessionaire and the Department), notify Contractor that Opitz Boulevard Ramp Final Completion has not been achieved, stating in reasonable detail the reasons therefor. If Concessionaire notifies Contractor that Opitz Boulevard Ramp Final Completion has not been achieved, Contractor shall, at its own cost, promptly take such action or perform such additional TMS Work as will permit achievement of Opitz Boulevard Ramp Final Completion, conduct another Performance Test, if necessary, and issue to Concessionaire a revised Opitz Boulevard Ramp Final Completion Certificate signed by Contractor. The foregoing process shall be repeated until Concessionaire is satisfied with the Notice of Opitz Boulevard Ramp Final Completion and concurs that Opitz Boulevard Ramp Final Completion has occurred, whereupon it shall countersign the Opitz Boulevard Ramp Final Completion Certificate and forward the same to Contractor; provided, that Contractor is obligated to achieve Opitz Boulevard Ramp Final Completion within ninety (90) days after the Opitz Boulevard Ramp Service Commencement Date, as such date may be extended hereunder (the “**Opitz Boulevard Ramp Guaranteed Final Completion Date**”).

6.7 Concessionaire’s Punch List. At any time after the commencement of TMS Project start-up, Concessionaire may submit Concessionaire’s Punch List to Contractor, and may thereafter revise the same from time to time; provided, that Concessionaire does not have the right to submit or revise Concessionaire’s Punch List after Concessionaire issues fully countersigned Opitz Boulevard Ramp Final Completion Certificate; notwithstanding the foregoing, Concessionaire shall retain the right to confirm that punch list items performed by Contractor are properly completed. Concessionaire shall not be precluded from listing any item of TMS Work on the Concessionaire’s Punch List that was not included on Contractor’s Punch List.

6.8 Failure to Achieve Opitz Boulevard Ramp Service Commencement by Opitz Boulevard Ramp Guaranteed Service Commencement Date; Opitz Boulevard Ramp Service Commencement Recovery Plan. Contractor will achieve Opitz Boulevard Ramp Service Commencement of the TMS Project by the Opitz Boulevard Ramp Guaranteed Service Commencement Date. The Opitz Boulevard Ramp Guaranteed Service Commencement Date will be extended one time if (i) Contractor submits to Concessionaire for Concessionaire’s Approval a

written recovery plan (the “**Opitz Boulevard Ramp Service Commencement Recovery Plan**”) not later than ninety (90) days prior to the Opitz Boulevard Ramp Guaranteed Service Commencement Date, (ii) the Opitz Boulevard Ramp Service Commencement Plan outlines the actions Contractor proposes to take in order to cause Opitz Boulevard Ramp Service Commencement to occur as promptly as reasonably possible, which plan may include increasing work hours to the extent permitted under applicable Law and utilizing additional labor and equipment and other appropriate acceleration techniques to improve schedule progress and will set forth a proposed new Opitz Boulevard Ramp Guaranteed Service Commencement Date, (iii) such Opitz Boulevard Ramp Service Commencement Recovery Plan and new Opitz Boulevard Ramp Guaranteed Service Commencement Date is subject to Concessionaire’s Approval within twenty (20) days in its reasonable discretion, (iv) Contractor diligently implements the Opitz Boulevard Ramp Service Commencement Recovery Plan and (v) Contractor agrees to continue to pay any Late Completion Payments or Additional Contractor Delay Payments pursuant to Section 7.2 (at the same daily rate for up to the number of additional days by which the Opitz Boulevard Ramp Guaranteed Service Commencement Date is so extended at Contractor’s request) notwithstanding the limit on Contractor’s liability for such payments as set forth in Section 7.6. If all the conditions to the approval of the Opitz Boulevard Ramp Service Commencement Recovery Plan set out in the preceding sentence have been satisfied, the Opitz Boulevard Ramp Service Commencement Date hereunder shall be extended for the same number of days the Opitz Boulevard Ramp Baseline Schedule has been extended under the Opitz Construction Contract. In addition, Concessionaire may, in its sole discretion, consent to a second Opitz Boulevard Ramp Service Commencement Recovery Plan upon such terms and conditions as it may establish in its sole discretion.

6.9 Acceptance by Concessionaire Not a Release of Contractor. The acceptance by Concessionaire or Concessionaire’s Approval of the Design Documentation, or any other part of the TMS Work or the TMS Project, shall not constitute a waiver or relinquishment by Concessionaire of any of its rights under this Agreement, nor exonerate or relieve Contractor from any obligation, warranty or liability hereunder, except to the extent expressly provided herein. Each such acceptance by Concessionaire or Concessionaire’s Approval shall be given in reliance upon, and subject to, the performance by Contractor of its obligations hereunder.

## ARTICLE 7

### LATE COMPLETION PAYMENTS

7.1 Opitz Boulevard Ramp Guaranteed Service Commencement Date, Guaranteed Dale Boulevard Slip Ramp Opening Date and Opitz Boulevard Ramp Guaranteed Final Completion Date. Subject only to the adjustments permitted in accordance with this Agreement, Contractor guarantees that Opitz Boulevard Ramp Service Commencement will be achieved on or before the Opitz Boulevard Ramp Guaranteed Service Commencement Date, the Dale Boulevard Slip Ramp Opening will be achieved on or before the Guaranteed Dale Boulevard Slip Ramp Opening Date and Opitz Boulevard Ramp Final Completion will be achieved on or before the Opitz Boulevard Ramp Guaranteed Final Completion Date.

7.2 Late Completion Payments.

7.2.1 If Opitz Boulevard Ramp Service Commencement has not occurred on or before the Opitz Boulevard Ramp Guaranteed Service Commencement Date, then for each calendar day (or portion thereof) by which Opitz Boulevard Ramp Service Commencement occurs after the Opitz Boulevard Ramp Guaranteed Service Commencement Date, subject to the limitation set forth in Section 7.6 hereof, Contractor hereby agrees to pay to Concessionaire, as part of the consideration for awarding the contract, an amount of liquidated damages equal to nine thousand six hundred dollars (\$9,600) (the “**Late Opitz Boulevard Ramp Service Commencement Payment**”); provided, however, that Contractor shall not be obligated to pay such amount, or a portion of such amount for any calendar days that the Concessionaire determines its contractors, other than Contractor and its Subcontractors, are responsible such delay in Opitz Boulevard Ramp Service Commencement.

7.2.2 If the Dale Boulevard Slip Ramp Opening has not occurred on or before the Guaranteed Dale Boulevard Slip Ramp Opening Date, then for each calendar day (or portion thereof) by which Dale Boulevard Slip Ramp Opening occurs after the Guaranteed Dale Boulevard Slip Ramp Opening Date, subject to the limitation set forth in Section 7.6 hereof, Contractor hereby agrees to pay to Concessionaire, as part of the consideration for awarding the contract, an amount of liquidated damages equal to nine thousand six hundred dollars (\$9,600) (the “**Late Dale Boulevard Slip Ramp Opening Payment**”).

7.2.3 If Opitz Boulevard Ramp Final Completion has not occurred on or before the Opitz Boulevard Ramp Guaranteed Final Completion Date, then for each calendar day (or portion thereof) by which Opitz Boulevard Ramp Final Completion occurs after the Opitz Boulevard Ramp Guaranteed Final Completion Date, Contractor hereby agrees to pay to Concessionaire, as part of the consideration for awarding the contract, an amount of liquidated damages equal to three thousand one hundred dollars (\$3,100) (the “**Late Opitz Boulevard Ramp Final Completion Payment,**” and collectively with the Late Opitz Boulevard Ramp Service Commencement Payment and the Late Dale Boulevard Slip Ramp Opening Payment, the “**Late Completion Payments**”); provided, however, that Contractor shall not be obligated to pay such amount, or a portion of such amount, of Late Opitz Boulevard Ramp Final Completion Payment for any calendar days the Concessionaire determines its contractors, other than Contractor and its Subcontractors, are responsible for such delay in Opitz Boulevard Ramp Final Completion.

7.2.4 The above notwithstanding, Contractor shall not be responsible for Late Completion Payments for that period of a delay in achieving Opitz Boulevard Ramp Final Completion by the Opitz Boulevard Ramp Guaranteed Final Completion Date solely attributable to theft to or damage to Contractor TMS Equipment or Concessionaire-Supplied Equipment and Facilities, not caused by Contractor or its Subcontractors, once such materials are physically installed into the permanent facilities at the TMS Work Site. For the avoidance of doubt in the application of this Section 7.2, a failure by the Contractor to provide protection of property on the gantries located on the Project Right of Way where Contractor TMS Equipment or Concessionaire-Supplied Equipment and Facilities has been installed in accordance with Section 2.1.23 will not be deemed to be Contractor-caused theft or damage.

7.2.5 In the event that Contractor is responsible for any delay that causes the Opitz Boulevard Ramp Service Commencement Date, the Dale Boulevard Slip Ramp Opening to occur after the Guaranteed Dale Boulevard Slip Ramp Opening Date to occur after the Opitz Boulevard

Ramp Guaranteed Service Commencement Date or the Opitz Boulevard Ramp Final Completion Date to occur after the Opitz Boulevard Ramp Guaranteed Final Completion Date, as applicable, and such delay causes Concessionaire's contractors (other than Contractor or its Subcontractors) to incur additional reasonable and documented costs and expenses required to achieve Opitz Boulevard Ramp Service Commencement or Opitz Boulevard Ramp Final Completion, as applicable, then, in addition to any Late Completion Payments otherwise payable under Section 7.2 above, Contractor hereby agrees to pay to Concessionaire, as part of the consideration for awarding the contract, an amount equal to such additional reasonable and documented costs and expenses of Concessionaire's contractors (other than Contractor or its Subcontractors) that has been previously approved by the Concessionaire required to achieve Opitz Boulevard Ramp Service Commencement or Opitz Boulevard Ramp Final Completion, as applicable (the "**Additional Contractor Delay Payments**").

7.3 Payment of Late Completion Payments. Late Completion Payments and Additional Contractor Delay Payments shall be paid by Contractor or withheld by Concessionaire, as applicable, in arrears at the payment intervals applicable to Scheduled Payments beginning after the Opitz Boulevard Ramp Guaranteed Final Completion Date with the last such payment to occur on the date on which Opitz Boulevard Ramp Final Completion, as applicable, actually occurs. Concessionaire's rights of set-off under Section 4.7 hereof expressly apply to any amounts of the Late Completion Payment not timely paid to Concessionaire hereunder.

7.4 Late Completion Payments for Delay Only. The Late Completion Payments and Additional Contractor Delay Payments shall be the full measure of Contractor's liability only for delay in achieving Opitz Boulevard Ramp Service Commencement, the Dale Boulevard Slip Ramp Opening and Opitz Boulevard Ramp Final Completion, and shall not limit Contractor's liability for defects or deficiencies in the TMS Work or for Contractor's failure to perform its other obligations under either the Comprehensive Agreement or this Agreement. The Late Completion Payments and Additional Contractor Delay Payments are in lieu of Concessionaire's right to terminate this Agreement solely as a result of any schedule delay, except to the extent such delay otherwise constitutes a Contractor Default under Section 15.2.1(v).

7.5 [Reserved].

7.6 Limitation on Liquidated Damages. Contractor's liability to Concessionaire under this Agreement for Late Completion Payments and Additional Contractor Delay Payments shall not exceed an amount equal to forty percent (40%) of the Contract Sum. This Section 7.6 shall not be construed to limit Contractor's other obligations or liabilities arising under or in connection with this Agreement.

7.7 Liquidated Damages Reasonable. Concessionaire and Contractor hereby acknowledge and agree that the terms, conditions and amounts fixed pursuant to Section 7.2 for Late Completion Payments and pursuant to Section 7.2.2 for Additional Contractor Delay Payments are fair and reasonable, considering the reduction in value of the TMS Project to Concessionaire and the actual costs that Concessionaire will incur in the event of Contractor's failure to achieve Opitz Boulevard Ramp Service Commencement by the Opitz Boulevard Ramp Guaranteed Service Commencement Date, the Dale Boulevard Slip Ramp Opening by the Guaranteed Dale Boulevard Slip Ramp Opening Date, or Opitz Boulevard Ramp Final Completion

by the Opitz Boulevard Ramp Guaranteed Final Completion Date. The amount of liquidated damages is agreed upon and fixed hereunder because of the difficulty of ascertaining the exact amount of Losses that will be actually incurred by Concessionaire for late occurrence of Opitz Boulevard Ramp Service Commencement, the Dale Boulevard Slip Ramp Opening, or Opitz Boulevard Ramp Final Completion, and Concessionaire and Contractor agree that the liquidated damages amounts specified in Section 7.2 represent a reasonable estimate of fair compensation of Losses that may be reasonably anticipated for such late occurrences and shall be applicable regardless of the amount of such costs actually incurred by Concessionaire.

## **ARTICLE 8**

## **RESERVED**

## **ARTICLE 9**

### **LIABILITY AND DAMAGES**

9.1 Limitation of Certain Contractor Liabilities. Notwithstanding anything herein to the contrary, the total liability of Contractor in contract, tort, equity or otherwise (including negligence, warranty, strict liability or otherwise and including any liquidated damages that may be payable pursuant to Article 7 hereof) relative to or arising out of this Agreement shall not exceed an amount equal to one hundred percent (100%) of the Contract Sum; provided, that the foregoing limitation shall not apply to or include:

- (i) the proceeds of insurance, not to exceed amounts required to be maintained by Contractor in accordance with the terms of this Agreement;
- (ii) costs, liabilities or obligations that arise from the gross negligence, willful misconduct or actual fraud of Contractor;
- (iii) costs, liabilities or obligations that arise from Contractor's abandonment of the TMS Work or from a Contractor Default described in Section 15.2.1(vii);
- (iv) Contractor's breach of its obligations in Section 10.3; or
- (v) Contractor's indemnity obligations under Article 13.

9.2 CONSEQUENTIAL DAMAGES. NEITHER CONCESSIONAIRE NOR CONTRACTOR SHALL BE LIABLE TO THE OTHER FOR ANY CONSEQUENTIAL, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING LOSS OF USE OR LOSS OF PROFIT, AND CONCESSIONAIRE AND CONTRACTOR EACH HEREBY RELEASES THE OTHER AND ITS CONTRACTORS AND AGENTS FROM ANY SUCH LIABILITY. THE FOREGOING EXCLUSION (I) SHALL NOT PRECLUDE RECOVERY, WHERE APPLICABLE, OF LIQUIDATED DAMAGES PURSUANT TO SECTIONS 7.2 AND 7.5 AND (II) SHALL NOT BE CONSTRUED TO LIMIT RECOVERY UNDER ANY INDEMNITY IN ARTICLE 13 FOR THIRD PARTY CLAIMS

FOR DAMAGE TO OR DESTRUCTION OF PROPERTY OF, OR DEATH OF OR BODILY INJURY TO, ANY PERSON.

9.3 Further Limitation of Liability. The limitations of liability and the exclusions of consequential damages set forth in this Agreement shall apply irrespective of whether a Party or any Affiliate thereof, or any partner, shareholder, officer, director or employee of a Party or an Affiliate thereof, asserts a theory of liability in contract, tort, negligence, misrepresentation (including negligent misrepresentation), strict liability or any other theory of liability.

## ARTICLE 10

### WARRANTIES

#### 10.1 Warranties.

10.1.1 Contractor warrants and guarantees (the “**General Warranty**”) to Concessionaire and the Department as follows:

(i) The design of the TMS Project shall satisfy the requirements of this Agreement, the Comprehensive Agreement and the Technical Requirements;

(ii) All TMS Work (except as described in Section 10.1.1(i) hereof), including materials and equipment, shall be (A) complete and conform to Good Industry Practice, (B) new unless otherwise specified herein or in the Technical Requirements, of good quality, in conformance with the Standard of Care, Laws, Applicable Standards, the Technical Requirements, this Agreement, and the Comprehensive Agreement, and (C) once completed, free of all defects and deficiencies in design, materials and workmanship and fit for its intended purpose; and

(iii) The Final As-Built Drawings and Documentation shall be accurate and complete, comply with the requirements of the Comprehensive Agreement and this Agreement, and accurately reflect the condition of the TMS Project as of Opitz Boulevard Ramp Project Completion.

10.1.2 If Concessionaire notifies Contractor in writing during the Warranty Period, or no later than fifteen (15) days after the expiration of the Warranty Period, that a breach of the General Warranty has occurred during the Warranty Period, Contractor shall promptly investigate and determine the source of the deficiency or defect (including any inaccuracy or other deficiency in the Final As-Built Drawings and Documentation), and promptly rectify any defects or deficiencies in the TMS Work at its expense without recourse to Concessionaire or the Department. Contractor’s liability for such defects shall include labor, parts, transportation, factory repair and testing, dismantling, re-designing, re-construction, re-erecting, re-testing and re- Commissioning associated with the correction of such defects which are needed or appropriate to assure the continued performance of the TMS Project for its intended functions as a complete operating system. If Contractor fails to repair or replace a defect or deficiency within reasonable time following Concessionaire’s notice of a breach of the General Warranty, Concessionaire (or the

Department pursuant to the Comprehensive Agreement) shall have the right to employ another contractor to correct the deficiency or defect and complete the TMS Work at Contractor's expense; provided, that the Department has agreed under Section 8.11(a)(iii) of the Comprehensive Agreement that it will only have the right to exercise remedies under the General Warranty so long as Concessionaire is not pursuing such remedies.

10.1.3 The "**Warranty Period**" for all TMS Work shall be twenty-four (24) months commencing on the date of Opitz Boulevard Ramp Final Completion; provided, however, that:

(i) the Warranty Period shall be extended for an additional twelve (12) months from the date of repair or replacement with respect to any portion of the TMS Work that is repaired or replaced during the final year of the initial Warranty Period;

(ii) the Warranty Period as to the individual pieces of equipment shall be twenty-four (24) months from the date of incorporation of the specific piece of equipment into the TMS Project unless Contractor is able to obtain from the vendor thereof longer durations on commercially reasonable terms; and

(iii) any warranties from third party suppliers longer than the Warranty Period shall be passed through to Concessionaire and the Department.

10.1.4 Following the expiration of the first year of the Warranty Period, the General Warranty shall extend only to repairs which exceed \$15,000 per single occurrence (but such threshold shall not apply if the same type of defect causes same type of repair more than twice).

10.1.5 If and to the extent Contractor obtains general or limited warranties from any Subcontractor with respect to design, materials, workmanship, equipment, tools, supplies, software or services in accordance with Section 3.3, Contractor will cause such warranties to be expressly extended to Concessionaire. Concessionaire agrees that it will only have the right to exercise remedies under any such warranty so long as Contractor is not pursuing such remedies. The foregoing requirement will not apply to standard, pre-specified manufacturer warranties of mass-marketed materials, products (including software products), equipment or supplies where the warranty cannot be extended to Concessionaire using Commercially Reasonable Efforts.

10.1.6 The duties, liabilities and obligations of Contractor under this Section 10.1 do not extend to any repairs, adjustments, alterations, replacements or maintenance of materials which are required as a result of normal corrosion, erosion, or wear and tear in the operation of the TMS Project other than as caused by the negligence of or breach of this Agreement by Contractor.

10.2 Concessionaire's Right to Proceed. If, within fourteen (14) days after notification by Concessionaire of a breach of any warranty hereunder, Contractor has not, to the reasonable satisfaction of Concessionaire, commenced re-performance, repair, replacement or other performance as required herein or notified Concessionaire of its disagreement with such alleged breach and, within seven (7) days after such notice, provide reasonable evidence in support of its position, Concessionaire may retain a third party to undertake such re-performance, repair,

replacement or other performance and the costs of retaining such third party shall be for the account of Contractor. Concessionaire's retention of such third-party contractor shall not in any way diminish Contractor's obligations or liabilities under this Agreement or reduce its warranty obligations under this Article 10 with respect to the work undertaken by such third party. Nothing herein shall be deemed to preclude Concessionaire from retaining a third-party contractor at its own cost to undertake any re-performance, repair, replacement or other performance of warranty claims hereunder.

10.3 No Liens or Encumbrances. Contractor warrants and guarantees that title to the TMS Project, any portion or component of the TMS Project, and all TMS Work provided hereunder shall pass to the Department as provided under Section 24.14 hereof, free and clear of all liens, Claims, security interests and other encumbrances (other than inchoate liens provided by Laws to secure payments not yet delinquent), and that none of such TMS Work, materials, supplies or equipment shall be acquired by Contractor subject to any agreement under which a security interest or other lien or encumbrance is retained by any Person. Such warranty shall become effective as title to TMS Work passes to the Department under Section 24.14 hereof, subject to Concessionaire's obligation to pay for such TMS Work in accordance with the Comprehensive Agreement and this Agreement.

10.4 EXCLUSIVE REMEDIES. ARTICLE 8, THIS ARTICLE 10 AND SECTION 15.2 HEREOF SET FORTH CONCESSIONAIRE'S EXCLUSIVE REMEDIES AGAINST CONTRACTOR, AND CONCESSIONAIRE HEREBY WAIVES ALL OTHER REMEDIES, REGARDING DEFECTS OR DEFICIENCIES IN THE TMS WORK, WHETHER PATENT OR LATENT OR ARISING IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR PURSUANT TO OTHER LEGAL THEORY, EXCEPT FOR DEFECTS AND DEFICIENCIES IN THE TMS WORK RESULTING FROM THE FRAUD OR DECEIT OF CONTRACTOR. CONTRACTOR MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, RELATING TO THE QUALITY OF THE TMS WORK, PROVIDED, HOWEVER, THAT CONTRACTOR SHALL CONTINUE TO BE RESPONSIBLE FOR ALL OF ITS OTHER OBLIGATIONS UNDER THIS AGREEMENT, INCLUDING THE DESIGN AND DEVELOPMENT OF THE TMS PROJECT, NOTWITHSTANDING THE PARTIES' AGREEMENT TO EXCLUSIVE REMEDIES FOR BREACH OF WARRANTY UNDER THIS SECTION 10.4.

## ARTICLE 11

### EXCUSED PERFORMANCE

11.1 Excused Performance Events. If Contractor is delayed in the performance of the TMS Work due to acts, omissions, conditions, events, or extreme circumstances beyond its control and due to no fault of its own, including, by way of example, wars or other significant events relating to national security such as terrorist attacks, floods in excess of the base flood (as specified in the Technical Requirements), hurricane force winds, tornados, labor disputes, and earthquakes that cause ground accelerations in excess of AASHTO bridge design standards for the Project Right of Way ("**Excused Performance Events**"), Contractor may initiate a Scope Change in accordance with Article 12 only to the extent necessary to account for such schedule delay caused by an Excused Performance Event. For the avoidance of doubt, Contractor may not request any



adjustment to the Contract Sum in connection with an Excused Performance Event, except in conjunction with another provision of this Agreement. It is specifically understood that other than floods in excess of the base flood, hurricane force winds and tornados, Contractor assumes the risk, and will not be entitled to a scope change for any costs or delays caused by weather-related events or conditions resulting from weather-related events. It is also understood that Contractor shall take all reasonable actions necessary to mitigate the effects of such Excused Performance Events to the extent practical.

11.2 Disputes; Burden of Proof. If Concessionaire and Contractor are unable in good faith to agree that an Excused Performance Event has occurred, either Party may submit the dispute to dispute resolution under Article 19; provided, however, that the burden of proof as to whether an Excused Performance Event has occurred and whether the Excused Performance Event excuses the Party from performance under Section 11.1 shall be upon the Party claiming such Excused Performance Event.

## ARTICLE 12

### SCOPE CHANGES

12.1 Scope Change Orders. A “**Scope Change**” means a material addition to, deletion from, suspension of or other modification to, the quality, function or intent of the TMS Project as delineated in the Scope of Work, or a material change to the requirements of this Agreement, but shall not include refinement, correction or detailing of the TMS Work by Concessionaire and Contractor from time to time. Concessionaire may order Scope Changes to the TMS Work, in which event, as more specifically set forth in this Article 12, one or more of the Contract Sum, the Payment and Values Schedule, the Opitz Boulevard Ramp Guaranteed Final Completion Date, the Opitz Boulevard Ramp Guaranteed Service Commencement Date, the Scope of Work and any other applicable terms and conditions of the Comprehensive Agreement or this Agreement shall be adjusted accordingly, if necessary, as agreed by Concessionaire and Contractor or determined pursuant to dispute resolution under Article 19; provided, that Contractor shall use reasonable efforts to mitigate the impacts of any Scope Change. If either Concessionaire or Contractor believes a Scope Change is necessary, it shall proceed as set forth in this Article 12. If Concessionaire believes that a particular item of TMS Work is within the then-existing Scope of Work but Contractor believes that such TMS Work constitutes a Scope Change, the Contractor shall diligently proceed with such TMS Work as directed in writing by Concessionaire; provided, that if the disputed item of TMS Work is subsequently determined to constitute a Scope Change (whether by mutual agreement of the Parties or by operation of the dispute resolution provisions hereunder), then such TMS Work shall be deemed to have been the subject of a Work Order under Section 12.9 and Concessionaire shall issue a Scope Change Order with respect thereto as provided in Section 12.10 hereof; otherwise, Contractor shall not be entitled to a Scope Change Order with respect to such item of TMS Work. All Scope Changes may be subject to the Concessionaire and Department’s consent, as described in Section 24.8 hereof. In the event the Concessionaire and Department require modifications to either the Comprehensive Agreement or the Opitz Construction Contract as a condition of its approval of any Scope Change, the Parties shall cooperate to effect such modifications.

As a condition to Concessionaire's obligation under this Article 12 to make payments to Contractor in respect to a Scope Change Order or Work Order, Contractor shall increase the amount of the Letter of Credit by an amount equal to the Applicable Security Rate of the increase in the Contract Sum resulting from the Scope Change Order or Work Order. To the extent the aggregate increase in the Contract Sum resulting from all Scope Changes exceeds \$5,000,000 in lieu of increasing the Letter of Credit by the full amount required, Contractor may notify Concessionaire to withhold as retainage from payments of the Contract Sum the amount not provided pursuant to a Letter of Credit, such retainage not to exceed the Applicable Security Rate of each installment payment of the Contract Sum. Amounts withheld as retainage may be applied by Concessionaire to the same purposes for which draws on the Letter of Credit may be applied, and shall be released to Contractor in whole or in part if the Letter of Credit is increased as required, or otherwise at the time the amount of the Letter of Credit may be reduced pursuant to Section 4.9 hereof, it being understood that the Parties intend that the Letter of Credit is to be the primary form of additional security during the first two (2) years of the Warranty Period, and that amounts withheld as retainage will continue to be withheld during the first two (2) years of the Warranty Period only to the extent the amount of the Letter of Credit does not satisfy the requirements of Section 4.9.

12.2 Scope Change by Concessionaire. If a Scope Change is initiated by Concessionaire (including a Scope Change resulting from a change in Applicable Standards after the Agreement Date that Concessionaire determines should apply to the TMS Work, if such changes do not otherwise constitute a Change in Law covered by Section 12.5 hereof or a Technical Requirements Revision), Concessionaire shall give Contractor a written "Proposal Request" (herein so called) setting forth in detail the nature of the requested change. Within fourteen (14) days after receipt of a Proposal Request, Contractor shall provide Concessionaire with a preliminary written response, and within a reasonable time thereafter (not to exceed fourteen (14) days) provide to Concessionaire two (2) completed copies of its definitive "**Change Order Proposal**" (herein so called) setting forth in detail, to the extent known at such time, with a separate pay item (addition or deletion) for purchase and installation of equipment and materials and an otherwise suitable breakdown of costs by trades and TMS Work classifications, a stipulated sum proposed as an adjustment to the Contract Sum for the performance of the Scope Change set forth in the Proposal Request, together with any proposed adjustment to the Opitz Boulevard Ramp Guaranteed Final Completion Date, the Scope of Work and the Payment and Values Schedule or other changes in either the Comprehensive Agreement or this Agreement necessary because of such proposed Scope Change. The stipulated sum set forth in each Change Order Proposal shall equal the amount obtained by (a) calculating the difference of (i) Contractor's good faith estimate of the actual costs of the proposed Scope Change, but including only such costs as are directly attributable to and necessarily incurred as part of the proposed Scope Change and are not included in Contractor's existing administrative and overhead expenses, and (ii) Contractor's good faith estimate of the cost savings, if any, that will result from the replacement or obviation of previously planned TMS Work by the performance or supply of the proposed Scope Change, then (b) provided the difference obtained in clause (a) is a positive number, adding to such difference an amount to cover the total of Contractor's overhead costs and Contractor's profit for services rendered calculated through application of the overhead and profit percentages set forth in Section 12.9 hereof. The adjustment, if any, to the Opitz Boulevard Ramp Guaranteed Final Completion Date and the Payment and Values Schedule specified in any Change Order Proposal shall be limited to the delays to the Critical Path directly attributable to and necessarily incurred as a result of the

proposed Scope Change. Each Change Order Proposal shall be accompanied by appropriate data reasonably acceptable to Concessionaire supporting the proposed adjustments therein, including but not limited to bids, cost estimates, quotations from suppliers and wage schedules. If Concessionaire approves Contractor's Change Order Proposal, Concessionaire will issue and Contractor will execute and accept a written Scope Change Order in the form attached to this Agreement as Exhibit G, and the Contract Sum, the Payment and Values Schedule, the Opitz Boulevard Ramp Guaranteed Final Completion Date and any other appropriate and necessary changes in either the Comprehensive Agreement or the Opitz Construction Contract shall be adjusted as set forth in such Scope Change Order. If Concessionaire does not approve Contractor's Change Order Proposal, Concessionaire may, at its option, execute and deliver to Contractor a Work Order in accordance with Section 12.8 hereof in lieu of the Scope Change Order.

12.3 Change Directives. At any time, the Concessionaire may issue a written order in the form of Exhibit F hereto (each such written order, a "**Change Directive**") directing a change in the TMS Work prior to agreement on an adjustment in the Contract Sum and/or the TMS Work Schedule. Concessionaire and the Contractor shall negotiate in good faith and as expeditiously as possible the appropriate adjustments for the applicable Change Directive. Upon reaching an agreement, the Parties shall prepare and execute an appropriate Work Order reflecting the terms of the agreement. Concessionaire may issue a Change Directive by unilateral Work Order and if the adjustment in the Contract Sum cannot be agreed to pursuant to the foregoing, then the cost of the change of the TMS Work shall be determined by the reasonable expense and savings in the performance of the TMS Work resulting from the change, including a reasonable overhead and profit, as may be set forth in this Agreement. If the net result of both additions and deletions to the TMS Work is an increase in the Contract Sum, overhead and profit shall be calculated on the basis of the net increase to the Contract Sum. If the net result of both additions and deletions to the TMS Work is a decrease in the Contract Sum, there shall be no overhead or profit adjustment to the Contract Sum. Contractor shall maintain a documented, itemized accounting evidencing the expenses and savings associated with such changes.

12.4 Scope Change by Contractor. If Contractor desires to initiate a Scope Change because of an Excused Performance Event or otherwise, Contractor shall, within seven (7) Business Days after first becoming aware (or should have been aware, using all reasonable due diligence) that a Scope Change may be necessary, provide notice thereof to Concessionaire. Except as otherwise specified in Sections 12.5 and 12.6, within five (5) Business Days thereafter, Contractor shall deliver to Concessionaire (i) a Change Order Proposal meeting the requirements specified in Section 12.2, together with a detailed description of the proposed Scope Change, a reasonably detailed explanation of why Contractor believes the proposed Scope Change is necessary, all relevant back up documentation, including drawings (original vs. latest), relevant technical/commercial agreement references, and a description of the critical activity which is directly affected, and by how long, or (ii) such of the foregoing information as is known to Contractor at the time, together with its estimate of the date by which a full Change Order Proposal will be submitted to Concessionaire. Subject to the final sentence of this Section 12.4, Concessionaire shall approve a Change Order Proposal evidencing Contractor's entitlement to claim a Scope Change Order under Sections 12.5, 12.6, 12.8 and 12.10 due to any of the causes specified therein, but if Concessionaire has a reasonable basis for objecting to any such Change Order Proposal, Concessionaire shall state such objections in writing to Contractor within ten (10) days of receipt of Contractor's Change Order Proposal and the Parties promptly shall meet to

resolve their differences; Concessionaire is under no obligation to approve any other Change Order Proposal initiated by Contractor. Contractor shall not be entitled to submit a package of one or more Change Order Proposals more than once in any month (other than a Change Order Proposal which Concessionaire must approve as set forth in the second preceding sentence, as to which there shall be no limits).

## 12.5 Scope Changes Due to CA Delay Events.

### 12.5.1 Delay Event Notice and Determination.

12.5.1.1 If Contractor is affected by a CA Delay Event, it will give written notice to Concessionaire within fifteen (15) days following the date on which Contractor first became aware (or should have become aware using all reasonable due diligence) that an event has occurred and that it is or will become a CA Delay Event (provided, that in the case of the same CA Delay Event being a continuing cause of delay, only one notice will be necessary) (a “**CA Delay Event Notice**”). Such CA Delay Event Notice will include, in such form and substance as is required to satisfy Concessionaire’s obligations under the Comprehensive Agreement: (i) a detailed description of the CA Delay Event, (ii) details of the circumstances from which the CA Delay Event arises and (iii) an estimate of the duration of the delay in the performance of obligations pursuant to this Agreement attributable to such CA Delay Event and information in support thereof, if known at that time. Based on the CA Delay Event Notice provided by Contractor to Concessionaire hereunder, Concessionaire shall assert its rights thereunder to seek the Department’s approval under Section 13.01 of the Comprehensive Agreement with respect to the CA Delay Event claimed by Contractor. Contractor will also provide such further information relating to the CA Delay Event as Concessionaire or the Department may reasonably require. Contractor will bear the burden of proving the occurrence of a CA Delay Event and the resulting impacts in accordance with the Comprehensive Agreement.

12.5.1.2 If for any reason Contractor fails to deliver a CA Delay Event Notice within such fifteen (15) day period, Contractor will be deemed to have irrevocably and forever waived and released any Claim or right to time extensions or any other relief with respect to such CA Delay Event pursuant to this Agreement.

12.5.1.3 Upon the occurrence of a CA Delay Event, Contractor will promptly undertake efforts to mitigate the effects of such CA Delay Event, including all steps that would generally be taken in accordance with Good Industry Practice. Within three (3) days following the date on which it first became aware of the occurrence of such CA Delay Event, Contractor will deliver to Concessionaire an explanation of the measures being undertaken to mitigate the delay and other consequences of the CA Delay Event. Contractor will notify the Concessionaire within fifteen (15) days following the date on which it first became aware (or should have become aware using all reasonable due diligence) that such a CA Delay Event has ceased.

12.5.1.4 Notwithstanding the occurrence of a CA Delay Event, Contractor will continue its performance and observance pursuant to this Agreement of all of its obligations and covenants to be performed to the extent that it is reasonably able to do so and will use its reasonable efforts to minimize the effect and duration of the CA Delay Event. Without

limiting the foregoing, the occurrence of a CA Delay Event will not excuse Contractor from timely payment of monetary obligations that are due and payable by Contractor pursuant to this Agreement (including liquidated damages and amounts payable as indemnities), from compliance with Law, or from compliance with the Technical Requirements, except temporary inability to comply with the Technical Requirements as a direct result of the CA Delay Event.

12.5.1.5 Subject to Contractor's giving the notice required in Section 12.5.1.1 and to the provisions of Section 12.5.2, but solely to the extent performance by Concessionaire is excused by the Department under the Comprehensive Agreement, a CA Delay Event will result in an extension of the Opitz Boulevard Ramp Guaranteed Final Completion Date, and the Opitz Boulevard Ramp Guaranteed Service Commencement Date and the TMS Work Schedule shall be adjusted accordingly. All changes to the Opitz Boulevard Ramp Guaranteed Final Completion Date or the Opitz Boulevard Ramp Guaranteed Service Commencement Date and conforming changes to the TMS Work Schedule shall be reflected in a Scope Change Order entered into pursuant to Section 12.1.

12.5.2 Delays Affecting Performance of the TMS Work. Contractor acknowledges and agrees that a CA Delay Event occurring during the TMS Work Period will excuse Contractor from performance of its obligations to perform the TMS Work pursuant to this Agreement but only to the extent that such obligations are directly affected by such CA Delay Event. In addition, during the TMS Work Period, extensions of milestones or activities identified on the TMS Work Schedule for CA Delay Events affecting the TMS Work will be made based on Time Impact Analysis, using the then current Concessionaire approved TMS Work Schedule and taking into account impacts of the CA Delay Events on Critical Path items, in accordance with the Technical Requirements, and will extend the Opitz Boulevard Ramp Guaranteed Final Completion Date and the Opitz Boulevard Ramp Guaranteed Service Commencement Date. For avoidance of doubt, the Opitz Boulevard Ramp Long Stop Date may be extended in accordance with this Agreement by reason of a CA Delay Event that occurs during the period after the Opitz Boulevard Ramp Guaranteed Service Commencement Date.

## 12.6 Scope Changes Due to CA Compensation Events.

### 12.6.1 CA Compensation Event Notice.

12.6.1.1 If Contractor is affected by a CA Compensation Event, it will give written notice to Concessionaire within fifteen (15) days following the date on which Contractor first became aware (or should have become aware using all reasonable due diligence) that an event has occurred and that it is or will become a CA Compensation Event (a "**CA Compensation Event Notice**"). The CA Compensation Event Notice will set forth, in such form and substance as is required to satisfy Concessionaire's obligations under the Comprehensive Agreement for such notice: (A) the CA Compensation Event and its date of occurrence in reasonable detail, (B) the amount by which Contractor claims the Contract Sum should be adjusted as a result of the CA Compensation Event and (C) details of the calculation thereof; provided, that if the amount of such Contract Sum adjustment and details of such calculation are not available within the fifteen (15)-day notice period, Contractor may submit an estimate of the amount claimed, or if known, the actual amount claimed, and details thereof no later than twenty-one (21) days from the submission of a CA Compensation Event Notice, and Contractor may update

the amount of claimed Contract Sum adjustment and details thereof every thirty (30) days. Based on the CA Compensation Event Notice submitted by Contractor and such other information provided by Contractor pursuant to this Section 12.6.1.1 Concessionaire shall submit a “CA Compensation Event Notice” to Department, and seek the Department’s approval, under Section 14.01(a)(i) of the Comprehensive Agreement with respect to the CA Compensation Event claimed by Contractor.

12.6.1.2 If, for any reason, Contractor fails to deliver such CA Compensation Event Notice within such fifteen (15) day period, Contractor will be deemed to have irrevocably and forever waived and released any Claim or right to an adjustment to the Contract Sum or other adverse effects on costs, expenses and liabilities attributable to such CA Compensation Event.

12.6.1.3 After Concessionaire submits a “CA Compensation Event Notice” under the Comprehensive Agreement based on a CA Compensation Event claimed by Contractor, under Section 14.01(a)(iii) of the Comprehensive Agreement the Department may but it is not required to obtain, at its sole cost, (A) a comprehensive report as to Concessionaire’s estimate of the net cost impact attributable to the CA Compensation Event (which will incorporate the adjustment to the Contract Sum sought by Contractor) and (B) from a traffic and revenue consultant a traffic and revenue study, prepared in accordance with Good Industry Practice, analyzing and calculating the estimated net revenue impact attributable to the CA Compensation Event. Under the Comprehensive Agreement, within 90 days after receiving a “Compensation Event Notice” and the supporting documentation, the Department is to provide to Concessionaire a copy of such reports as it has elected to obtain and, if obtained from Concessionaire, Concessionaire will provide a copy of such report to Contractor. Under Section 14.01(a)(iii) of the Comprehensive Agreement, if the Department disagrees with the entitlement to or the amount of “Concessionaire Damages” claimed by Concessionaire (which will incorporate the adjustment to the Contract Sum sought by Contractor), Concessionaire and the Department are to commence good faith negotiations to resolve the dispute within 120 days after the delivery of the “Compensation Event Notice.” All changes to the Contract Sum and corresponding changes to the Payment and Values Schedule and other appropriate changes to either the Comprehensive Agreement or the Opitz Construction Contract shall be reflected in a Scope Change Order entered into pursuant to Section 12.1.

#### 12.6.2 Contract Sum Adjustment Determination.

12.6.2.1 The Contract Sum shall be adjusted only in an amount necessary to compensate Contractor for all reasonable, unavoidable costs and expenses (including additional Taxes) attributable to the CA Compensation Event and mitigate or avoid the effects of the CA Compensation Event (net of any savings incurred by Contractor as a result of the CA Compensation Event) (the “**Contract Sum Adjustment**”).

12.6.2.2 The Contract Sum Adjustment associated with a CA Compensation Event will be net of all applicable insurance proceeds payable to Contractor associated with such CA Compensation Event (or that would be payable to Contractor but for the failure by Contractor to comply with the insurance requirements set forth herein), except as any payment of such insurance proceeds is affected by the bankruptcy or insolvency of the provider of

such insurance, and will include all costs of asserting a Claim for such insurance proceeds and any increased insurance premiums resulting from such Claim; provided, that any portion of an increased insurance premium resulting from any such Claim is certified in writing by Contractor's insurance provider prior to payment by Concessionaire.

12.6.2.3 Contractor will share with Concessionaire and the Department all data, documents and information pertaining to the proposed Contract Sum Adjustment on an Open Book Basis. Contractor will take all steps reasonably necessary to mitigate the amount of the Contract Sum Adjustment attributable to, and other consequences of, any CA Compensation Event, including all steps that would generally be taken in accordance with Good Industry Practice, including filing a timely claim for insurance and pursuing such claims.

12.6.2.4 Under the Comprehensive Agreement, if Concessionaire and the Department are unable to agree upon the amount of the "Concessionaire Damages" within 120 days after the delivery of the "Compensation Event Notice," then either party, by written notice to the other party, may terminate the negotiations and request the dispute be resolved in accordance with Article 21 of the Comprehensive Agreement. Under the Comprehensive Agreement the Department is to make payment to Concessionaire of the undisputed portion of the "Concessionaire Damages" in accordance with Section 14.01(b)(vi) of the Comprehensive Agreement without regard to the dispute resolution procedures, and solely to the extent received by Concessionaire from the Department under the Comprehensive Agreement Concessionaire shall pay the portion thereof attributable to the Contract Sum Adjustment over to Contractor.

12.6.2.5 The Parties acknowledge that under Section 14.01(b)(vii) of the Comprehensive Agreement Concessionaire is not entitled to "Concessionaire Damages" which are de minimis, and, as a result, Contractor will not be entitled to a Contract Sum Adjustment under this Agreement.

12.6.2.6 All payments to Contractor of amounts claimed in respect of a CA Compensation Event are strictly subject to Concessionaire's receipt thereof from the Department under the Comprehensive Agreement; provided, however, that if the amount of "Concessionaire Damages" payable (through Concessionaire) by the Department under Section 14.01 of the Comprehensive Agreement is less than the amount to which Contractor is entitled hereunder in respect of such CA Compensation Event (as agreed by the Parties or determined pursuant to the dispute resolution process set forth in Article 19 hereof) as a result of the application of the proviso to Section 14.01(b)(i) of the Comprehensive Agreement, Contractor shall only be entitled to such lesser amount payable by the Department.

12.6.3 Sole Remedy and Release of Claims. Without limiting Contractor's rights with respect to non-monetary relief for CA Delay Events in accordance with Section 12.5, the Contract Sum Adjustment as expressly provided in this Agreement will represent the sole right to compensation and damages for the adverse effects of a CA Compensation Event.

#### 12.6.4 Additional Provisions for Certain CA Compensation Events.

12.6.4.1 If Contractor is affected by a CA Compensation Event described in clause (l) of the definition thereof, Contractor will be entitled to claim a Contract Sum

Adjustment under this Agreement for such CA Compensation Event. The costs to Contractor attributable to the CA Compensation Event described in this Section 12.6.4.1 for which the Department bears responsibility pursuant to Section 14.01(f)(ii) of the Comprehensive Agreement are to be paid by the Department to Concessionaire, which in turn shall promptly pay over the amount received to Contractor. Concessionaire shall not be liable to Contractor for the payment of any such costs for which the Department is responsible under the Comprehensive Agreement except, to the extent the same are actually received by Concessionaire from the Department.

12.7 Scope Changes Due to Concessionaire-Caused Delay. Except to the extent another consequence is expressly provided in this Agreement, Contractor shall be entitled to claim a Scope Change Order adjusting one or more of the Contract Sum, the Payment and Values Schedule, the Opitz Boulevard Ramp Guaranteed Final Completion Date the Opitz Boulevard Ramp Guaranteed Service Commencement Date and other appropriate changes to the Comprehensive Agreement to the extent Contractor's performance of the TMS Work is adversely affected by a Concessionaire-Caused Delay and in respect of which Contractor cannot, in the absence of incurring material cost or impacting the Critical Path, overcome the effect thereof. If the Parties cannot agree upon the appropriate adjustment(s), such adjustment(s) shall be determined pursuant to the dispute resolution process set forth in Article 19.

12.8 Work Orders. If Contractor's Change Order Proposal delivered pursuant to Section 12.2 hereof is not agreed to by Concessionaire, Concessionaire may, at its option, issue to Contractor a Work Order in lieu of the Scope Change Order ordinarily issued under certain other sections of this Article 12. A "**Work Order**" is a written instruction from Concessionaire to Contractor to proceed with the Scope Change that is the subject of a Change Order Proposal. Concessionaire shall make corresponding payments to Contractor on a monthly basis for the reasonable costs of the TMS Work demonstrated by Contractor. Contractor shall be entitled to claim a Scope Change Order pursuant to Section 12.10 with respect to Work Orders issued by Concessionaire.

12.9 Performance of Scope of Changes. If Concessionaire executes and delivers to Contractor a Work Order, or if Concessionaire and Contractor agree to a Scope Change Order, Contractor promptly shall perform the TMS Work described in the Work Order or Scope Change Order. With respect to TMS Work performed pursuant to a Work Order, Contractor shall deliver to Concessionaire, within thirty (30) days after completion, invoices, statements, payroll data and other evidence of the actual cost of the TMS Work attributable to the Work Order that Concessionaire may reasonably require.

12.10 Scope Changes Due to Contractor Error. Notwithstanding anything in this Article 12 to the contrary, no Scope Change Order shall be issued and no adjustment of the Contract Sum, the Opitz Boulevard Ramp Guaranteed Service Commencement Date or the Payment and Values Schedule shall be made in connection with any correction of errors, omissions, deficiencies, project management inefficiencies or inaction, or improper or defective TMS Work on the part of Contractor or any Subcontractor in the performance of the TMS Work hereunder, or correction of any improper, defective or deficient equipment supplied by Contractor or any Subcontractor.



12.11 Familiarity with Conditions. Except as otherwise expressly provided in Sections 2.1.17, 12.5 and 12.6, Contractor accepts the risk of mistake or error relating to all matters within the scope of the TMS Work and acknowledges and agrees that no increase or adjustment in the Contract Sum, the Opitz Boulevard Ramp Guaranteed Service Commencement Date or the Payment and Values Schedule will be authorized by Concessionaire as a result of any such mistake or error. Contractor has received from Concessionaire and the Department, for its reference purpose only, certain information pertinent to the TMS Work Site and the TMS Work. Neither Concessionaire nor the Department has made and will not make any express or implied warranty to Contractor as to the accuracy and completeness of such information, and neither Concessionaire nor the Department shall be liable to Contractor with respect to such information.

12.12 Compliance with Opitz Boulevard Ramp Guaranteed Service Commencement Date. With respect to any Scope Change proposed by Concessionaire or Contractor or required hereunder, Contractor shall whenever possible provide Concessionaire with the option to cause Contractor to perform the Scope Change without an adjustment in the Opitz Boulevard Ramp Guaranteed Service Commencement Date or the TMS Work Schedule; provided that the Contract Sum is adjusted to compensate Contractor for any reasonable additional costs incurred in performing the Scope Change in accordance with such time limitation. If Concessionaire disputes Contractor's estimate of such reasonable additional costs, such costs shall nonetheless be paid pending the resolution of the dispute. Amounts that are subsequently determined not to have been properly payable to Contractor shall be refunded to Concessionaire together with interest at the Bank Rate. Subject to the foregoing, Concessionaire shall have the right to elect to cause such Scope Change to be performed without an adjustment in the Opitz Boulevard Ramp Guaranteed Service Commencement Date or any schedule for the TMS Project whenever possible, or to cause such Scope Change to be performed upon any other terms and conditions set forth in the Change Order Proposal.

12.13 Opitz Construction Contract Modifications. If an amendment to the Opitz Construction Contract that materially increases Contractor's obligations or diminishes its rights is made without Contractor's consent, then Concessionaire shall issue a Scope Change Order reasonably acceptable to Contractor addressing the impacts to Contractor of such amendment to the Opitz Construction Contract.

12.14 Seminary Road Change Directive. No later than 60 days following the Agreement Date, Concessionaire may issue the Seminary Road Change Directive in the form attached hereto as Exhibit I (the "**Seminary Road Change Directive**") to add the scope of work associated with the Seminary Road Ramp (as further described therein), including the agreed adjustments to the Contract Sum and other terms and conditions as set forth therein, and Contractor acknowledges and agrees to all such adjustments, terms and conditions, including the agreed adjustments to the Contract Sum.

## ARTICLE 13

### INDEMNIFICATION

13.1 Indemnities of Contractor. In addition to the Contractor's indemnity obligations as set forth elsewhere in this Agreement, Contractor will indemnify, defend, and hold harmless each

Contractor Indemnitee from and against any Losses actually suffered or incurred by such Contractor Indemnitee (except to the extent such Losses are solely caused by the misconduct, negligence or other culpable act, error or omission of a Contractor Indemnitee), due to Third Party Claims that are based upon:

(i) any actual or alleged failure by Contractor to comply with, observe or perform any of its covenants, obligations, agreements, terms or conditions in this Agreement, the Comprehensive Agreement, or the Technical Requirements, or, any actual or alleged breach by Contractor of its representations or warranties set forth herein or therein;

(ii) any actual or alleged misconduct, negligence or other culpable act, error or omission of a Contractor Party in connection with the Opitz Boulevard Ramp Project;

(iii) any actual or alleged patent or copyright infringement or other actual or alleged improper appropriation or use by a Contractor Party of trade secrets, patents, proprietary information, know-how, trade-marked or service marked materials, equipment, devices or processes, copyright rights or inventions in connection with the TMS Project;

(iv) any actual or alleged inverse condemnation, trespass, nuisance or similar taking of or harm to real property committed or caused by a Contractor Party in connection with the TMS Project arising from any actual or alleged (A) failure by Contractor to comply with, observe or perform any of the covenants, obligations, agreements, terms or conditions in this Agreement; (B) breach by Contractor of its representations or warranties set forth in this Agreement or (C) misconduct, negligence or other culpable act, error or omission of a Contractor Party;

(v) any actual or alleged claim for brokerage commissions, fees or other compensation by any Person who acted on behalf of Contractor, its Affiliates, excluding Concessionaire, or their respective Representatives in connection with this Agreement;

(vi) payments of, or failure to pay, Taxes relating to Contractor's income or other Taxes required to be paid by Contractor without reimbursement under this Agreement; or

(vii) nonpayment of amounts due as a result of furnishing materials to Contractor or any Subcontractor in connection with the TMS Work to the extent Concessionaire has paid Contractor all undisputed amounts then due and payable from Concessionaire to Contractor under this Agreement.

13.2 Indemnities of Concessionaire. Concessionaire will indemnify, defend, and hold harmless Contractor Parties from and against any Losses actually suffered or incurred by Contractor Parties (except to the extent such Losses are solely caused by the misconduct, negligence or other culpable act, error or omission of a Contractor Party), due to Third Party

Claims that are based upon (i) any actual or alleged failure by Concessionaire to comply with, observe or perform any of the covenants, obligations, agreements, terms or conditions in this Agreement, the Comprehensive Agreement, or, any actual or alleged breach by Concessionaire of its representations or warranties set forth herein or therein, or (ii) any actual or alleged misconduct, negligence, violation of Law, or other culpable act, error or omission of Concessionaire or a Concessionaire Contractor in connection with the Opitz Boulevard Ramp Project.

### 13.3 Defense and Indemnification Procedures.

13.3.1 In the event that either Party becomes aware of any Claim for which a Party (the “**Indemnifying Party**”) may be required to indemnify an Indemnitee hereunder, it will as promptly as practicable notify the other Party in writing of such Claim, and such notice will include a copy of the Claim (if available) and any related correspondence or documentation; provided, that if the Party required to give notice is the Indemnitee, any failure to give such prompt notice will not constitute a waiver of any rights of the Indemnitee, except to the extent that the rights of the Indemnifying Party are actually and materially prejudiced thereby. If any Third Party Claim for which Contractor may be required to indemnify a State Indemnitee hereunder is asserted in writing against a State Indemnitee other than the Department, a failure by such State Indemnitee to give Concessionaire prompt notice in writing of such Claim, together with a copy of the Claim and any related correspondence or documentation from the third party asserting the Claim, will constitute a waiver of any rights of such State Indemnitee to indemnification to the extent, and only to the extent, that the rights of Contractor are actually and materially prejudiced thereby.

13.3.2 The Indemnifying Party will be entitled and obligated to appoint counsel of its choice at the expense of the Indemnifying Party to represent an Indemnitee in any action for which indemnification is sought (in which case the Indemnifying Party will not thereafter be responsible for the fees and expenses of any separate counsel retained by that Indemnitee except as set forth below); provided, that such counsel will be satisfactory to such Indemnitee. Notwithstanding the Indemnifying Party’s appointment of counsel to represent an Indemnitee in any action, such Indemnitee will have the right to employ separate counsel, and the Indemnifying Party will bear the reasonable fees, costs and expenses of such separate counsel, if:

- (i) the use of counsel chosen by the Indemnifying Party to represent the Indemnitee would present such counsel with a conflict of interest;
- (ii) the actual or potential defendants in, or targets of, any such action include both the Indemnitee and the Indemnifying Party and the Indemnitee will have reasonably concluded that there may be legal defenses available to it or other Indemnitees which are different from or additional to those available to the Indemnifying Party, and the Indemnifying Party has not provided the Indemnitee with its own separate counsel satisfactory to such Indemnitee;
- (iii) the Indemnifying Party will not have employed counsel to represent the Indemnitee within a reasonable time after notice of the institution of such action; or

(iv) the Indemnifying Party authorizes the Indemnitee to employ separate counsel at the Indemnifying Party's expense.

13.3.3 The Indemnifying Party will not be liable for any settlement or compromise by an affected Indemnitee of a Third Party Claim except with the Indemnifying Party's prior written consent, which consent will not be unreasonably withheld or delayed, or except where the settlement or compromise is approved by the court after the Indemnifying Party receives reasonable notice and the opportunity to be heard and such court approval has become final and non-appealable.

13.4 Action in Case of Injunction. If, in any claim, suit or proceeding identified in Section 13.1(iii), a temporary restraining order or preliminary injunction is granted, Contractor shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the suspension of the injunction or restraining order. If, in any such claim, suit or proceeding, the TMS Project or any part, combination or process thereof is held to constitute an infringement and its use is permanently enjoined, Contractor shall at its own expense and without impairing performance requirements, either replace the infringing TMS Work or part, combination or process thereof with non-infringing components or parts or modify the same so that they become non-infringing. If Contractor is unable to do so within a reasonable time, Contractor shall promptly make every reasonable effort to secure for Concessionaire, or both, as applicable, a license, at no cost to Concessionaire, authorizing continued use of the infringing TMS Work. No Opitz Boulevard Ramp Guaranteed Service Commencement Date or any of Contractor's scheduling requirements under this Agreement shall be extended due to any temporary restraining order or injunction described in this Section 13.4.

13.5 Survival. The provisions of this Article 13 shall survive Opitz Boulevard Ramp Final Completion and the termination of this Agreement.

## ARTICLE 14

### INSURANCE

#### 14.1 Contractor-Provided Insurance.

14.1.1 Contractor's Responsibilities. Contractor and its Subcontractors are required to cooperate with Concessionaire, the OCIP administrator, and the OCIP insurance carriers in all aspects of the OCIP operation and administration. The Contractor's responsibilities include:

14.1.1.1 Include OCIP contract provisions and requirements in all tiered Subcontracts; every contractor is required to incorporate OCIP insurance provisions into their tiered subcontract(s).

14.1.1.2 Assisting in securing the required OCIP enrollment or payroll/premium information from their tiered contractors.

14.1.1.3 Notifying OCIP administrator of all Subcontracts awarded by completing the notice of subcontract award.

14.1.1.4 Attending all meetings, as required.

14.1.1.5 Maintaining and reporting payroll, receipts, labor-hours, or payments made to contractors as required by the OCIP.

14.1.1.6 Notifying Concessionaire and the OCIP administrator immediately of any insurance cancellation or non-renewal of Contractor Required Coverage.

14.1.1.7 Completing and submitting to Concessionaire and OCIP administrator the following administrative forms within the time frames specified below:

(i) Form 1 – Notice of Subcontract Award Form – Upon execution of tiered Subcontract and prior to starting TMS Work on the Project Right of Way; and

(ii) Insurance safety and claim forms.

14.1.1.8 Contractor and its Subcontractors of all tiers are responsible for insurance covering their property including rented, owned, leased or borrowed equipment and tools, and are responsible for reporting damage claims to such property to their own insurance carrier. Up to \$25,000 per incident may be assessed by Concessionaire against a contractor for any third party property damage.

14.2 General Liability Owner Controlled Insurance Program. The Concessionaire will provide an Owner Controlled Insurance Program (“OCIP”) for the Opitz Boulevard Ramp Project. The Contractor and all subcontractors of every tier are required to participate as described below and in accordance with the Opitz Boulevard Ramp Project’s OCIP manual.

14.2.1 Owner Controlled Insurance Program and Covered Entities. The Concessionaire will procure a General Liability OCIP that will provide coverage for the Department, the Concessionaire, the Construction Contractor, the Contractor and the eligible Subcontractors on the Opitz Boulevard Ramp Project. The Contractor and its contracting parties shall enroll in the OCIP. Participation in the OCIP is subject to several Contractor responsibilities under the terms of this Agreement. The Contractor and its contracting parties must enroll in the OCIP before commencing the TMS Work. Contractor insurance costs include Workers’ Compensation and Employer’s Liability, Automobile Liability, and Excess Liability for the Automobile Liability and Worker’s Compensation and Employer’s Liability will continue to be the responsibility of each party to provide coverage for its interests. Eligible parties include Subcontractors performing labor or services within the Project Right of Way, suppliers that perform installation and temporary labor services, and leasing companies providing direct labor.

14.2.2 Excluded Parties. Vendors, suppliers, material dealers and others who solely furnish, transport, pick up, deliver, or carry materials, personnel, parts or equipment to or from the Project Right of Way will not be enrolled parties to the OCIP. The OCIP will not cover losses arising out of operations conducted away from the Project Right of Way, nor will it cover certain on-site activities including transport, pickup, delivery, or loading or unloading of materials, personnel, parts or equipment or any other items or persons to or from the Project Right of Way; by parties who do not otherwise work at the Project Right of Way. Each enrolled party will be

required to provide its own insurance for losses arising out of Excluded Operations, and will be required to report such claims to its own insurance carriers. Any party described below is not required to be enrolled in the OCIP and will be enrolled in the OCIP only at the Concessionaire's discretion:

14.2.2.1 Hazardous materials, remediation, removal or transport companies and their consultants;

14.2.2.2 Any Subcontractor performing structural demolition (including the removing or relocating of load bearing beams, columns or walls);

14.2.2.3 Architects, engineers, surveyors and soil testing engineers, and their consultants;

14.2.2.4 Vendors, suppliers, fabricators, material dealers, truckers, haulers, drivers and others who merely transport, pickup, deliver, or carry materials, personnel, parts or equipment or any other items or persons to or from the Project Right of Way; however, if such party has a subcontractor who performs work at the Project Right of Way they and their subcontractor may be considered an eligible party;

14.2.2.5 Subcontractors, and any of their respective tiered subcontractors, who do not perform any actual labor on the Project Right of Way; and

14.2.2.6 Building implosion subcontractors including subcontractors involved with blasting or the use of explosives.

14.2.3 OCIP Coverage Amounts. The OCIP coverages will be set forth in full in the respective policy forms, the following description of such coverage is not intended to be all-inclusive, nor alter or amend any provision of the actual policies. In matters, if any, in which the said description may be conflicting with the actual policy language, the provisions of the insurance policies shall govern. Subject to the exclusions, limitations, terms and conditions of the policies, OCIP coverage shall be as follows:

14.2.3.1 Commercial General Liability Insurance in an "occurrence" form, with annual limits for all insureds combined of \$2,000,000 each occurrence limit; \$4,000,000 general aggregate limit and \$4,000,000 products/completed operations aggregate limit. A separate single limit shall apply to the entire five (5) year term beyond the expiration or cancellation of the date of the policy for the "completed operations extension" for all insureds combined as follows: \$2,000,000 each occurrence limit and \$4,000,000 products-completed operations aggregate limit. Coverage shall apply to bodily injury and property damage for operations (including explosion, collapse and underground coverage), elevators, independent contractors, contractual liability for "insured contracts" and covered personal and advertising injury liability offenses.

14.2.3.2 Excess Liability Insurance in an occurrence form such that the total shared annual limits for all insureds combined, including the completed operations extension, shall not be less than \$100,000,000 and each occurrence and \$100,000,000 annual aggregate limit.

14.2.3.3 The OCIP policy includes the following terms:

- Products completed operations extension for ten (10) years or the applicable statute of repose, whichever is less, after Opitz Boulevard Ramp Final Completion.
- General aggregate limit reinstates annually.
- Products/completed operations aggregate limit applies once to entire completed operations term.
- Limits are shared among all enrolled parties.

14.3 Builder's Risk. Concessionaire shall obtain, pay for and maintain, from the effective date of this Agreement until the completion of the TMS Work, builder's risk insurance for the Opitz Boulevard Ramp Project. The builder's risk insurance shall be on an "all risk" form (or equivalent policy) and shall include insurance against the perils of fire (with extended coverage) and physical loss or damage including, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, and excavation collapse, but not including insurance for the machinery, tools, or equipment used by Contractor in the performance of the Opitz Boulevard Ramp TMS Work, or coverage for underground/subsurface structures and conditions. Concessionaire shall add Contractor and its Subcontractors as additional insureds on the builder's risk insurance policy.

Concessionaire shall include a waiver of subrogation against Contractor and its Subcontractors in the builder's risk insurance policy. No limitations or requirements are imposed on Concessionaire with respect to the amount of deductible(s) under the builder's risk insurance policy. Contractor shall be responsible to pay, or otherwise satisfy, the deductible portion of any loss, claim or occurrence under the builder's risk insurance policy that arises out of, or relates to, any act, omission, fault, default or negligence of Contractor or Contractor's employees, agents representatives, Subcontractors, or any other Person performing a portion of the Opitz Boulevard Ramp TMS Work by, through or under Contractor or Contractor's failure to fully and correctly perform its obligations under either the Comprehensive Agreement or this Agreement; provided, however, that Contractor's obligation to pay, or satisfy the deductible portion of a loss, claim or occurrence under the builder's risk insurance policy shall not exceed \$50,000 per deductible, per loss, claim or occurrence.

Contractor shall, at all times, comply with the terms of the builder's risk insurance policy. In addition, Contractor shall be responsible for any losses, claims, damages, costs and expenses are not indemnified under the builder's risk insurance policy due to Contractor's failure to perform its obligations under the builder's risk insurance policy.

All insurance proceeds received by Concessionaire for any insured loss under the builder's risk insurance policy shall be paid into a separate insurance proceeds account and shall be held in trust for the purpose of distribution to Contractor or its Subcontractors, as applicable, as if they were otherwise named as loss payees on the builder's risk insurance policy, and in accordance with this Agreement.

14.4 Pollution Liability Policy. Concessionaire shall obtain, pay for and maintain, from the effective date of this Agreement until the Opitz Boulevard Ramp Final Completion date, Pollution Liability insurance for the Opitz Boulevard Ramp Project with limits not less than \$5,000,000 per occurrence and in the aggregate. Concessionaire shall add Contractor and its Subcontractors as additional insureds on the policy, on a primary and non-contributory basis.

14.5 Contractor Provided Coverage Amounts. Contractor (or with respect to Errors and Omissions Insurance, its Subcontractors) shall file certificates of insurance with Concessionaire evidencing the coverages and limits below:

14.5.1 Workers' Compensation and Employer Liability Insurance, with statutory workers' compensation (Coverage A) limits and employer's liability (Coverage B) limits of \$1,000,000 for each accident, \$1,000,000 for each employee, with a \$1,000,000 policy limit. If necessary, coverage shall be extended to cover any claims under the United States Longshoreman's Act and Harbor Workers Act and Jones' Act as may be appropriate for the Opitz Boulevard Ramp TMS Work.

14.5.2 Automobile Liability Insurance, with a limit of at least \$1,000,000 combined single limit for bodily injury and property damage covering all owned (if any), non-owned, hired or borrowed vehicles on-site or off

14.5.3 Commercial General Liability Insurance including coverage for premises and operations, independent contractors, personal injury, product and completed operations, explosion, collapse and underground, and broad form contractual liability of limits of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate applicable on a per project basis.

14.5.4 Errors and Omissions/Professional Liability Insurance, for acts, errors or omissions arising in connection with the Opitz Boulevard Ramp TMS Work, including network security cyber liability, for not less than: \$2,000,000 per claim and \$2,000,000 in the aggregate. Such insurance shall be maintained in full force and effect during the performance of such professional services and with an extended reporting period for two years after completion of such professional services. In addition, if the Contractor's Subcontractor's maintain the Errors and Omissions Insurance policy, the Contractor must be named as an indemnified party on the Errors and Omissions Insurance policy.

14.6 Contractor General Requirements – Contractor shall ensure that all insurances required contain the following provisions:

14.6.1 With the exception of workers' compensation and errors and omissions/professional liability insurance, the Concessionaire and the Department shall be named as an additional insured on all policies. Each such policy shall also include the appropriate severability of interest and cross-liability clauses to allow one insured to bring claim against another insured party.

14.6.2 All insurance coverages shall be considered primary and non- contributory with regard to other insurances that might be available to Contractor or the Concessionaire.



14.6.3 All insurers shall waive rights of subrogation against the Concessionaire for any claims covered by insurance required herein.

14.6.4 Any inadvertent errors or omissions by Contractor in procuring the insurance required herein shall in no way prejudice the rights of the Concessionaire to collect under such policies.

14.6.5 Any deductibles shall be the sole responsibility of Contractor.

14.6.6 The insurance shall remain in full force and in effect and will remain in effect for the duration required by this Agreement; and

14.6.7 No insurance coverage will be canceled, renewal refused, or materially changed unless at least thirty (30) days prior written notice is given to Concessionaire.

14.6.8 With the exception of Workers' Compensation and Automobile Insurance, the insurance policies shall specifically delete any design-build or similar exclusions that could compromise coverages because of the TMS Work.

14.6.9 With the exception of errors and omissions/professional liability and builder's risk insurance, Contractor shall require all Subcontractors to carry the same insurance required by Section 14.5 above, in the same amounts as outlined in Section 14.5 above.

14.6.10 Contractors shall file certificates of insurance with the Concessionaire evidencing the coverages and limits described above within the times required by this Agreement. The certificates shall be executed by approved insurance companies authorized to do business in Virginia with a minimum "Best Rating" of "A-VII" or greater, and shall cover this Agreement.

14.6.11 The insurance coverage limits shall not be construed to relieve Contractor or Subcontractor(s) of liability in excess of such coverage, nor shall it preclude the Concessionaire from taking such actions as are available to it under any other provision of this Agreement or otherwise in law.

14.7 Insurance Closeout Process. Unless otherwise directed by Concessionaire, general liability/excess liability coverage for operations under the OCIP will terminate at Opitz Boulevard Ramp Final Completion. General liability/excess liability coverage for completed operations will commence upon completion of the work according to the OCIP insurance policy provisions and will be provided for ten (10) years or through the applicable statute of repose, whichever is less. Should a Contractor or a Subcontractor return to the Project Right of Way for any reason after their coverage under the OCIP has ceased, the Contractor or a Subcontractor is required to provide its own insurance coverage in compliance with the Contractor Required Coverage and must provide a certificate of insurance evidencing such coverage.

## ARTICLE 15

### SUSPENSION OF TMS WORK; TERMINATION

#### 15.1 Suspension of the TMS Work.

15.1.1 Concessionaire's Right to Suspend the TMS Work. Concessionaire may elect to suspend completion of all or any part of the TMS Work upon ten (10) days' prior written notice to Contractor (or, in emergency situations, upon such prior notice as circumstances may permit) indicating (a) the portion of the TMS Work the completion of which Concessionaire has elected to defer, (b) Concessionaire's estimate of the duration of such suspension; and (c) the effective date of such suspension of the TMS Work. Upon receipt of and consistent with the effective date of such notice, Contractor shall stop performance of the portion of the TMS Work which Concessionaire has elected to defer and shall continue to complete performance of the balance of the TMS Work hereunder. In the event of a suspension of the TMS Work pursuant to this Section 15.1.1, Concessionaire will authorize a Scope Change Order or, at its option, a Work Order if appropriate, making required adjustments to one or more of the Opitz Boulevard Ramp Guaranteed Final Completion Date, the Contract Sum or the Payment and Values Schedule, and such other adjustments as are appropriate, with any disputes being resolved pursuant to the dispute resolution process set forth in Article 19. Contractor shall mitigate to the fullest extent reasonable possible any additional expenses to be borne by Concessionaire as a result of suspension of the TMS Work pursuant to this Section 15.1.1. In the event the entire TMS Work is suspended pursuant to this Section 15.1.1 for a period of one hundred and eighty (180) consecutive days, Contractor may terminate this Agreement upon written notice to Concessionaire. In the event Contractor terminates this Agreement pursuant to this Section 15.1.1, Concessionaire shall pay the Termination Payment to Contractor in accordance with Section 4.4 as Contractor's sole and exclusive remedy, but it will not affect Contractor's right to receive amounts otherwise due but unpaid hereunder prior to termination.

15.1.2 Department's Right to Suspend the TMS Work.

15.1.2.1 Contractor acknowledges and agrees that under the Comprehensive Agreement the Department has the right and authority, without liability to Concessionaire or Contractor, to suspend any affected portion of the TMS Work by written order to Concessionaire to comply with any court order or judgment, to protect against a risk to the public health, safety or welfare (as more particularly set forth in the Comprehensive Agreement and Section 15.1.2.2 hereof), including to workers, other personnel or the general public from unsafe or dangerous conditions, or upon the occurrence of the events described in the Comprehensive Agreement. In accordance with the Comprehensive Agreement, the Department is to lift the suspension order promptly after it is permitted by the terms of the court order or judgment, after the dangerous or unsafe condition is rectified, or after Contractor (acting on behalf of Concessionaire) fully cures and corrects the applicable breach or failure to perform. Contractor may request Concessionaire to dispute the Department's suspension order by written notice to Concessionaire, which notice will provide supporting information for Contractor's position. Unless directed otherwise by Concessionaire after receipt of such notice, Contractor will carry out the TMS Work required by the Department. If it is determined in accordance with the dispute resolution procedures in the Comprehensive Agreement that Contractor was in compliance with its obligations under this Agreement, then the suspension order and any additional TMS Work required by the Department under the Comprehensive Agreement will be treated as a Department Change and Contractor shall be entitled to a corresponding Scope Change Order hereunder.

15.1.2.2 The Parties acknowledge that the Department under Section 24.04(b) of the Comprehensive Agreement may require Concessionaire to suspend any

TMS Work or other activities related to the TMS Project, which, in the sole discretion of the Department, presents a risk to the public health, safety or welfare, and to take such other actions as the Department may require to prevent such risk; provided, that if it is determined in accordance with the dispute resolution procedures in the Comprehensive Agreement that Contractor was in compliance with its obligations under this Agreement, then the suspension order will be treated as a Department Change and Contractor shall be entitled to a corresponding Scope Change Order hereunder. If the TMS Work is so suspended for reasons attributable to Contractor, then Contractor shall not be relieved of any of its obligations under this Agreement and shall be fully liable to Concessionaire for any failure to timely and fully fulfill such obligations in accordance with the terms of this Agreement.

15.1.3 Contractor Right to Suspend the TMS Work. Contractor may suspend performance of the TMS Work pursuant to Section 15.3.2 hereof and as otherwise expressly permitted in this Agreement.

## 15.2 Termination of Contractor for Cause.

15.2.1 Concessionaire may elect, by ten (10) Business Days written notice to Contractor, at Concessionaire's sole option, to terminate this Agreement if any of the following events ("**Contractor Defaults**") shall occur:

(i) Contractor makes a general assignment for the benefit of its creditors, is generally unable to pay its debts as they become due, or becomes the subject of any voluntary or involuntary bankruptcy, insolvency, arrangement, reorganization or other debtor relief proceeding under any Law, now in existence or hereafter becoming effective, and, in the case of any such involuntary proceeding, it is not dismissed or stayed within sixty (60) days after it is commenced;

(ii) Contractor fails to pay to Concessionaire when due any undisputed amount in excess of \$100,000, adjusted annually by the percentage increase in CPI, payable to Concessionaire pursuant to this Agreement in the amount and within the time period required by this Agreement, and such failure, including any failure to pay interest at the Bank Rate from the date due, continues without cure for a period of thirty (30) days following the date Concessionaire delivers to Contractor written notice thereof (which notice requirement shall be waived if Law prohibits the giving of such notice);

(iii) Contractor fails, for any reason other than failure of Concessionaire to make payments to Contractor when obligated and in accordance with this Agreement, to make undisputed payments due to Subcontractors, which failure continues for thirty (30) days after written notice of such non-payment (which notice requirement shall be waived if Law prohibits the giving of such notice);

(iv) Contractor intentionally or negligently disregards Laws in the performance of the TMS Work and such failure continues for fifteen (15) days

after written notice from Concessionaire (which notice requirement shall be waived if Law prohibits the giving of such notice), or, if such failure is not capable of being cured within such fifteen (15) day period, if Contractor has not commenced the cure within such period and thereafter diligently pursued the same until a cure is effected, not to exceed an additional thirty (30) days unless the failure is not susceptible of cure;

(v) Contractor fails to achieve Opitz Boulevard Ramp Final Completion of the TMS Project by the Opitz Boulevard Ramp Long Stop Date, as such date may be extended pursuant to this Agreement;

(vi) Contractor fails to diligently implement a corrective action plan adopted pursuant to Section 2.1.1.4;

(vii) Contractor abandons the TMS Work;

(viii) Contractor fails to maintain (A) the Letter of Credit in effect in the amount required hereunder or (B) insurance in the amount, terms and coverage required hereunder, and such failure continues without cure for six (6) Business Days following the date Concessionaire delivers to Contractor written notice thereof;

(ix) Contractor otherwise is in default of any provision of or has failed to perform its obligations under either the Comprehensive Agreement or this Agreement and such failure continues for thirty (30) days after written notice from Concessionaire (which notice requirement shall be waived if Law prohibits the giving of such notice), or, if such failure is not capable of being cured within such thirty (30)-day period, if Contractor has not commenced the cure within such period and thereafter diligently pursued the same until a cure is effected, not to exceed an additional ninety (90) days unless the failure is not susceptible of cure; provided, that a debarment pursuant to the provisions set forth in Section 24.15.2 (relating to SWaM participation) will not constitute a Contractor Default, and provided, further, that that this Section 15.2.1(ix) will not apply to events covered by other provisions of this Section 15.2.1; or

(x) the Department terminates the Comprehensive Agreement or Concessionaire terminates the Opitz Construction Contract as a result of a breach by Contractor of its obligations hereunder.

15.2.2 With respect to any termination by Concessionaire pursuant to Section 15.2.1 (a “**Termination for Cause**”):

(a) If Concessionaire terminates this Agreement in accordance with Section 15.2.1, Concessionaire may cause the TMS Work to be completed by other contractors, and Contractor shall pay for the cost of such completion and Losses suffered by Concessionaire to the extent the same exceeds the Contract Sum. Concessionaire shall, within a reasonable period of time after the TMS Project is fully and finally completed by the work of one or more other contractors, determine the total cost (including contractor

fees) to Concessionaire for completing the TMS Work, including all sums previously paid or then owned to Contractor pursuant to this Agreement. If the Contract Sum is less than the sum of (i) the cost incurred by Concessionaire to fully and finally complete the TMS Work, (ii) all other Losses suffered by Concessionaire as a result of a default or breach by Contractor of its obligations under either the Comprehensive Agreement or this Agreement, and (iii) all amounts previously paid to Contractor pursuant to this Agreement, Contractor shall pay to Concessionaire on demand the amount of such difference. Any amount owed by Concessionaire to Contractor, including for the month and level of completion of the TMS Work shall be retained by Concessionaire until after completion of the TMS Work and applied by Concessionaire to pay any amounts and Losses owed by Contractor pursuant to this Section 15.2.2 or otherwise. Any excess shall be remitted to Contractor within sixty (60) days after the TMS Project is fully and finally completed.

(b) If a Contractor Default has occurred for which a cure period is envisioned above in Section 15.2.1, Contractor shall prepare a remedial program and submit the same for Concessionaire's Approval, and Contractor shall remedy such Contractor Default in accordance with the agreed remedial program. To the extent Contractor fails to cure such Contractor Default and Concessionaire elects not to exercise its termination rights hereunder, Concessionaire may remedy such Contractor Default with the cost thereof to be borne by Contractor.

(c) No compensation shall be payable to Contractor in the event of a Termination for Cause except to the extent provided in Section 15.2.2(a).

### 15.3 Concessionaire Default.

15.3.1 The following events shall constitute "**Concessionaire Defaults**":

(i) Concessionaire makes a general assignment for the benefit of its creditors, is generally unable to pay its debts as they become due, or becomes the subject of any voluntary or involuntary bankruptcy, insolvency, arrangement, reorganization or other debtor relief proceeding under any Law, now in existence or hereafter becoming effective, and, in the case of any such involuntary proceeding, it is not dismissed or stayed within sixty (60) days after it is commenced;

(ii) Concessionaire fails to pay to Contractor any portion of a Scheduled Payment which is not in dispute and such failure continues for thirty (30) days after written notice of such non-payment (which notice requirement shall be waived if Law prohibits the giving of such notice); or

(iii) only if relief cannot be provided by issuance of a Scope Change Order under Section 12.8, Concessionaire otherwise is in default or has failed to perform any of its other material obligations under either the Comprehensive Agreement or this Agreement and such failure continues for thirty (30) days after written notice from Contractor (which notice requirement shall be waived if Law prohibits the giving of such notice), or, if such failure is not capable

of being cured within such thirty (30) day period, if Concessionaire has not commenced the cure within such period and thereafter diligently pursued the same until a cure is effected, not to exceed an additional ninety (90) days unless the failure is not susceptible of cure.

15.3.2 Upon the occurrence of a Concessionaire Default under Section 15.3.1(ii), Contractor may suspend performance of the TMS Work hereunder and, if Concessionaire fails to pay the undisputed portion of the Scheduled Payment within ninety (90) days after written notice of such non-payment (which notice requirement shall be waived if Law prohibits the giving of such notice), terminate this Agreement upon ten (10) Business Days written notice to Concessionaire. In the case of any other Concessionaire Default, Contractor may terminate this Agreement upon ten (10) Business Days written notice to Concessionaire. Any right of Contractor to terminate this Agreement shall be subject to any cure rights of the Department under the Comprehensive Agreement. In the event Contractor terminates this Agreement by Contractor pursuant to this Section 15.3.2, Concessionaire shall pay the Termination Payment to Contractor in accordance with Section 4.4 hereof as Contractor's sole and exclusive remedy, but it will not affect Contractor's right to receive amounts otherwise due but unpaid hereunder prior to termination. If Contractor suspends the TMS Work under the first sentence of this Section 15.3.2 but subsequently resumes performance of the TMS Work following Concessionaire's payment of the undisputed portion of the Scheduled Payment, then such suspension shall be treated as a Concessionaire -Caused Delay entitling Contractor to claim a Scope Change Order pursuant to Section 12.8.

15.4 Termination Due to Significant Force Majeure Event. If a Significant Force Majeure Event occurs under the Comprehensive Agreement and the Department or Concessionaire terminates the Comprehensive Agreement as a result thereof pursuant to Section 20.03(a) of the Comprehensive Agreement and the Opitz Construction Contract automatically terminates, then this Agreement shall automatically terminate effective as of the termination date of the Opitz Construction Contract. If this Agreement is terminated pursuant to the preceding sentence prior to Opitz Boulevard Ramp Final Completion of the entire TMS Project (and Concessionaire's payment therefor), Contractor shall be entitled to receive a termination payment (the "**FM Termination Payment**") equal to that portion of the Contract Sum and any other amounts that are then due and payable to Contractor by Concessionaire and applicable to the TMS Work completed up to the date of termination and which have not previously been paid to Contractor, plus all Demobilization Costs but less proceeds of insurance that is required to be carried by Contractor hereunder. Representatives of Concessionaire and Contractor shall determine the Contract Sum amount in accordance with the Payment and Values Schedule. Contractor shall submit an invoice to Concessionaire for the FM Termination Payment, and Concessionaire shall pay such invoice within 30 days after its receipt of same subject to the provisions of this Section 15.4 unless it disputes certain elements thereof, in which event only the undisputed portion of the FM Termination Payment need be made within such 30-day period and the dispute over the remainder of the claimed FM Termination Payment may be submitted to the appropriate dispute resolution process set forth in Article 19. The FM Termination Payment shall be subject to offset for amounts payable by Contractor to Concessionaire. As a condition precedent to receiving the FM Termination Payment, Contractor shall comply, on behalf of Concessionaire, with all the provisions of the Comprehensive Agreement with respect to the TMS Work. Payment of the FM Termination Payment shall be the sole and exclusive liability of Concessionaire, and the sole and

exclusive remedy of Contractor, with respect to termination of this Agreement pursuant to this Section 15.4 and the events (including the applicable Concessionaire Default) giving rise to such termination, but it will not affect Contractor's right to receive amounts otherwise due but unpaid hereunder prior to termination. In no event shall Concessionaire have any further liability to Contractor in any such event for actual, incidental, consequential or other damages, notwithstanding the actual amount of damages that Contractor may have sustained in connection with a termination pursuant to this Section 15.4. Calculation of the FM Termination Payment has been agreed upon and fixed hereunder because of the difficulty of ascertaining the exact amount of such damages Contractor will actually sustain in the event of a termination pursuant to this Section 15.4 and Concessionaire and Contractor agree that the calculation of the FM Termination Payment is reasonable.

15.5 Requirements Following Termination. Upon termination of this Agreement, Concessionaire shall be immediately released from any and all obligations to Contractor (except for Concessionaire's obligation to pay the Termination Payment or any amount payable under this Agreement by Concessionaire to Contractor that is due but unpaid as of the termination date), Contractor shall immediately discontinue the TMS Work and remove its personnel and equipment from the TMS Work Site, and Concessionaire shall be entitled to take exclusive possession of the TMS Project and all or any part of the equipment and materials delivered or enroute to the TMS Project, to the extent that Concessionaire has paid Contractor all undisputed amounts hereunder then due and payable from Concessionaire to Contractor. If requested by Concessionaire, Contractor will make every reasonable effort to cancel any existing Subcontracts upon terms satisfactory to Concessionaire. Except as otherwise expressly provided in this Agreement or where pursuant to the dispute resolution process under Article 19 it is determined that termination by Concessionaire was wrongful, any payments to be made to a Subcontractor as a result of any such termination shall be at the expense of Contractor. Contractor shall also, upon request by Concessionaire, (i) deliver and assign to Concessionaire (but in no event shall Concessionaire be liable for any action or default of Contractor occurring prior to such delivery and assignment except to the extent such action or default was caused by Concessionaire, and each Subcontract shall so provide) any and all Subcontracts, purchase order, bonds and options made by Contractor in performance of the TMS Work, and (ii) if the termination occurs at a time when the design of the TMS Project is incomplete, originals of all Design Documentation in process (except that Contractor may keep for its records copies, and, if sufficient originals exist, an original set, of the Agreement, the Comprehensive Agreement and related documents executed by Concessionaire), all other materials relating to the TMS Work which belong to Concessionaire, and all papers and documents relating to the Governmental Approvals for the TMS Work, orders placed, bills and invoices, lien releases and financial management under this Agreement. All deliveries hereunder shall be made free and clear of any liens, security interests or encumbrances, except such as may be created by Concessionaire. Contractor shall also fulfill Concessionaire's obligations under Section 20.08(b)-(e) of the Comprehensive Agreement to the extent they relate to the TMS Work. Notwithstanding any termination of Contractor's retention or this Agreement pursuant to this Article 15, Contractor shall for a period not to exceed five (5) days take such steps as are reasonably necessary to preserve and protect TMS Work completed and in progress and to protect materials, equipment and supplies at the Project Right of Way, stored off-site, or in transit. Except as provided herein, no action taken by Concessionaire or Contractor after the termination of Contractor's retention of this Agreement shall prejudice any other rights or remedies of

Concessionaire or Contractor provided by law, the Comprehensive Agreement, this Agreement, or otherwise upon such termination.

15.6 Surviving Obligations. Termination of this Agreement or the retention of Contractor to perform the TMS Work (a) shall not relieve Contractor of its obligations with respect to the confidentiality of Concessionaire information as set forth in Article 18 hereof, (b) shall not relieve Contractor of any obligation hereunder which expressly or by implication survives termination hereof, and (c) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall not relieve either Concessionaire or Contractor of any obligations or liabilities for loss or damage to the other Party arising out of or caused by acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination, and shall not relieve Contractor of its obligations as to portions of the TMS Work or other services hereunder already performed or of obligations assumed by Contractor prior to the date of termination.

15.7 Termination Prior to Notice to Proceed. Notwithstanding any other provision contained in this Article 15, the Concessionaire may terminate this Agreement at any time prior to Notice to Proceed upon ten (10) days written notice to the Contractor. In the event of such early termination, Concessionaire shall be liable to the Contractor for the amount of any Termination Payment required under Section 4.4.

## ARTICLE 16

### ASSIGNMENTS

16.1 Assignment. Neither Party shall have the right, power or authority to assign or delegate this Agreement or any portion thereof, either voluntarily or involuntarily, or by operation of law, without the prior written consent of the other Party, which consent may be granted or withheld in the sole discretion of such other Party. Notwithstanding the foregoing, Concessionaire may assign to a State Party (as defined in the Comprehensive Agreement) or a nonprofit special purpose entity established by the Commonwealth to deliver the Opitz Boulevard Ramp Project without Contractor's consent. Nothing in this Section 16.1 shall be deemed to preclude Contractor from subcontracting portions of the TMS Work in accordance with Article 3 hereof.

16.2 Successors and Assigns. All of the rights, benefits, duties, liabilities and obligations of the Parties hereto shall inure to the benefit of and be binding upon their respective successors and permitted assigns.

## ARTICLE 17

### DESIGN DOCUMENTATION

17.1 Concessionaire's Review. All design information and calculations shall be subject to Concessionaire's Review, but neither (a) the review of such information or calculations by Concessionaire, or (b) Concessionaire's acceptance of Opitz Boulevard Ramp Final Completion shall constitute a waiver of, or release Contractor from, any liability for errors or omissions contained in any designs or calculations by Contractor or by any Subcontractor, including any



errors or omissions contained in the Final As-Built Drawings and Documentation. Notwithstanding anything to the contrary herein contained, except with respect to the Concessionaire-Supplied Equipment and Facilities, Concessionaire shall not be liable for and makes no representation with respect to any designs and specifications prepared by Contractor and reviewed or accepted by Concessionaire, and including any designs and specifications set forth in either the Comprehensive Agreement or this Agreement. With respect to all aspects of TMS Project design, Contractor must create designs and solutions that comply with Laws and other requirements of this Agreement. The acceptance of the TMS Project by Concessionaire shall not relieve Contractor of its obligation for such compliance.

17.2 Final As-Built Drawings and Documentation. As a condition to achievement of Opitz Boulevard Ramp Final Completion, Contractor shall furnish for Concessionaire's Approval hard copies and electronic files of the Final As-Built Drawings and Documentation meeting the requirements of the Technical Requirements (plus one extra hard and electronic copy of each file). Together with the Final As-Built Drawings and Documentation, Contractor shall furnish to Concessionaire a TMS Project library in an electronic format that can be searched easily to include, without limitation: all Design Documentation, inspection and test reports, electronic management system and other documents prepared by Contractor and used in the performance of the TMS Work hereunder. Contractor shall incorporate into the Final As-Built Drawings and Documentation all changes or corrections to the TMS Work made at the TMS Work Site prior to Opitz Boulevard Ramp Final Completion so as to accurately represent the completed TMS Project and will certify, as required by the Technical Requirements, that the Final As-Built Drawings and Documentation reflect the actual condition of the TMS Project as of Opitz Boulevard Ramp Final Completion. Contractor shall establish such systems and retain such personnel as are necessary to maintain full quality control and quality assurance with respect to the Final As-Built Drawings and Documentation. If Contractor fails to provide Final As-Built Drawings and Documentation which in all material respects comply with the provisions of this Section 17.2, Concessionaire, without limiting any other right or remedy it may have under the Comprehensive Agreement or this Agreement or under Laws, may engage a third party engineer to produce Final As-Built Drawings and Documentation complying herewith, and Contractor shall pay all fees and costs of such engineer.

17.3 Ownership. Subject to Section 2.1.8, Contractor agrees that all Design Documentation, the Final As-Built Drawings and Documentation, and other documents prepared or required to be prepared by Contractor as deliverables under this Agreement shall be the sole and exclusive property of the Department and Concessionaire and shall not be used by Contractor in connection with any other project without Concessionaire's prior written consent. The foregoing does not apply to Contractor's pre-existing technical experience, expertise, standard formats or the like. Contractor agrees that all such documents, as well as any drawings, tracings, specifications, calculations, memoranda, data, notes and other materials which are supplied by Concessionaire and come into the possession of Contractor, shall be delivered to Concessionaire at the earlier of Opitz Boulevard Ramp Final Completion or termination of the TMS Work hereunder if not previously delivered hereunder, except to the extent Concessionaire shall instruct Contractor not to deliver such materials. Concessionaire shall not, copy or disseminate such materials in connection with any project other than the Opitz Boulevard Ramp Project unless Contractor's name is deleted from such materials. Concessionaire shall defend, indemnify and

hold Contractor harmless from any Claim, demand or liability arising from reuse of Contractor's documents if such reuse is not in connection with the Opitz Boulevard Ramp Project.

17.4 Use of Documents by Contractor. Contractor shall be entitled to retain and use solely and specifically in connection with the TMS Work hereunder and for enhancement of its engineering files a reproducible set of all Design Documentation, the Final As-Built Drawings and Documentation, and other documents delivered to Concessionaire by Contractor in accordance with this Article 17.

## ARTICLE 18

### CONFIDENTIAL INFORMATION

18.1 Confidentiality. Except as set forth in this Article 18, each Party shall hold in confidence for a period ending five (5) years after the earlier of (i) Opitz Boulevard Ramp Final Completion or (ii) the earlier termination hereof, any confidential information (marked as such) supplied to it by the other Party or otherwise related to this Agreement or the Opitz Boulevard Ramp Project; provided, non-public financial statements shall be held in confidence for as long as such statements remain confidential information. The Contractor shall inform its Subcontractors, suppliers, vendors and employees of its obligations under this Article 18 and shall require each of its Subcontractors, suppliers, vendors and employees to execute confidentiality arrangements consistent with this Article 18.

18.2 Survival. The provisions of this Article 18 shall continue in full force and effect in accordance with their terms, and shall survive any termination of this Agreement.

18.3 Publicity Releases; Information. The Contractor shall not issue any press or similar media release or any advertisement, or publish, release or disclose any photograph or other information concerning this Agreement or the Project without the express prior written consent of the Developer, which consent shall not be unreasonably withheld. The Contractor shall include this restriction in all Subcontracts and purchase orders.

## ARTICLE 19

### DISPUTE RESOLUTION

19.1 Arbitration; Other Actions. Any Claim or controversy between Concessionaire and Contractor not exceeding One Million Dollars (\$1,000,000) in value shall be submitted to binding arbitration in accordance with this Section 19.1 upon written notice of either Party delivered to the other of such Party's intention to arbitrate, the nature of the dispute, the amount claimed and the decision sought. Arbitration under this Section 19.1 shall be conducted under the American Arbitration Association's Construction Industry Arbitration Rules (the "Rules") subject to the limitations contained in this Section 19.1. Arbitration will be in Fairfax County, Virginia and may include other necessary parties. Concessionaire and Contractor shall proceed with any arbitration expeditiously. All conclusions and decisions of the arbitration shall be made consistent with applicable legal principles and the arbitrators' good faith interpretation of the terms and provisions of this Agreement. The award of the arbitrators will be final and binding on both Parties and may

be enforced in any court having jurisdiction over the Party against which enforcement is sought. Each Party shall bear its own expenses, including but not limited to counsel fees and witness fees. If the arbitrators determine that the Claim or defense of either Party was frivolous (i.e., without justifiable merit), they may require that the Party at fault pay or reimburse the other Party for costs of the arbitration in whole or in part, except that all expenses of the arbitration shall be apportioned in the award of the arbitrators based upon the respective merit of the positions of the Parties.

NOTWITHSTANDING THE FOREGOING, EQUITABLE REMEDIES, INCLUDING INJUNCTION AND SPECIFIC PERFORMANCE, SHALL BE AVAILABLE TO THE PARTIES BY JUDICIAL PROCEEDINGS AT ANY TIME AND, FOR THIS PURPOSE AND FOR THE PURPOSE OF ENFORCING ANY ARBITRAL AWARD OR DECISIONS, THE PARTIES HEREBY SUBMIT TO THE EXCLUSIVE JURISDICTION AND VENUE OF THE FEDERAL AND STATE COURTS IN RICHMOND, VIRGINIA. THE PARTIES ALSO SUBMIT TO THE EXCLUSIVE JURISDICTION AND VENUE OF THE FEDERAL AND STATE COURTS IN RICHMOND, VIRGINIA, REGARDING ANY DISPUTE BETWEEN THE PARTIES WHERE THE AMOUNT IN CONTROVERSY EXCEEDS ONE MILLION DOLLARS (\$1,000,000). EACH OF THE PARTIES HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES TRIAL BY JURY IN ANY LEGAL ACTION OR PROCEEDING UNDER THIS AGREEMENT AND FOR ANY COUNTERCLAIM IN SUCH AN ACTION OR PROCEEDING. THE PROVISIONS OF THIS SECTION 19.1 SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

19.2 Common Issue in Dispute under the Comprehensive Agreement or the Opitz Construction Contract. Notwithstanding any other provision in this Agreement to the contrary, if any issue in dispute between the Parties to this Agreement is also the subject of a concurrent dispute under the Comprehensive Agreement or the Opitz Construction Contract, the Parties shall seek to cause the dispute hereunder to be consolidated with the dispute resolution process occurring under the Comprehensive Agreement or the Opitz Construction Contract. If such consolidation does not occur, then any ongoing proceeding regarding the dispute hereunder shall be stayed pending final resolution of the dispute under the Comprehensive Agreement or the Opitz Construction Contract, which resolution shall be binding on the Parties for all purposes of this Agreement.

19.3 Continuation of TMS Work. Unless otherwise agreed in writing by the Parties, Contractor shall continue its performance of the TMS Work on a timely basis in accordance with the TMS Work Schedule during any dispute which may arise between Concessionaire and Contractor concerning the TMS Project.

## ARTICLE 20

### COST RECORDS

20.1 Maintenance of Records. Contractor shall maintain fiscal records, books and accounts pertaining to the TMS Project and will maintain or cause to be maintained such books, records and accounts in accordance with the Agreement and applicable Law, including such Laws applicable to the Opitz Boulevard Ramp Project as a result of the costs of the Opitz Boulevard Ramp Project being financed in part with State funds, federal-aid funds and State bond proceeds.

20.2 Inspection of Books, Records and Audit Rights. Contractor covenants and agrees to keep and maintain full, complete and detailed records of all its costs and allowances pertaining to Scope Changes. Contractor agrees to make available to Concessionaire, the Department, and FHWA (to the extent required under Section 18.07 of the Comprehensive Agreement) and independent third parties designated by Concessionaire and allow to each of them access to, such books, records and documents as they may reasonably request in connection with the TMS Project for any purpose related to the Opitz Boulevard Ramp Project, this Agreement or the Comprehensive Agreement, including but not limited to monitoring compliance with the terms and conditions of this Agreement. Contractor will fulfill all of Concessionaire's obligations relating to Concessionaire's obligations under Section 18.07 of the Comprehensive Agreement with respect to any books, records and documents in connection with the TMS Project and will cooperate with Concessionaire, the Department, FHWA and other parties mentioned in this Section 20.2 in the exercise of their rights hereunder. Any records, books and documents in connection with the TMS Project shall be preserved by Contractor for a period of three (3) years after Opitz Boulevard Ramp Final Completion, at no additional cost to Concessionaire, and subject to Concessionaire inspection and audit during such period. All expenses of an audit by Concessionaire shall be paid by Concessionaire. No audit rights (or, in the case of Concessionaire and its designees, inspection rights) shall extend to the make-up of the lump-sum Contract Sum or to any unit price or rate used under this Agreement after such amount, price or rate has been agreed by the Parties.

## ARTICLE 21

### INDEPENDENT CONTRACTOR

21.1 Contractor as Independent Contractor. Contractor shall be an independent contractor with respect to the TMS Project, each part thereof, and the TMS Work hereunder, and neither Contractor, its Subcontractors, nor the employees of any of them shall be deemed to be agents, representatives, employees or servants of Concessionaire in the performance of the TMS Work or any other services dealt with herein. Concessionaire shall not have the right to control the methods or means by which Contractor or any agent, representative, Subcontractor, or employee or Contractor conducts its independent business operations. Concessionaire and Contractor covenant and agree that in the performance of the TMS Work by Contractor, Contractor shall not perform any act or make any representation to any Person to the effect that Contractor or any of its agents, representatives or Subcontractors is the agent of Concessionaire.

## ARTICLE 22

### REPRESENTATIVES AND WARRANTIES OF CONTRACTOR

22.1 Representatives and Warranties. Contractor represents and warrants to Concessionaire that:

22.1.1 Organization and Qualification. Contractor is duly organized, validly existing and in good standing under the laws of the State of Delaware, and has the lawful power to engage in the business it presently conducts and contemplates conducting. Contractor is duly licensed or qualified to do business in the Commonwealth of Virginia and in each other jurisdiction

wherein the nature of the business transacted by them makes such licensing or qualification necessary.

22.1.2 Power and Authority. Contractor has the corporate power to make and carry out this Agreement and to perform its obligations hereunder and all such actions have been duly authorized by all necessary proceedings on its part.

22.1.3 No Conflict. The execution, delivery and performance of this Agreement by Contractor (assuming issuance of Governmental Approvals in due course upon application therefor) will not conflict with Contractor's governing documents, any Laws or any covenant, agreement, understanding, decree or order to which Contractor is a party or by which Contractor is bound or affected.

22.1.4 Validity and Binding Effect. This Agreement has been duly and validly executed and delivered by Contractor. This Agreement constitutes a legal, valid and binding obligation of Contractor, enforceable in accordance with its terms, except to the extent that its enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors generally or by general principles of equity. No authorization, approval, exemption or consent by any Governmental Authority (other than the Governmental Approvals) is required in connection with the authorization, execution, delivery and carrying out of the terms of this Agreement.

22.1.5 Litigation. There are no actions, suits, proceedings or investigations pending or, to the knowledge of Contractor, threatened against Contractor at law or in equity before any court or before any Governmental Authority, whether or not covered by insurance, which individually or in the aggregate are reasonably likely to have a materially adverse effect on the business, properties or assets or the condition, financial or otherwise, of Contractor or to result in any impairment of Contractor's ability to perform its obligations under this Agreement. Contractor has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any Governmental Authority which is reasonably likely to have such a materially adverse effect or to result in such impairment.

22.1.6 Patents; Licenses; Franchises. Contractor owns, has the rights to or possesses all the patents, trademarks, service marks, trade names, copyrights, licenses, franchises, Governmental Approvals and rights with respect to the foregoing necessary to perform the TMS Work and to carry on its business as presently conducted and presently planned to be conducted without conflict with the rights of others.

22.1.7 Compliance with Laws. Contractor has complied with all Laws such that Contractor is not subject to any fines, penalties, injunctive relief or criminal liabilities which in the aggregate have materially affected or are reasonably likely to have a materially adverse effect upon the business operations or financial condition of Contractor or Contractor's ability to perform the TMS Work or other services hereunder.

22.1.8 Prequalification. As required by the Comprehensive Agreement, Contractor is prequalified with the Department in accordance with the Department's applicable Rules Governing Prequalification Privileges, and covenants that it will not subcontract any part of

the TMS Work to a Subcontractor who is not prequalified with the Department in accordance with the Department's applicable Rules Governing Prequalification Privileges, unless otherwise indicated in the Comprehensive Agreement; provided, that this restriction does not apply to contract specialty items, consultants, manufacturers, suppliers, haulers or snow removal service providers.

22.1.9 Disbarment/Suspension. None of Contractor or any of its affiliates (as "affiliate" is defined in 29 CFR 98.905) is suspended or debarred, subject to a proceeding to suspend or debar it, or subject to an agreement for voluntary exclusion, from bidding, proposing or contracting with any federal or State department or agency.

22.1.10 No Default. To the best of Contractor's knowledge after diligent inquiry, no event which, with the passage of time or the giving of notice, would constitute a Contractor Default has occurred.

22.1.11 No CA Delay Event or CA Compensation Event. To the best of Contractor's knowledge after diligent inquiry, no event which, with the passage of time or the giving of notice, would constitute a CA Delay Event or a CA Compensation Event under this Agreement has occurred.

22.1.12 Disclosure. No representation or warranty by Contractor contained herein or in any other document furnished by Contractor to Concessionaire contains or will contain any untrue statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading in light of the circumstances under which it was made. All financial and other information furnished by Contractor to Concessionaire is true and correct in all material respects.

22.1.13 Department as Third-Party Beneficiary. Contractor acknowledges that the Department is a third-party beneficiary of all Contractor's representations and warranties made in this Article 22; provided, that, in accordance with the Comprehensive Agreement, the Department agreed to exercise its rights under such representations and warranties only so long as Concessionaire is not pursuing remedies related thereto.

## ARTICLE 23

### REPRESENTATIVES AND WARRANTIES OF CONCESSIONAIRE

23.1 Representatives and Warranties. Concessionaire represents and warrants to Contractor that:

23.1.1 Organization and Qualification. Concessionaire is duly organized, validly existing and in good standing under the laws of the State of Delaware, and has the lawful power to engage in the business it presently conducts and contemplates conducting. Concessionaire is duly licensed or qualified to do business in the Commonwealth of Virginia and in each other jurisdiction wherein the nature of the business transacted by them makes such licensing or qualification necessary.

23.1.2 Power and Authority. Concessionaire has the limited liability company power to make and carry out this Agreement and to perform its obligations hereunder and all such actions have been duly authorized by all necessary proceedings on its part.

23.1.3 No Conflict. The execution, delivery and performance of this Agreement by Concessionaire (assuming issuance of Governmental Approvals in due course upon application therefor) will not conflict with Concessionaire's governing documents, any Laws or any covenant, agreement, understanding, decree or order to which Concessionaire is a party or by which Concessionaire is bound or affected.

23.1.4 Validity and Binding Effect. This Agreement has been duly and validly executed and delivered by Concessionaire. This Agreement constitutes a legal, valid and binding obligation of Concessionaire, enforceable in accordance with its terms, except to the extent that its enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors generally or by general principles of equity. No authorization, approval, exemption or consent by any Governmental Authority (other than the Governmental Approvals) is required in connection with the authorization, execution, delivery and carrying out of the terms of this Agreement.

23.1.5 Litigation. There are no actions, suits, proceedings or investigations pending or, to the knowledge of Concessionaire, threatened against Concessionaire at law or in equity before any court or before any Governmental Authority, whether or not covered by insurance, which individually or in the aggregate are reasonably likely to have a materially adverse effect on the business, properties or assets or the condition, financial or otherwise, of Concessionaire or to result in any impairment of Concessionaire's ability to perform its obligations under this Agreement. Concessionaire has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any Governmental Authority which is reasonably likely to have such a materially adverse effect or to result in such impairment.

23.1.6 Compliance with Laws. Concessionaire has complied with all Laws such that Concessionaire is not subject to any fines, penalties, injunctive relief or criminal liabilities which in the aggregate have materially affected or are reasonably likely to have a materially adverse effect upon the business operations or financial condition of Concessionaire or Contractor's ability to perform the TMS Work or other services hereunder.

23.1.7 Disclosure. No representation or warranty by Concessionaire contained herein or in any other document furnished by Concessionaire to Contractor contains or will contain any untrue statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading in light of the circumstances under which it was made. All financial and other information furnished by Concessionaire to Contractor is true and correct in all material respects.

## ARTICLE 24

### MISCELLANEOUS

24.1 Estoppel Certificate. Contractor shall at any time and from time to time furnish promptly upon request by Concessionaire a written statement in such form as may be required by the requesting party stating that this Agreement is a valid and binding obligation of Contractor, enforceable against Contractor in accordance with its terms except to the extent that its enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors generally or by general principles of equity; that this Agreement has not been released, subordinated or modified; and that there are no offsets or defenses against the enforcement of this Agreement against Contractor; or if any of the foregoing statements are untrue, specifying the reasons therefor.

24.2 Waivers. No failure to exercise, and no delay in exercising, any right, power or remedy under this Agreement, the Comprehensive Agreement or the Opitz Construction Contract shall impair any right, power or remedy which any Party hereto may have, nor shall such failure or delay be construed to be a waiver of any such rights, powers or remedies, or an acquiescence in any breach or default under this Agreement, the Comprehensive Agreement or the Opitz Construction Contract, nor shall any waiver of any breach or default be deemed a waiver of any default or breach subsequently occurring under this Agreement, the Comprehensive Agreement or the Opitz Construction Contract.

24.3 Governing Law. THIS AGREEMENT AND THE RIGHTS AND DUTIES OF THE PARTIES HEREUNDER OR ARISING FROM OR RELATING IN ANY WAY TO THE TRANSACTIONS EVIDENCED BY THE COMPREHENSIVE AGREEMENT OR THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE COMMONWEALTH OF VIRGINIA, INCLUDING ALL MATTERS OF CONSTRUCTION, VALIDITY AND PERFORMANCE, WITHOUT GIVING EFFECT TO ANY CHOICE OF LAW RULES THEREOF WHICH MAY DIRECT THE APPLICATION OF THE LAWS OF ANOTHER JURISDICTION.

24.4 Severability. In the event that any of the provisions, or portions or applications thereof, of this Agreement are held to be unenforceable or invalid by any court of competent jurisdiction, Concessionaire and Contractor shall negotiate an equitable adjustment in the affected provisions of this Agreement with a view toward effecting the purpose of this Agreement, and the validity and enforceability of the remaining provisions, or portions or applications thereof, shall not be affected thereby.

24.5 Notice. Unless otherwise expressly required or permitted by either the Comprehensive Agreement or this Agreement, any notice required or permitted to be given by Contractor to Concessionaire hereunder shall be in writing and shall be addressed to Concessionaire at:

95 Express Lanes LLC  
6440 General Green Way  
Alexandria, VA 22312



Attention: Concessionaire Representative

and any notice required or permitted to be given by Concessionaire to Contractor hereunder shall be in writing and shall be addressed to:

Transurban (USA) Inc.  
7900 Westpark Drive  
Suite T500  
Tysons, VA 22102  
Attention: Vice President, Technology  
Telephone: (571) 419-6100  
Facsimile: (571) 419-6101

Also

Transurban (USA) Inc.  
7900 Westpark Drive  
Suite T500  
Tysons, VA 22102  
Attention: General Counsel – North America  
Telephone: (571) 419-6100  
Facsimile: (571) 419-6101

24.5.1 Delivery. Delivery shall be made in a manner reasonably acceptable by both the Parties.

24.6 Headings. The Article and Section headings herein have been inserted for convenience of reference only and shall not in any manner affect the construction, meaning or effect of the provisions herein contained nor govern the rights and liabilities of the Parties hereto.

24.7 Entire Agreement. This Agreement contains the entire agreement between Concessionaire and Contractor with respect to the TMS Project, and supersede any and all prior and contemporaneous written and oral agreements, proposals, negotiations, understandings and representations pertaining to the TMS Project.

24.8 Amendments. No amendments or modifications of this Agreement shall be valid unless evidenced by a Scope Change Order or by a written instrument signed by a duly authorized representative of the Party against whom enforcement is sought.

24.9 Conflicting Provisions. In the event of any inconsistencies between this Agreement the Opitz Construction Contract and the Comprehensive Agreement, the following order of precedence in the interpretation hereof or resolution of such conflict hereunder shall prevail:

- (i) the Comprehensive Agreement and any approved changes thereof;
- (ii) the Technical Requirements and TMS Special Provisions;

- (iii) Duly authorized and executed Scope Change Orders and written amendments to this Agreement executed by both Parties;
- (iv) this Agreement, excluding Exhibits hereto;
- (v) the Scope of Work;
- (vi) the TMS Interface Plan;
- (vii) Exhibits hereto (other than the Scope of Work, TMS Interface Plan and TMS Special Provisions); and
- (viii) Design Documentation, including drawings produced and delivered pursuant hereto (in respect of which, precedence shall be given to drawings of a larger scale over those of smaller, figured dimensions on the drawings shall control over scaled dimensions, and noted materials shall control over undimensioned graphic indications).

Where an irreconcilable conflict exists among Laws, this Agreement, the drawings included in the Design Documentation, and the specifications in the Design Documentation, the earliest item mentioned in this sentence involving a conflict shall control over any later mentioned item or items subject to such conflict, and if a conflict exists within or between parts of Opitz Construction Contract, or between Opitz Construction Contract and Laws, or among Laws themselves, the more stringent or higher quality requirements shall control. All obligations imposed on Contractor and each Subcontractor under the Opitz Construction Contract or under Laws or Applicable Standards and not expressly imposed or addressed in this Agreement shall be in addition to and supplement the obligations imposed on Contractor under this Agreement, and shall not be construed to create an “irreconcilable conflict.” Where a conflict exists among codes and standards applicable to the TMS Project or Contractor’s performance of the TMS Work, the most stringent provision of such codes and standards shall govern.

24.10 No Third Party Rights. This Agreement and all rights thereunder are intended for the benefit of Concessionaire and Contractor, Construction Contractor (to the extent set forth in the Opitz Construction Contract), the Department (to the extent set out in the Comprehensive Agreement), and the Indemnitees (to the extent provided in Article 13 hereof), and shall not imply or create any rights on the part of, or obligations to, any other Person or any other rights on the part of, or other obligations to, the Department and the Indemnitees beyond the rights and obligations expressly set forth herein.

24.11 Rule of Interpretation. Wherever the word “or” is used herein it shall be read to include the word “and”.

24.12 Source Code Escrow.

24.12.1 Concessionaire and Contractor acknowledge that Contractor or its Software suppliers may not wish to disclose directly to the Department and Concessionaire at the time of installation the Source Code and Source Code Documentation which is Proprietary Intellectual Property of Contractor or its Software suppliers, as public disclosure could deprive

Contractor or its Software suppliers of commercial value, but that the Department must be ensured access to such Source Code and Source Code Documentation in either of the following circumstances:

(i) if the Comprehensive Agreement is terminated for “Concessionaire Default” thereunder or upon assignment by Concessionaire of its rights pursuant to the Comprehensive Agreement, the Department assumes this Agreement or Subcontract with such Software supplier, and either (A) a business failure (including voluntary or involuntary bankruptcy, and insolvency) of the Software supplier occurs or (B) the Software supplier fails or ceases to provide services as necessary to permit continued use of the Software by the Department as contemplated by the Comprehensive Agreement; or

(ii) (A) if this Agreement is terminated for Contractor Default, (B) a business failure (including voluntary or involuntary bankruptcy, and insolvency) of Contractor occurs or (C) Contractor fails or ceases to provide services as necessary to permit continued use of the Software by Concessionaire as contemplated by this Agreement.

24.12.2 Under the Comprehensive Agreement, by no later than the Opitz Boulevard Ramp Service Commencement Date, the Department and Concessionaire will establish one or more escrows (the “**Source Code Escrows**”) with the Escrow Agent on terms and conditions reasonably acceptable to the Department and Concessionaire into which such Source Code and Source Code Documentation will be escrowed, including all relevant commentary, explanations and other documentation, as well as instructions to compile such Source Code and Source Code Documentation and all modifications, additions or substitutions made to such Source Code and Source Code Documentation. Contractor will cooperate with Concessionaire in escrowing the Source Code and Source Code Documentation and will submit to Concessionaire all Source Code and Source Code Documentation in its possession or control that is part of the TMS Work.

24.12.3 The escrows provided for herein will survive any termination of this Agreement regardless of the reason. Concessionaire will pay the reasonable costs and expenses of the Escrow Agent related to the Source Code Escrows and interim escrows.

24.13 Survival of Provisions. All provisions of either the Comprehensive Agreement or the Opitz Construction Contract which are expressly or by implication to come into or continue in force and effect after the expiration or termination of this Agreement shall remain in effect and be enforceable following such expiration or termination.

24.14 Title to the TMS Project. Title to all materials, supplies, equipment and machinery used in connection with the TMS Work which become a permanent part of the TMS Project shall vest in the Department upon the earliest of (i) the occurrence of any event by which title passes from the Subcontractor providing such materials, supplies, equipment or machinery, (ii) full payment therefor by Contractor, (iii) full payment therefor by Concessionaire, (iv) incorporation into the TMS Project at the Project Right of Way, or (v) delivery of equipment or materials for incorporation into the TMS Project to an approved off-site location.

## 24.15 DBE, SWAM Programs.

### 24.15.1.1 General.

(a) The Parties recognize the importance of pursuing, inviting and developing the participation of (i) disadvantaged business enterprises and (ii) minority, women-owned and small businesses through DBE and SWaM programs.

(b) Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Agreement and will not permit its Subcontractors to discriminate on the basis of race, color, national origin, or sex in the performance of their respective Subcontracts. Contractor shall carry out applicable requirements of 49 CFR part 26 in the administration of this Agreement and perform in a manner that will not result in a violation of the Comprehensive Agreement and shall cause its Subcontractors to do the same with respect to their respective Subcontracts.

(c) Contractor shall make Good Faith Efforts to develop and implement a plan to include DBE and SWaM businesses in their contracting structure that takes into account the specialized nature of the TMS Work.

## 24.16 Contracting Requirements.

24.16.1 Contractor covenants and agrees that it will not discriminate and it will require all Subcontractors not to discriminate against any person, or group of persons, on account of age, sex, marital status, race, creed, color, national origin, religion or the presence of any sensory, mental or physical handicap in the permitting, design, acquisition, construction, maintenance, operation or management of the Opitz Boulevard Ramp Project, nor will Contractor establish or permit any such practice or practices of discrimination or segregation with reference to the selection, use, hiring, firing, promotion or termination of employees, Subcontractors, and vendors; provided, that the prohibition against discrimination on the basis of sensory, mental or physical handicap will not apply if the particular disability prevents the proper performance of the particular person involved.

24.16.2 Contractor will comply, and will require all Subcontractors to comply, with all construction safety and health standards established by Law. Neither Contractor nor any Subcontractor will require any worker to work in surroundings or under working conditions that are unsanitary, hazardous or dangerous to his or her health or safety, as determined under construction safety and health standards promulgated by the U.S. Secretary of Labor in accordance with Section 107 of the Contract Work Hours and Safety Standards Act.

24.16.3 Contractor acknowledges that in accordance with Section 24.02(f)(ix) of Comprehensive Agreement no liens or Claims will attach at any time to any interest of the Department in the Opitz Boulevard Ramp Project or the Project Right of Way.

24.16.4 Coordination with the Department. Contractor acknowledges that the Department shall have the right to review this Agreement, and that it may have rights (a) to receive notices of default by Contractor and notices of inspections and tests and (b) to approve Opitz Boulevard Ramp Service Commencement and Opitz Boulevard Ramp Final Completion.

Contractor agrees to make changes to this Agreement and to otherwise cooperate with the Department to the extent reasonably required in order for Concessionaire to obtain the Department's approval.

24.17 Time of the Essence. Without prejudice to any provision of this Agreement relating to liquidated damages, delay or termination for default relating to delay, time is of the essence in the performance of this Agreement.

24.18 Exhibits. All exhibits attached to this Agreement are made a part hereof for all purposes.

*[Remainder of this page intentionally left blank. Signature page follows.]*

IN WITNESS WHEREOF, Concessionaire and Contractor, intending to be legally bound, have caused this Agreement to be executed by their duly authorized representatives as of the date indicated below and to be effective as of the day and year first above written.

**CONCESSIONAIRE**

**95 Express Lanes LLC**

By: \_\_\_\_\_

Name: Pierce Coffee

Title: President

**CONTRACTOR**

**Transurban (USA) Inc.**

By: \_\_\_\_\_

Name: Michael Discenza

Title: Treasurer

**EXHIBIT A**

**Form of Notice to Proceed**

NOTICE TO PROCEED

95 EXPRESS LANES LLC 6440 General Green Way  
Alexandria, VA 22312

[\_\_\_\_\_], 2022

Attention: [\_\_\_\_\_] [Title]  
Transurban (USA) Inc.  
6440 General Green Way  
Alexandria, VA 22312

Re: Notice to Proceed for the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System

Ladies and Gentlemen:

This Notice to Proceed is hereby delivered to you pursuant to Section 2.3.1 of the Turnkey Lump-Sum Design-Build Contract Relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_], 2022 (the “**Agreement**”) between 95 Express Lanes LLC (“**Concessionaire**”) and Transurban (USA) Inc. (“**Contractor**”). Capitalized terms used herein that are not otherwise defined herein shall have their respective meanings set forth in the Agreement.

Concessionaire hereby notifies Contractor to commence performance of the TMS Work and other services under the Agreement, requiring Notice to Proceed [on the date hereof].

Sincerely,

95 EXPRESS LANES LLC

By: \_\_\_\_\_  
Name:  
Title:

**EXHIBIT B**

**FORM OF CONTRACTOR FINAL LIEN WAIVER**

FINAL LIEN WAIVER – CONTRACTOR

COMMONWEALTH OF VIRGINIA            )

:

COUNTY OF                                    )

TO WHOM IT MAY CONCERN:

The undersigned is the [Title] of [Name of Contractor], a [Name of State] [Type of Entity] (“Contractor”), which has contracted to furnish design, development, construction and other services in connection with the Opitz Boulevard Ramp Project, located in the Commonwealth of Virginia (the “Project”) pursuant to the Construction Contract (the “Contract”) with 95 Express Lanes LLC, a Delaware liability company, as concessionaire (“Concessionaire”). Capitalized terms used herein that are not otherwise defined herein shall have the respective meanings set forth in the Contract.

The undersigned, on behalf of Contractor, DOES HEREBY WAIVE AND RELEASE:

Any and all claims, liens, security interests or encumbrances in the nature of mechanics’, labor or materialmen’s liens or otherwise, with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site, in each case on account of the Work performed by or on behalf of Contractor for the Project;

And DOES HEREBY CERTIFY THAT:

There are no claims, liens, security interests or encumbrances in the nature of mechanics’, labor or materialmen’s liens or claims or otherwise arising out of or in connection with, the performance by Contractor or any Subcontractors of the Work performed under the Contract Documents, the Project, the Project Right of Way and any and all interests and estates herein and all improvements and Materials placed on the Site, outstanding or known to exist at the date of this certification; all bills with respect to the Work to be performed under the Contract Documents have been paid (except for disputed amounts for additional work equal to \$\_\_\_\_\_ [insert figure if applicable]) and there is no known basis for filing of any claims, liens, security interests or encumbrances in the nature of mechanics’, labor or materialmen’s liens or claims or otherwise arising out of or in connection with the performance by Contractor or any of the Subcontractors of the Work under the Contract Documents; and releases, assignments and waivers from all Subcontractors that would



otherwise have had the right to place a lien or encumbrance with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site, for all services done and Material furnished have been obtained in such a form as to constitute an effective defense against the assertion of all such liens and claims under the laws of the Commonwealth of Virginia.

Executed copies of all such releases, assignments and waivers obtained by Contractor and not previously delivered to Concessionaire are attached hereto.

The Commonwealth of Virginia may rely on this Final Lien Waiver as a third-party beneficiary thereof.

Signed this \_\_\_\_ day of 20\_\_\_\_.

By: \_\_\_\_\_  
Name:  
Title:

Subscribed and sworn to before me this \_\_\_\_ day of 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for  
Said County and State

**EXHIBIT C**

**FORM OF SUBCONTRACTOR FINAL LIEN WAIVER**

FINAL LIEN WAIVER – SUBCONTRACTOR

COMMONWEALTH OF VIRGINIA       )  
   :  
 COUNTY OF                             )

TO WHOM IT MAY CONCERN:

The undersigned is the *[Title]* of *[Name of Subcontractor]*, a *[Name of State]* *[Type of Entity]* (“Subcontractor”), which has entered into *[Subcontract Name]*, dated *[TBD]* with *[Name of Contractor]*, a *[Name of State]* *[Type of Entity]* (“Contractor”), to furnish design, development, construction or other services for the Opitz Boulevard Ramp Project, located in the Commonwealth of Virginia (the “Project”), pursuant to the Construction Contract (the “Contract”) with 95 Express Lanes LLC, a Delaware liability company, as concessionaire (“Concessionaire”). Capitalized terms used herein that are not otherwise defined herein shall have the respective meanings set forth in the Contract.

For and in consideration of the payment of \$ \_\_\_\_\_, the undersigned, on behalf of Subcontractor, DOES HEREBY WAIVE AND RELEASE:

Any and all claims liens, security interests or encumbrances in the nature of mechanics’, labor or materialmen’s liens or otherwise, with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site and the moneys, funds or other consideration due or to become due from Concessionaire, in each case on account of labor, services, improvements, Materials, fixtures, apparatus or machinery furnished to the date hereof by Subcontractor for the Project. Specifically, *[insert description of the work to which the waiver applies]*.

Signed this \_\_\_ day of 20\_\_\_.

*[NAME OF SUBCONTRACTOR]*  
 By: \_\_\_\_\_  
           Name:  
           Title:

Subscribed and sworn to before me this \_\_\_ day of 20\_\_\_\_\_.

Notary Public in and for  
 Said County and State

**EXHIBIT D**

**FORM OF CONTRACTOR INTERIM LIEN WAIVER**

INTERIM LIEN WAIVER – CONTRACTOR

COMMONWEALTH OF VIRGINIA                 )

:

COUNTY OF   )

TO WHOM IT MAY CONCERN:

The undersigned is the *[Title]* of *[Name of Contractor]*, a *[Name of State]* *[Type of Entity]* (“Contractor”), which has contracted to furnish design, development, construction and other services in connection with the Opitz Boulevard Ramp Project, located in the Commonwealth of Virginia (the “Project”), pursuant to the Construction Contract (the “Contract”) with 95 Express Lanes LLC, a Delaware liability company, as concessionaire (“Concessionaire”). Capitalized terms used herein that are not otherwise defined herein have the respective meanings set forth in the Contract.

For and in the consideration of the payment of \$ \_\_\_\_\_, the undersigned, on behalf of Contractor, DOES TO THE EXTENT OF SUCH PAYMENT HEREBY WAIVE AND RELEASE:

Any and all liens, security interests, encumbrances and other claims in the nature of mechanics’, labor or materialmen’s liens or other similar liens with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site and the moneys, funds or other consideration due or to become due from the Concessionaire, in each case on account of the Work performed to the date specified hereof by or on behalf of Contractor for the Project, excepting only the following pending matters (*none, if blank*):

and DOES HEREBY CERTIFY THAT:

There are no liens, security interests, encumbrances and other claims in the nature of mechanics’, labor or materialmen’s liens or other similar liens, arising out of or in connection with the performance by Contractor or any of the Subcontractors of the Work performed under the Contract Documents, known to exist at the date of this certification, except     for     the     following     matters     (*none, if blank*): \_\_\_\_\_; all bills due and payable with respect to the Work performed to the date hereof under the Contract Documents have been

paid and there is no known basis for filing of any liens, security interests, encumbrances or other claims in the nature of mechanics', labor or materialmen's liens or other similar liens arising out of or in connection with the performance by Contractor or any of the Subcontractors of the Work under the Contract Documents; and releases, assignments and waivers from all Subcontractors that would otherwise have had the right to place a lien or encumbrance with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site, for all services done and Materials furnished to the date hereof have been obtained in such a form as to constitute an effective defense against the assertion of all such liens and encumbrances under the law of the Commonwealth of Virginia, if and to the extent required under the Contract Documents.

The Commonwealth of Virginia may rely on this Interim Lien Waiver as a third-party beneficiary thereof.

Signed this \_\_\_\_ day of 20\_\_\_\_.

[NAME OF CONTRACTOR]

By: \_\_\_\_\_

Name:

Title:

Subscribed and sworn to before me this \_\_\_\_ day of 20\_\_\_\_\_.

Notary Public in and for  
Said County and State

**EXHIBIT E**  
**FORM OF SUBCONTRACTOR INTERIM LIEN WAIVER**

INTERIM LIEN WAIVER – SUBCONTRACTOR

COMMONWEALTH OF VIRGINIA         )  
   :  
COUNTY OF                                 )

TO WHOM IT MAY CONCERN:

The undersigned is the [Title] of [Name of Subcontractor], a [Name of State] [Type of Entity] (“Subcontractor”), which has entered into [Subcontract Name], dated [TBD] with [Name of Contractor], a [Name of State] [Type of Entity] (“Contractor”), to furnish design, development, construction or other services for the Opitz Boulevard Ramp Project, located in the Commonwealth of Virginia (the “Project”), pursuant to the Construction Contract (the “Contract”) with 95 Express Lanes LLC, a Delaware liability company, as concessionaire (“Concessionaire”). Capitalized terms used herein that are not otherwise defined herein shall have the respective meanings set forth in the Contract.

For and in consideration of the payment of \$\_\_\_\_\_, the undersigned, on behalf of Subcontractor, DOES TO THE EXTENT OF SUCH PAYMENT HEREBY WAIVE AND RELEASE:

Any and all claims liens, security interests or encumbrances in the nature of mechanics’, labor or materialmen’s liens or otherwise, with respect to and on the Project, the Project Right of Way and any and all interests and estates therein, and all improvements and Materials placed on the Site and the moneys, funds or other consideration due or to become due from Concessionaire, in each case on account of labor, services, improvements, Materials, fixtures, apparatus or machinery furnished during the period specified hereof by Subcontractor for the Project. Specifically, [insert description of the work to which the interim waiver applies].

Signed this \_\_\_\_ day of 20\_\_\_\_.

[NAME OF SUBCONTRACTOR]

By: \_\_\_\_\_  
Name:  
Title:

Subscribed and sworn to before me this \_\_\_\_ day of 20\_\_\_\_\_.

Notary Public in and for  
Said County and State

**EXHIBIT F**

**Form of Change Directive**

**CHANGE DIRECTIVE  
95 Express Lanes Opitz Boulevard Ramp Project,  
TMS Contract**

95 Express Lanes LLC  
6440 General Green Way  
Alexandria, VA 22312

\_\_\_\_\_, 2022

Attention: [\_\_\_\_\_] , [Title]  
Transurban (USA) Inc.  
6440 General Green Way  
Alexandria, VA 22312

Re: Change Directive No. \_\_\_\_\_  
[insert subject]

As provided in Section 12.3 (*Change Directives*) of the Turnkey Lump-Sum Design-Build Contract relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_\_] , 2022 (the “**Agreement**”), 95 Express Lanes LLC (the “**Concessionaire**”) directs Transurban (USA), Inc. (the “**Contractor**”) to make the following changes in the TMS Work. Any adjustment to the Contract Sum or adjustment to timing of the TMS Work Schedule will be established according to the provisions of Article 12 (*Scope Changes*) of the Agreement.

***Description:***

1. [insert]

***Attachments:***

A. [insert]

B. [insert]

[Date]

Change Directive No. \_\_\_\_\_

[Insert subject]

Page 2 of 2

**The basis for the final amount of adjustment to the Contract Sum shall be as follows:**

*[insert]*

*There is [no] funding associated with this Change Directive.*

When signed by the Authorized Representative of the Concessionaire this document, as of the date below, becomes EFFECTIVE IMMEDIATELY as a Change Directive (CD), and the Contractor shall proceed with the above noted work:

---

[Name]

95 Express Lanes LLC

**EXHIBIT G**

**Form of Scope Change Order**

SCOPE CHANGE ORDER

95 Express Lanes LLC  
6440 General Green Way  
Alexandria, VA 22312

\_\_\_\_\_, 20\_\_

Attention: [\_\_\_\_\_] [Title]  
Transurban (USA) Inc.  
6440 General Green Way  
Alexandria, VA 22312

Re: Scope Change Order No. \_\_\_\_\_

95 Express Lanes LLC (“**Concessionaire**”) has delivered this Scope Change Order, completed except for signature by Transurban (USA) Inc. (“**Contractor**”), to Contractor’s duly authorized representative on the above date. Capitalized terms used herein that are not otherwise defined herein have the meanings set forth in that certain Turnkey Lump-Sum Design-Build Contract relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_\_] , 2022 (the “**Agreement**”), entered by and between Concessionaire and Contactor.

The following Scope Change shall, upon execution of this Scope Change Order, become part of the Agreement, and shall be subject to the same terms and conditions contained therein (*Concessionaire to cross through the following provisions that do not apply*):

1. Scope of Work. Contractor is hereby authorized/instructed to make the additions and/or deletions to the equipment, material, services and extent of Scope of Work as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

2. Guaranteed Dates. The Opitz Boulevard Ramp Guaranteed Service Commencement Date is \_\_\_\_\_. The Guaranteed Dale Boulevard Slip Ramp Opening Date is \_\_\_\_\_. The Opitz Boulevard Ramp Guaranteed Final Completion Date is \_\_\_\_\_. (*Indicate “unchanged” if applicable.*)



3. Opitz Boulevard Ramp Long Stop Date. The Opitz Boulevard Ramp Long Stop Date is \_\_\_\_\_ . (Indicate “unchanged” if applicable.)

4. Payment and Values Schedule. The Payment and Values Schedule is adjusted as follows (indicate “unchanged” if applicable): \_\_\_\_\_  
\_\_\_\_\_.

5. Maximum Cumulative Drawdown Schedule. The Maximum Cumulative Drawdown Schedule is adjusted as follows (indicate “unchanged” if applicable): \_\_\_\_\_  
\_\_\_\_\_.

6. TMS Work Schedule. The TMS Work Schedule is adjusted as follows (indicate “unchanged” if applicable): \_\_\_\_\_  
\_\_\_\_\_.

7. Contract Sum. The Contract Sum shall be [increased][decreased] in the amount of \_\_\_\_\_ (\$\_\_\_\_\_), and taking into account this Scope Change and all prior Scope Changes, is now equal to \_\_\_\_\_ (\$\_\_\_\_\_).

8. Attachments. The following attachments are hereby incorporated into this Scope Change:  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_  
5. \_\_\_\_\_

The above represents full and final compensation, including but not limited to the impact of any adjustments to the Scope of Work, the TMS Work Schedule, the Opitz Boulevard Ramp Guaranteed Service Commencement Date, the Guaranteed Dale Boulevard Slip Ramp Opening Date, the Opitz Boulevard Ramp Guaranteed Final Completion Date, the Opitz Boulevard Ramp Long Stop Date, the Payment and Values Schedule, the Maximum Cumulative Drawdown Schedule and the Contract Sum, for the change described herein.

Agreed and Accepted:

95 EXPRESS LANES LLC

TRANSURBAN (USA) INC.

By: \_\_\_\_\_

By:\_\_\_\_\_

Name: \_\_\_\_\_

Name:\_\_\_\_\_

Title: \_\_\_\_\_

Title:\_\_\_\_\_

**EXHIBIT H**

**Form of Letter of Credit**

*[The Issuer Bank Letterhead]*

**IRREVOCABLE STANDBY LETTER OF CREDIT NO. XXXXXXXXX**

ISSUE DATE: [MONTH] [DAY], 20[\_\_\_]

**ISSUER:**

*Issuer Bank*

PLACE FOR PRESENTATION OF DRAFT:

*[Issuer Bank]*

*New York Branch*

*[Address]*

*[Address]*

**APPLICANT:**

TRANSURBAN (USA) INC. (“THE APPLICANT”)

**BENEFICIARY:**

95 EXPRESS LANES LLC  
6440 GENERAL GREEN WAY  
ALEXANDRIA, VA 22312  
ATTN: TREASURER

PROJECT: OPITZ BOULEVARD RAMP PROJECT

LETTER OF CREDIT NUMBER: XXXXXXXXX

PLACE AND DATE OF ISSUE:

NEW YORK CITY, NEW YORK AND [MONTH] [DAY], 20[\_\_\_]

EFFECTIVE DATE: [MONTH] [DAY], 20[\_\_\_]

EXPIRATION DATE: [MONTH] [DAY], 20[\_\_\_]

AMOUNT: **USD X,XXX,XXX.XX** ([\_\_\_] MILLION UNITED STATES DOLLARS)

ISSUER HEREBY ISSUES THIS IRREVOCABLE STANDBY LETTER OF CREDIT NUMBER XXXXXX (THIS “LETTER OF CREDIT”) IN FAVOR OF BENEFICIARY IN THE AMOUNT OF [\_\_\_\_\_] MILLION UNITED STATES DOLLARS (USD XX,XXX,XXX.XX) (SUCH AMOUNT, THE “STATED AMOUNT”). FUNDS UNDER THIS LETTER OF CREDIT ARE AVAILABLE TO BENEFICIARY UPON BENEFICIARY’S PRESENTATION TO ISSUER OF ONE OR MORE SIGHT DRAFTS DRAWN ON ISSUER FOR A SUM OR SUMS IN AN AGGREGATE AMOUNT NOT EXCEEDING THE STATED AMOUNT.

ANY SIGHT DRAFT DRAWN UNDER THIS LETTER OF CREDIT WILL IDENTIFY THIS LETTER OF CREDIT BY THE NAME OF ISSUER AND THE LETTER OF CREDIT NUMBER, AMOUNT, AND PLACE AND DATE OF ISSUE. SUCH SIGHT DRAFT WILL BE DATED AND SIGNED BY 95 EXPRESS LANES LLC (“CONCESSIONAIRE”) TREASURER AND WILL CONTAIN A STATEMENT THAT BENEFICIARY IS ENTITLED TO MAKE SUCH DRAW.

PARTIAL DRAWINGS AND MULTIPLE DRAWINGS UNDER THIS LETTER OF CREDIT ARE PERMITTED.

THIS LETTER OF CREDIT WILL BE HONORED BY ISSUER IF THE ABOVE-REFERENCED SIGHT DRAFT IS DRAWN UNDER AND IN COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS LETTER OF CREDIT AND IS PRESENTED TO THE [\_\_\_ISSUER BANK\_\_\_], NEW YORK BRANCH [\_\_\_ADDRESS\_\_\_] ON OR BEFORE [MONTH] [DAY], 20[\_\_\_] (THE “EXPIRATION DATE”). IF A DRAWING IN COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS LETTER OF CREDIT IS PRESENTED ON ANY BANKING DAY, ISSUER WILL HONOR THE DRAWING ON OR PRIOR TO THE FOLLOWING BANKING DAY REGARDLESS OF WHETHER SUCH BANKING DAY OCCURS AFTER THE EXPIRATION DATE.

AS USED HEREIN “BANKING DAY” MEANS ANY DAY THAT IS NOT A SATURDAY OR SUNDAY OR ANY OTHER DAY ON WHICH COMMERCIAL BANKS IN NEW YORK ARE AUTHORIZED BY LAW OR EXECUTIVE ORDER TO CLOSE.

THE OBLIGATIONS OF ISSUER HEREUNDER ARE PRIMARY OBLIGATIONS TO BENEFICIARY AND WILL NOT BE AFFECTED BY ANY BANKRUPTCY, INSOLVENCY OR OTHER SIMILAR PROCEEDING INITIATED BY TRANSURBAN (USA) INC. TRANSURBAN (USA) INC. IS NOT THE BENEFICIARY UNDER THIS LETTER OF CREDIT AND POSSESSES NO INTEREST WHATSOEVER IN PROCEEDS OF ANY DRAW HEREON. ISSUER WILL PAY TO BENEFICIARY ANY AMOUNT DRAWN HEREUNDER WITHIN ONE BANKING OF RECEIPT OF A DRAW, IN COMPLIANCE WITH THE LETTER OF CREDIT TERMS AND CONDITIONS, IN IMMEDIATELY AVAILABLE FUNDS FREE AND CLEAR OF AND WITHOUT DEDUCTION FOR ANY TAXES, DUTIES, FEES, LIENS, SET-OFFS OR OTHER DEDUCTIONS OF ANY KIND AND REGARDLESS OF ANY OBJECTION BY ANY THIRD PARTY. THIS LETTER OF CREDIT WILL TERMINATE ON THE EARLIER OF

- (I) THE CLOSE OF BUSINESS ON THE EXPIRATION DATE AND
- (II) THE DATE ON WHICH ISSUER HAS HONORED ONE OR MORE DRAWS IN THE AGGREGATE SUM OF THE STATED AMOUNT.

THIS LETTER OF CREDIT MAY ONLY BE TRANSFERRED TO THE VIRGINIA DEPARTMENT OF TRANSPORTATION, AN AGENCY OF THE COMMONWEALTH OF VIRGINIA, IN ITS CAPACITY AS PARTY TO THE THIRD AMENDED AND RESTATED COMPREHENSIVE AGREEMENT DATED AS OF [MONTH] [DAY], 2022.

DRAWINGS DRAWN UNDER, AND IN COMPLIANCE WITH, THE TERMS AND CONDITIONS OF THIS LETTER OF CREDIT, WILL BE HONORED BY THE ISSUER PROVIDED THAT SUCH ARE MADE IN ORIGINAL. PRESENTATION OF A SIGHT DRAFT SHALL BE MADE TO OUR OFFICE LOCATED AT [\_\_\_ISSUER BANK\_\_\_] NEW YORK BRANCH, [\_\_\_ADDRESS\_\_\_] BY

- (I) PHYSICAL DELIVERY OF SUCH ORIGINAL DOCUMENTS TO SUCH OFFICE, OR
- (II) VIA OVERNIGHT COURIER OF SUCH ORIGINAL DOCUMENTS TO SUCH OFFICE

TO THE EXTENT NOT INCONSISTENT WITH PROVISIONS HEREOF, THIS LETTER OF CREDIT IS SUBJECT TO AND GOVERNED BY THE RULES OF THE INTERNATIONAL STANDBY

PRACTICES ISP98 (“ISP98”), INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 590, AND THE LAWS OF THE COMMONWEALTH OF VIRGINIA, AND WILL, AS TO MATTERS NOT GOVERNED BY ISP 98, BE GOVERNED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE COMMONWEALTH OF VIRGINIA, WITHOUT REGARD TO CONFLICT OF LAWS PRINCIPLES.

WITH RESPECT TO ANY SUIT, ACTION OR PROCEEDINGS RELATING TO THIS LETTER OF CREDIT (“PROCEEDINGS”), ISSUER IRREVOCABLY:

- (I) SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF VIRGINIA AND
- (II) WAIVES ANY OBJECTION, WHICH IT MAY HAVE AT ANY TIME TO THE LAYING OF VENUE OF ANY PROCEEDINGS BROUGHT IN SUCH COURT, WAIVES ANY CLAIM THAT SUCH PROCEEDINGS HAVE BEEN BROUGHT IN AN INCONVENIENT FORUM AND FURTHER WAIVES THE RIGHT TO OBJECT, WITH RESPECT TO SUCH PROCEEDINGS, THAT SUCH COURT DOES NOT HAVE ANY JURISDICTION OVER ISSUER.

ANY FAILURE BY BENEFICIARY TO DRAW UPON THIS LETTER OF CREDIT AS PERMITTED HEREUNDER WILL NOT CAUSE THIS LETTER OF CREDIT TO BE UNAVAILABLE FOR ANY FUTURE DRAWING, PROVIDED THAT THIS LETTER OF CREDIT HAS NOT EXPIRED PRIOR TO SUCH FUTURE DRAWING AND THAT ALL REQUIREMENTS OF THIS LETTER OF CREDIT ARE SATISFIED WITH RESPECT TO ANY SUCH FUTURE DRAWING.

VERY TRULY YOURS,

[ ISSUER BANK ]  
NEW YORK BRANCH

BY: \_\_\_\_\_  
(AUTHORIZED SIGNATORY)

**EXHIBIT I**

Form of Seminary Change Directive

**CHANGE DIRECTIVE**  
**95 Express Lanes Opitz Boulevard Ramp Project,**  
**TMS Contract**

95 Express Lanes LLC  
6440 General Green Way  
Alexandria, VA 22312

\_\_\_\_\_, 2022

Attention: [\_\_\_\_\_] , [Title]  
Transurban (USA) Inc.  
6440 General Green Way  
Alexandria, VA 22312

Re: Contract Directive No. \_\_\_\_\_  
Seminary Road Ramp Project, TMS Scope

95 Express Lanes LLC (“**Concessionaire**”) directs Transurban (USA) Inc. (“**Contractor**”) to make the following changes to the TMS Work upon, and subject to, the following terms and conditions, as acknowledged and agreed by Contractor in Section 12.14 of the Agreement. Capitalized terms used herein that are not otherwise defined herein have the meanings set forth in that certain Turnkey Lump-Sum Design-Build Contract Relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_\_] , 2022 (the “**Agreement**”), entered by and between Concessionaire and Contractor.

**Description:**

1. *Contractor is hereby authorized/instructed to add to the TMS Work the Seminary Road Ramp Conversion Scope of Work further detailed and described in the attachment referenced below.*
2. *In connection with the foregoing additional scope:*
  - a. *The Opitz Guaranteed Service Commencement Date is unchanged.*
  - b. *The Opitz Guaranteed Final Completion Date is unchanged.*
  - c. *The Opitz Long Stop Date is unchanged.*

June 13, 2022

Change Directive No. [\_\_\_\_\_]

Page 2 of 3

*d. Contractor shall incorporate the scope change into the Maximum Cumulative Drawdown Schedule and the TMS Work Schedule and submit with the next monthly update. Refer to the Seminary Road Ramp Payment and Values Schedule attachment referenced below.*

**Attachments:**

- A. *Addition of Seminary Road Ramp Conversion Scope of Work*
- B. *Payment and Values Schedule*

**The final amount of adjustment to the Contract Sum shall be as follows:**

*The Contract Sum shall be increased in the amount of one hundred sixty-six thousand, seven hundred and sixteen dollars (\$166,716), and taking into account this Change Directive and all prior Change Directives and Scope Changes, is now equal to two million, one hundred sixty-five thousand, six hundred and ten dollars (\$2,165,610).*

*The above represents full and final compensation for the change described herein.*

When signed by the Authorized Representative of the Concessionaire this document, as of the date below, becomes EFFECTIVE IMMEDIATELY as a Change Directive pursuant to the Agreement, and the Contractor shall proceed with the above noted work:

---

[Name]  
95 Express Lanes LLC



**Attachment A**  
**Addition of Seminary Road Ramp Conversion Scope of Work**



---

**Seminary Ramp Conversion**  
**Traffic Management System Contractor**  
**Scope of Work**

---

**Document Control**

The master copy of this document is held electronically. Printed documents are uncontrolled copies.

**Owner:** Transurban (USA) Inc.

**Principal Author:** Transurban (USA) Inc.

**Document Number:**

**Document Reference:**

**CONFIDENTIALITY STATEMENT:**

Information in this document must be kept confidential as per its classification below, and the rules of disclosure.

PUBLIC     COMMERCIAL IN CONFIDENCE     COMPANY CONFIDENTIAL     HIGHLY CONFIDENTIAL

All documents within the Transurban Infrastructure Developments (WSO) Pty Ltd Company are classified in the following way. **PUBLIC** documents are intended for anyone, **COMMERCIAL IN CONFIDENCE** documents are to be kept confidential between the restricted individuals within Transurban and partner organisations. **COMPANY CONFIDENTIAL** documents are to be kept confidential within Transurban, and used for normal business activities by the general office population, **HIGHLY CONFIDENTIAL** documents are to be kept confidential to restricted individuals within Transurban.

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## **1 TMS WORK**

### **1.1 Traffic Management System (TMS)**

- a. TMS Subcontractor shall provide updates to the current 495/95/395 TMS system necessary to integrate the Seminary Ramp Conversion project;
- b. TMS Subcontractor shall deliver and install TMS updates to the Production system and Testing/Training system;
- c. TMS Subcontractor shall conduct end to end testing in test environment as well as post deployment testing;
- d. TMS Subcontractor shall support post go-live 'Hypercare'.

### **1.2 Back Office and Dynamic Pricing System**

#### **1.2.1 Back Office System (BOS)**

- a. TMS Subcontractor shall update configurations to support the DPS changes.

#### **1.2.2 Dynamic Pricing System (DPS)**

- a. TMS Subcontractor shall provide updates to the current 495/95/395 DPS system necessary to integrate the Seminary Ramp Conversion project;
- b. TMS Subcontractor shall display toll rates on DMSs for data transferred from the DPS to the TMS for the pricing intervals affected by the Seminary Ramp Conversion project;
- c. TMS Subcontractor shall compute dynamic rates for configured pricing segments for the Seminary Ramp Conversion project;
- d. TMS Subcontractor shall transfer toll prices to all configured virtual pricing DMSs that are included in DMS Groups.

#### **1.2.3 Corporate Web and Mobile Applications**

- a. Provide 'on-the-road-now' pricing information to support Seminary Ramp Conversion project.

## **2 TESTING AND COMMISSIONING**

### **2.1 Testing Process and Procedures**

- a. TMS Subcontractor shall provide testing documentation including test results after the test environment testing and the post deployment testing;
- b. TMS Subcontractor shall coordinate and manage the system testing and commissioning process through post deployment testing;
- c. TMS Subcontractor shall follow the change approval process prior to deployment of the Seminary Ramp Conversion project to production.

## **3 SERVICE COMMENCEMENT AND STARTUP SCOPE**

- a. TMS Subcontractor shall implement and coordinate the Seminary Ramp Conversion project start-up;
- b. TMS Subcontractor shall provide a roll-back plan in the event that Seminary Ramp Conversion project implementation negatively impacts revenue collection on 495/95/395 road network;
- c. TMS Subcontractor shall support TMS-related activities and deliverables required prior to Service Commencement.
- d. Service Commencement shall occur within 90 days of Notice to Proceed.

**Attachment B - Payment and Values Schedule**

**SEMINARY RAMP CONVERSION PAYMENTS & VALUES**

Task/Activity/Milestone	Category	% of Total Cost	% of Subtotals*	Total	Notations
<b>1.0 PROJECT MANAGEMENT (Monthly Recurring)</b>					
<b>1.1 TTMS SI Management</b>					
1.1.1 TTMS Project Management	SI	11.04%	15.45%	\$ 18,400.00	Monthly until Service Commencement (+ Punchout)
1.1.2 Systems Integration	SI	17.54%	24.55%	\$ 29,246.40	Monthly until Service Commencement (+ Punchout)
<b>2.0 Mobilization</b>					
2.1 DPS Mobilization	DPS	1.66%	10.00%	\$ 2,760.00	At Mobilization
2.2 SI Mobilization	SI	7.14%	10.00%	\$ 11,911.60	At Mobilization
<b>3.0 TESTING</b>					
<b>3.1 Test Environment Testing</b>					
3.1.1 SI Testing: Test Environment	SI	10.72%	15.00%	\$ 17,867.40	Upon Successful completion of testing in SIT
3.1.2 TMS Testing: Test Environment	TMS	3.60%	30.00%	\$ 6,000.00	Upon Successful completion of testing in SIT
3.1.3 DPS Testing: Test Environment	DPS	4.14%	25.00%	\$ 6,900.00	Upon Successful completion of testing in SIT
<b>3.2 Post Deployment Testing</b>					
3.2.1 SI Testing: Post Deployment	SI	10.72%	15.00%	\$ 17,867.40	Upon Successful completion of testing post deployment
3.2.2 TMS Testing: Post Deployment	TMS	3.60%	30.00%	\$ 6,000.00	Upon Successful completion of testing post deployment
3.2.3 DPS Testing: Post Deployment	DPS	4.14%	25.00%	\$ 6,900.00	Upon Successful completion of testing post deployment
<b>4.0 TRANSITION, HYPERCARE, GO-LIVE, CLOSURE</b>					
<b>4.1 Go-Live Support - Service Commencement</b>					
4.1.1 TMS Go-Live Support - Service Commencement	TMS	3.60%	30.00%	\$ 6,000.00	At Go-Live - Service Commencement
4.1.2 DPS Go-Live Support - Service Commencement	DPS	4.97%	30.00%	\$ 8,280.00	At Go-Live - Service Commencement
4.1.3 SI Go-Live Support - Service Commencement	SI	14.29%	20.00%	\$ 23,823.20	At Go-Live - Service Commencement
<b>4.2 Punch List Completion</b>					
4.2.1 TMS Punch List Completion	TMS	1.20%	10.00%	\$ 2,000.00	Upon Successful completion of Punch List
4.2.2 DPS Punch List Completion	DPS	1.66%	10.00%	\$ 2,760.00	Upon Successful completion of Punch List
<b>* SUBTOTALS</b>					
*	TMS Update - Vendor Contract	12.00%		\$20,000.00	
*	DPS Update	16.56%		\$27,600.00	
*	TTMS Systems Integration (SI)	71.45%		\$ 119,116.00	

**\$166,716.00**

**EXHIBIT J**

**PROJECT RIGHT OF WAY**





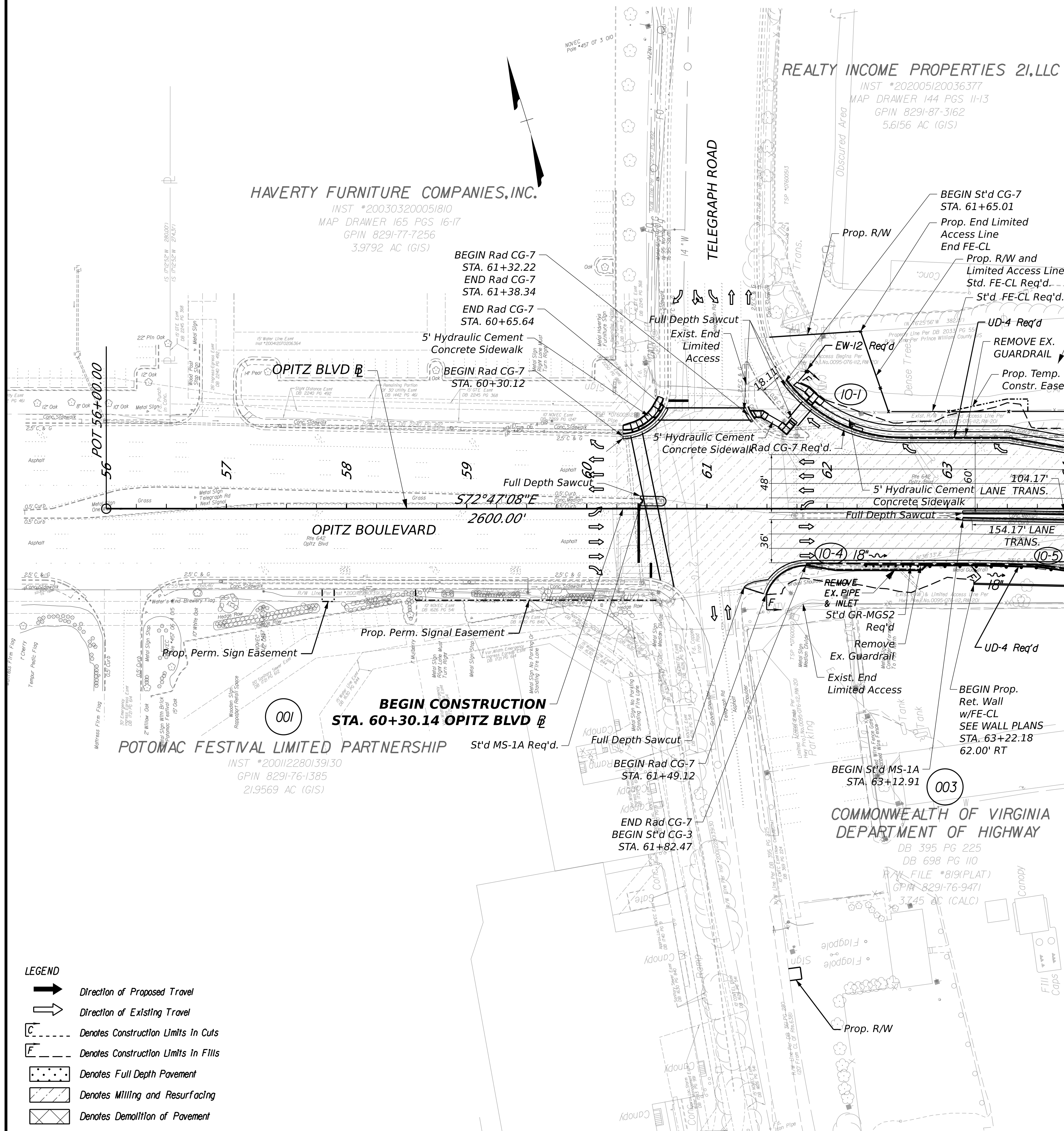
PROJECT MANAGER: *Rampal Shah, P.E. (703) 259-2362 (NOVA District)*  
 SURVEYED BY, DATE: *H&B Surveying and Mapping, LLC (804) 330-3781, 03/09/2021*  
 DESIGN BY: *Whitman, Requardt & Associates, LLP (804) 272-8700*  
 SUBSURFACE UTILITY BY, DATE: *Accumark, Inc. (804) 550-7140, 07/07/2021*

REVISED	STATE	STATE		SHEET NO.
		ROUTE	PROJECT	
	VA.	95	0095-076-299, C-501	10

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Whitman, Requardt & Associates  
 Richmond, Virginia  
 HYDRAULICS ENGINEER

Whitman, Requardt & Associates  
 Richmond, Virginia  
 ROADWAY ENGINEER



MATCHLINE STATION 64+00 - SEE SHEET 9

002

COMMONWEALTH OF VIRGINIA  
 DB 1250 PG 506  
 HWY PB 9 PG 314  
 NO GPIN ASSIGNED  
 0.654 +/- AC (CALC)

Utility Owner's List

- Water & Sewer:**  
 Prince William County Service Authority  
 4 County Complex Court  
 Woodbridge, VA 22192  
 Samantha (Sam) Kearney PE 703-335-7925  
 skearney@pwcsa.org  
 Luke Engbert Work: 703-393-4467  
 Cell: 540-642-6288  
 lengbert@pwcsa.org
- Street Lighting:**  
 Richard "Ricky" Hagstrom  
 Prince William County  
 Street Lighting Program Coordinator  
 703-792-6823  
 rhagstrom@pwccgov.org
- Power:**  
 Dominion Energy  
 7500 W Broad St  
 Richmond, VA 23294  
 Alec T. Hagerman  
 Cell: 804-366-9344  
 Alec.T.Hagerman@dominionenergy.com
- Northern Virginia Electric Cooperative**  
 Manager, Field Services  
 P.O. Box 2710  
 Manassas, VA 20108  
 Dale Diffenbaugh  
 Office: 703-392-1720  
 Cell: 703-926-7661  
 Ddiffenbaugh@Novec.com
- Gas:**  
 Washington Gas  
 Mark Tajnai PE PMP  
 Work: 703-750-5667  
 Cell: 703-408-6534  
 MTajnai@washgas.com
- Telecomm:**  
 Comcast  
 Mark Slebrch  
 11101 University Blvd  
 Manassas, VA 20110  
 Cell: 540-553-1415  
 Mark\_Slebrch@comcast.com
- Cox Communications**  
 Patricio (Jeff) Acierto  
 7741 Southern Drive  
 Springfield, VA 22150  
 703-480-7812  
 Patricio.Acierto@cox.com
- Verizon Virginia Inc.**  
 Joe Zych  
 6014 Windsor Drive  
 Fredericksburg, VA 22407  
 540-903-4188  
 joezych@msn.com
- SummittIG LLC**  
 Steve Ragland  
 22375 Brodrick Dr., Suite 165  
 Dulles, VA 20166  
 Work: 804-317-4483  
 Cell: 703-376-3695  
 sragland@summittig.com
- LUMEN (Qwest)**  
 Samantha Meyer  
 Business Analyst - Relocations  
 Tulsa, OK  
 relocations@lumen.com

**LEGEND**

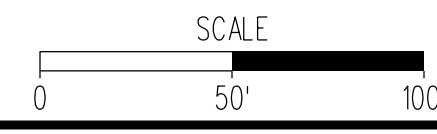
	Direction of Proposed Travel
	Direction of Existing Travel
	Denotes Construction Limits in Cuts
	Denotes Construction Limits in Fills
	Denotes Full Depth Pavement
	Denotes Milling and Resurfacing
	Denotes Demolition of Pavement

**REFERENCES (PLAN AND DETAIL SHEETS)**

OPITZ BLVD PROF.	10A
E&S PLAN	10B
RW PLAN	10RW
DRAINAGE DESC.	14(1)-14(2)
TMS PLANS	15(1)-15(13)
SIGNING PLANS	16(1)-16(21)
LIGHTING PLANS	17(1)-17(10)
SIGNAL PLANS	18(1)-18(5)


**RIGHT OF WAY PLANS**

THESE PLANS ARE UNFINISHED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION.



PROJECT	0095-076-299
SHEET NO.	10

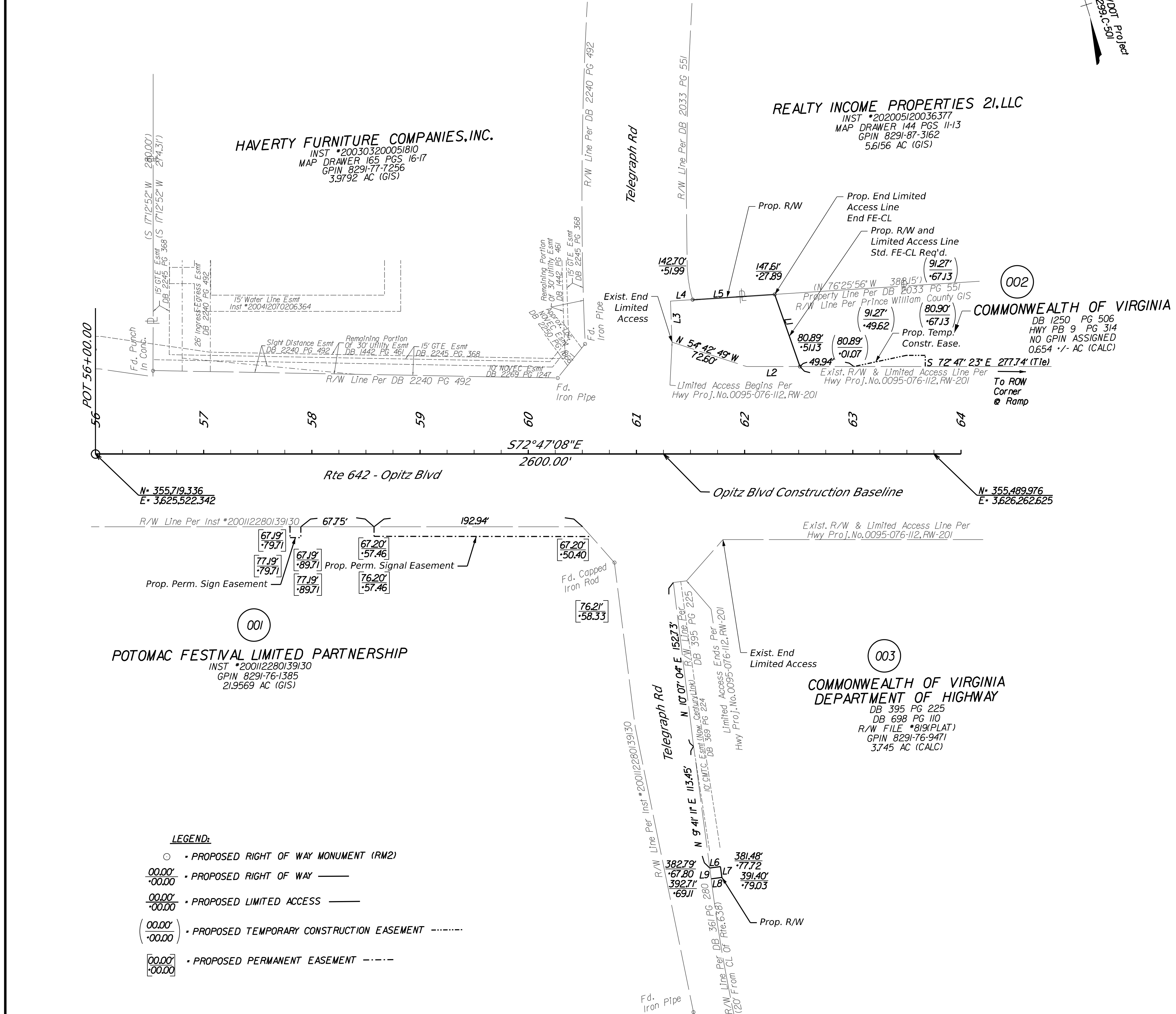
PROJECT MANAGER: Bimal Shaha, P.E. (703) 259-2362 (NOVA District)  
SURVEYED BY, DATE: H&B Surveying and Mapping, LLC (804) 330-3781, 03/09/2021  
DESIGN BY: Whitman, Bequardt, & Associates, LLP (804) 272-8700  
SUBSURFACE UTILITY BY, DATE: Accurmark, Inc. (804) 550-7740, 07/07/2021

	REVISED	STATE	ROUTE	PROJECT	SHEET NO.
		VA.	95	0095-076-299, C-501	10RW

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Leslie R Byrnside  
2022.07.08 16:54:53-04'00"  
H&B Surveying and Mapping  
Richmond, Virginia  
LAND SURVEYOR

Based on VDOT Project  
0095-076-299, C-501



Line Table

Line	Bearing	Distance
L1	S 1° 59' 33" E	70.66'
L2	N 72° 47' 23" W	49.77'
L3	N 15° 02' 17" E	38.00'
L4	S 76° 29' 10" E	20.53'
L5	S 76° 29' 10" E	76.05'
L6	S 80° 18' 49" E	10.00'
L7	S 09° 41' 11" W	10.00'
L8	N 80° 18' 49" W	10.00'
L9	N 09° 41' 11" E	10.00'

Area Table

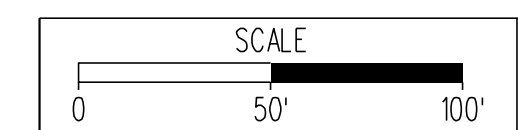
Parcel	Proposed Right-of-Way Take (Ac. or SF)	Proposed Temp. Const. Easement (Ac. or SF)	Proposed Permanent Sign Easement (Ac. or SF)	Proposed Permanent Signal Easement (Ac. or SF)
001			100 SF	1,772 SF
002	6,070 SF	433 SF		
003	100 SF			

Notes:

- This Right-of-Way Sheet is Based Upon a Field Run Perimeter Survey of the Existing and Proposed R/W Limits. All Other Adjoining/Departing Boundary Lines Shown are Compiled From Various Sources: Found Field Monumentation, Metes and Bounds Description and Recorded Plats. The Adjoining Lines Do Not Represent a Field Run Survey of the Adjoining Properties and are a Best Fit Based on Compiled Data. All Areas Shown for R/W Takes and Easements are Approximate Only. See Right-of-Way Sheet IC.
- All of the Properties Physical Improvements are not Shown Hereon.
- This Plan Sheet was Prepared Without the Benefit of a Title Report and May Not Show All Easements Which May Affect the Property Shown Hereon.
- No Designation or Location of Subsurface Utilities were Performed During Preparation of This Plan Sheet.
- This Survey Datum is Based on VDOT Project \*0095-076-299, C-501, UPC \*116663.
- No Cemetery Sites were Observed / Visible on the Subject Properties.
- I hereby Certify That This Plan Sheet is Correct to the Best of My Knowledge and Belief, and This Plan Sheet Complies With The Minimum Standards and Procedures as Established By The Virginia Department Of Transportation's Location and Design Division.
- Coordinate Values Shown Hereon are VDOT Project Coordinates.
- All Monumentation to be Set Within 6 Months of the Completion of Construction.

LEGEND:

- - PROPOSED RIGHT OF WAY MONUMENT (RM2)
- (00.00' / -00.00') - PROPOSED RIGHT OF WAY
- (00.00' / -00.00') - PROPOSED LIMITED ACCESS
- - - - (00.00' / -00.00') - PROPOSED TEMPORARY CONSTRUCTION EASEMENT
- - - - (00.00' / -00.00') - PROPOSED PERMANENT EASEMENT





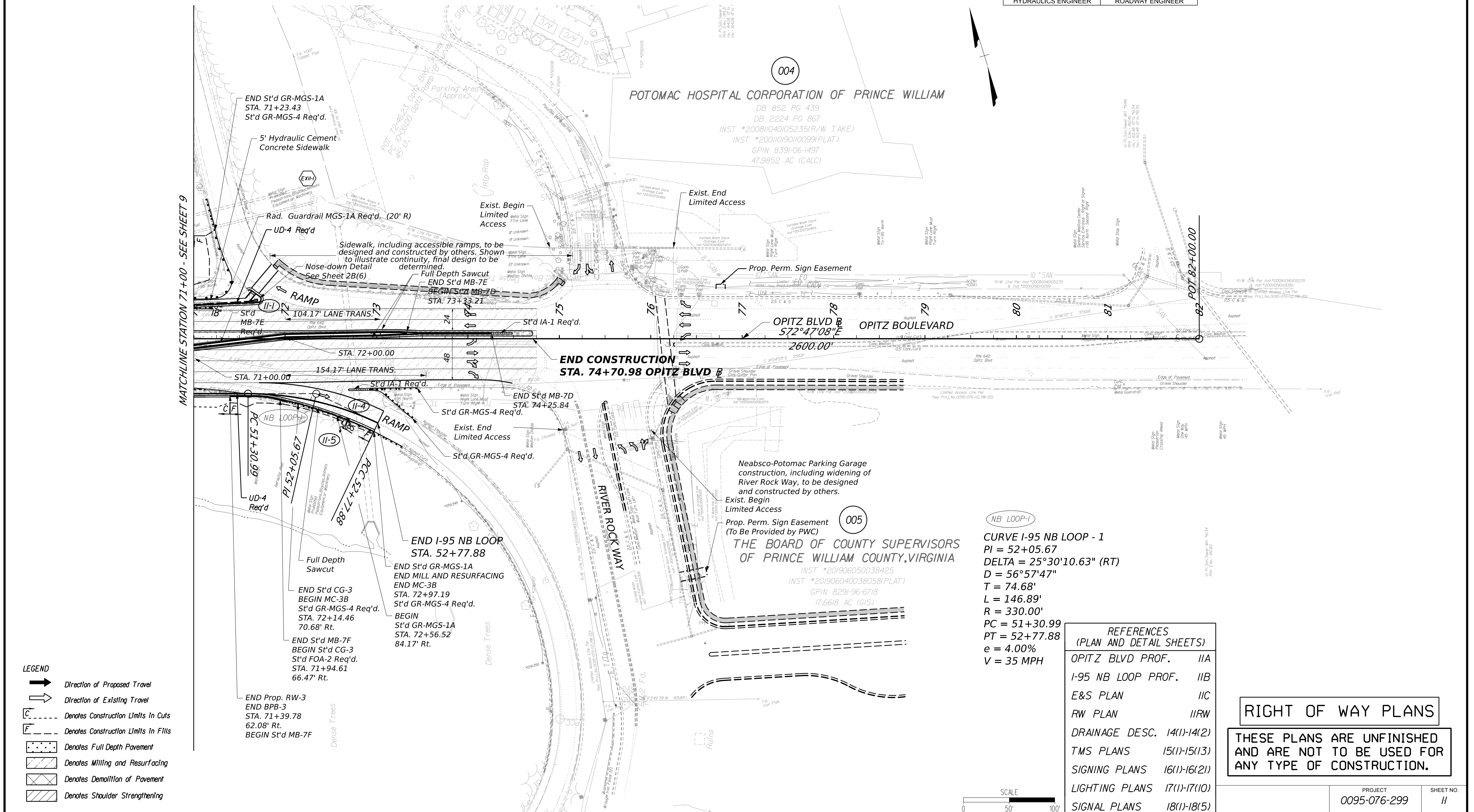
PROJECT MANAGER: *Rampal Shah, P.E., (703) 259-2362 (NOVA District)*  
 SURVEYED BY, DATE: *H&B Surveying and Mapping, LLC (804) 330-3781, 03/09/2021*  
 DESIGN BY: *Whitman, Reardon & Associates, LLP (804) 272-8700*  
 SUBSURFACE UTILITY BY, DATE: *AccuMark, Inc. (804) 550-7140, 07/07/2021*

See Sheet 10 for Utility Owner's List

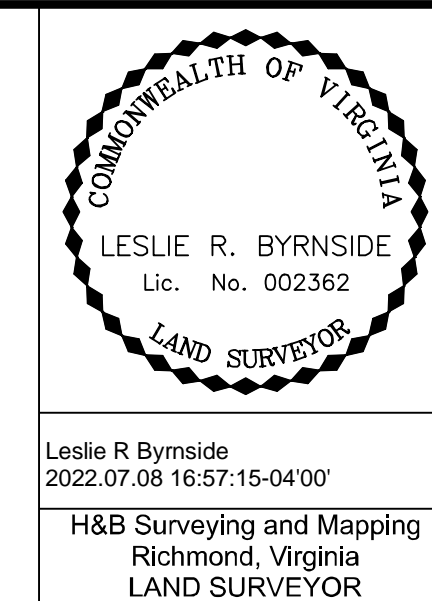
REVISED	STATE	STATE		SHEET NO.
		ROUTE	PROJECT	
	VA.	95	0095-076-299, C-501	11

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Whitman, Reardon & Associates Richmond, Virginia HYDRAULICS ENGINEER	Whitman, Reardon & Associates Richmond, Virginia ROADWAY ENGINEER
--	---



PROJECT MANAGER: Bimal Shaha, P.E. (703) 259-2362 (NOVA District)  
SURVEYED BY, DATE: H&B Surveying and Mapping, LLC (804) 330-3781, 03/09/2021  
DESIGN BY: Whitman, Bequardt, & Associates, LLP (804) 272-8700  
SUBSURFACE UTILITY BY, DATE: AccuMark, Inc. (804) 550-7740, 07/07/2021



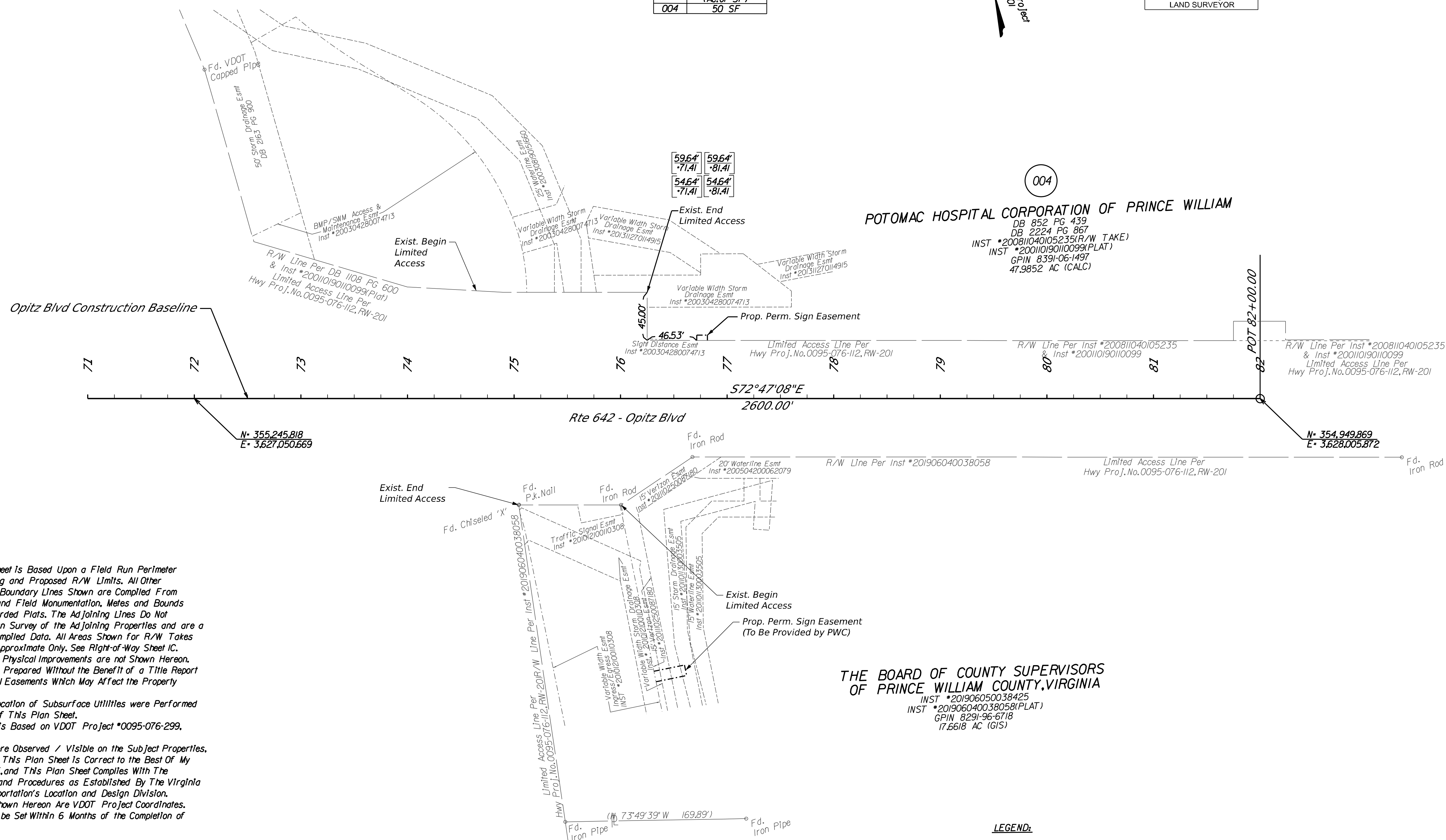
REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	95		0095-076-299, C-501	11RW

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Area Table

Parcel	Proposed Permanent Sign Easement (Ac. or SF)
004	50 SF

Based on VDOT Project 0095-076-299, C-501



59.64'	59.64'
71.41'	81.41'
54.64'	54.64'
71.41'	81.41'

POTOMAC HOSPITAL CORPORATION OF PRINCE WILLIAM  
DB 852 PG 439  
DB 2224 PG 867  
INST \*20081040105235(R/W TAKE)  
INST \*200110190110099(PLAT)  
GPIN 8391-06-1497  
47.9852 AC (CALC)

THE BOARD OF COUNTY SUPERVISORS OF PRINCE WILLIAM COUNTY, VIRGINIA  
INST \*201906050038425  
INST \*201906040038058(PLAT)  
GPIN 8291-96-6718  
17.6618 AC (GIS)

- Notes:
- This Right-of-Way Sheet is Based Upon a Field Run Perimeter Survey of the Existing and Proposed R/W Limits. All Other Adjoining/Departing Boundary Lines Shown are Compiled From Various Sources: Found Field Monumentation, Metes and Bounds Description and Recorded Plats. The Adjoining Lines Do Not Represent a Field Run Survey of the Adjoining Properties and are a Best Fit Based on Compiled Data. All Areas Shown for R/W Takes and Easements are Approximate Only. See Right-of-Way Sheet IC.
  - All of the Properties Physical Improvements are not Shown Hereon.
  - This Plan Sheet was Prepared Without the Benefit of a Title Report and May Not Show All Easements Which May Affect the Property Shown Hereon.
  - No Designation or Location of Subsurface Utilities were Performed During Preparation of This Plan Sheet.
  - This Survey Datum is Based on VDOT Project \*0095-076-299, C-501, UPC \*116663.
  - No Cemetery Sites were Observed / Visible on the Subject Properties.
  - I hereby Certify That This Plan Sheet is Correct to the Best of My Knowledge and Belief, and This Plan Sheet Complies With The Minimum Standards and Procedures as Established By The Virginia Department Of Transportation's Location and Design Division.
  - Coordinate Values Shown Hereon are VDOT Project Coordinates.
  - All Monumentation to be Set Within 6 Months of the Completion of Construction.

LEGEND:  
[00.00'] - PROPOSE PERMANENT SIGN EASEMENT - - - -



**EXHIBIT L  
PAYMENT AND VALUES SCHEDULE**

**OPITZ BOULEVARD PAYMENTS & VALUES**

Task/Activity/Milestone	Category	% of Total Cost	% of Subtotals*	Total	Notations
<b>1.0 PROJECT MANAGEMENT (Monthly Recurring)</b>					
<b>1.1 TTMS SI Management</b>					
1.1.1 TTMS Project Management	SI	13.75%	21.00%	\$ 274,867.70	Monthly until Service Commencement (+ Punchout)
1.1.2 Systems Integration	SI	32.74%	50.00%	\$ 654,446.92	Monthly until Service Commencement (+ Punchout)
1.1.3 Internal Business Partners (Cross-Functional Support)	SI	3.27%	5.00%	\$ 65,444.69	Monthly until Service Commencement (+ Punchout)
1.1.4 Project Support - Direct Costs (Travel/Food/Ent)	SI	1.31%	2.00%	\$ 26,177.88	Monthly until Service Commencement (+ Punchout)
1.1.5 Quality Assurance	SI	3.27%	5.00%	\$ 65,444.69	Monthly until Service Commencement (+ Punchout)
<b>1.2 TMS Management</b>					
1.2.1 TMS Project Management	TMS	2.18%	15.00%	\$ 43,500.00	Monthly until Service Commencement
<b>2.0 Mobilization</b>					
2.1 NET Mobilization	NET	0.50%	5.00%	\$ 10,000.00	At Mobilization
2.2 TMS Mobilization	TMS	0.44%	3.00%	\$ 8,700.00	At Mobilization
2.3 BOS Mobilization	BOS	1.00%	10.00%	\$ 20,000.00	At Mobilization
2.4 SI Mobilization	SI	3.27%	5.00%	\$ 65,444.85	At Mobilization
<b>3.0 REQUIREMENTS &amp; DESIGN</b>					
<b>3.1 System Requirements</b>					
3.1.1 NET System Requirements	NET	0.60%	6.00%	\$ 12,000.00	Upon Successful completion of SRR
3.1.2 TMS System Requirements	TMS	0.15%	1.00%	\$ 2,900.00	Upon Successful completion of SRR
3.1.3 BOS System Requirements	BOS	1.00%	10.00%	\$ 20,000.00	Upon Successful completion of SRR
<b>3.2 Dale Boulevard Slip Ramp Design Review</b>					
3.2.1 NET Dale Blvd Slip Ramp Design Review	NET	1.50%	15.00%	\$ 30,000.00	Upon Successful completion of Dale Blvd Slip Ramp Design Review
3.2.2 TMS Dale Blvd Slip Ramp Design Review	TMS	1.45%	10.00%	\$ 29,000.00	Upon Successful completion of Dale Blvd Slip Ramp Design Review
3.2.3 BOS Dale Blvd Slip Ramp Design Review	BOS	2.00%	20.00%	\$ 40,000.00	Upon Successful completion of Dale Blvd Slip Ramp Design Review
<b>3.3 Opitz Boulevard Ramp Design Review</b>					
3.3.1 NET Opitz Blvd Ramp Design Review	NET	2.50%	25.00%	\$ 50,000.00	Upon Successful completion of Opitz Blvd Ramp Design Review
3.3.2 TMS Opitz Blvd Ramp Design Review	TMS	1.45%	10.00%	\$ 29,000.00	Upon Successful completion of Opitz Blvd Ramp Design Review
3.3.3 BOS Opitz Blvd Ramp Design Review	BOS	2.00%	20.00%	\$ 40,000.00	Upon Successful completion of Opitz Blvd Ramp Design Review
<b>4.0 HARDWARE &amp; SOFTWARE PROCUREMENT</b>					
4.1 Corporate Technology Provision (Laptops and Software)	SI	0.65%	1.00%	\$ 13,088.94	At Mobilization
<b>5.0 TESTING &amp; INSTALLATION</b>					
<b>5.1 FAT</b>					
5.1.1 NET Factory Acceptance Testing (FAT)	NET	0.50%	5.00%	\$ 10,000.00	Upon Successful completion of FAT
5.1.2 TMS Factory Acceptance Testing (FAT)	TMS	2.90%	20.00%	\$ 58,000.00	Upon Successful completion of FAT
<b>5.2 Device Test &amp; Integration - Dale Blvd Slip Ramp</b>					
5.2.1 NET Device Acceptance Testing	NET	1.25%	12.50%	\$ 25,000.00	Upon Successful completion of Dale Blvd Slip Ramp Device Acceptance Testing
5.2.2 TMS Device integration and Acceptance Testing	TMS	1.45%	10.00%	\$ 29,000.00	Upon Successful completion of Dale Blvd Slip Ramp Device Acceptance Testing
<b>5.3 Device Test &amp; Integration - Opitz Blvd Ramp</b>					
5.3.1 NET Device Acceptance Testing	NET	1.25%	12.50%	\$ 25,000.00	Upon Successful completion of Opitz Blvd Ramp Device Acceptance Testing
5.3.2 TMS Device integration and Acceptance Testing	TMS	1.45%	10.00%	\$ 29,000.00	Upon Successful completion of Opitz Blvd Ramp Device Acceptance Testing
<b>5.4 Vehicle and Drivers for UAT and IAT support - Dale Blvd Slip Ramp</b>	SI	0.98%	1.50%	\$ 19,633.41	Upon Successful completion of Dale Blvd Slip Ramp Device Acceptance Testing
<b>5.5 Vehicle and Drivers for UAT and IAT support - Opitz Blvd Ramp</b>	SI	0.98%	1.50%	\$ 19,633.41	Upon Successful completion of Opitz Blvd Ramp Device Acceptance Testing
<b>5.6 IAT - Dale Blvd Slip Ramp</b>					
5.6.1 NET Testing: Integrated Acceptance Test	NET	0.50%	5.00%	\$ 10,000.00	Upon Successful completion of Dale Blvd Slip Ramp IAT
5.6.2 TMS Testing: Integrated Acceptance Test	TMS	0.73%	5.00%	\$ 14,500.00	Upon Successful completion of Dale Blvd Slip Ramp IAT
5.6.3 BOS Testing: Integrated Acceptance Test	BOS	1.00%	10.00%	\$ 20,000.00	Upon Successful completion of Dale Blvd Slip Ramp IAT
<b>5.7 IAT - Opitz Blvd Ramp</b>					
5.7.1 NET Testing: Integrated Acceptance Test	NET	0.50%	5.00%	\$ 10,000.00	Upon Successful completion of Opitz Blvd Ramp IAT
5.7.2 TMS Testing: Integrated Acceptance Test	TMS	0.73%	5.00%	\$ 14,500.00	Upon Successful completion of Opitz Blvd Ramp IAT
5.7.3 BOS Testing: Integrated Acceptance Test	BOS	1.00%	10.00%	\$ 20,000.00	Upon Successful completion of Opitz Blvd Ramp IAT
<b>5.8 UAT - Dale Blvd Slip Ramp</b>					
5.8.1 NET Testing: User Acceptance Test	NET	0.25%	2.50%	\$ 5,000.00	Upon Successful completion of Dale Blvd Slip Ramp UAT
5.8.2 TMS Testing: User Acceptance Test	TMS	0.22%	1.50%	\$ 4,350.00	Upon Successful completion of Dale Blvd Slip Ramp UAT
5.8.3 BOS Testing: User Acceptance Test	BOS	0.50%	5.00%	\$ 10,000.00	Upon Successful completion of Dale Blvd Slip Ramp UAT
<b>5.9 UAT - Opitz Blvd Ramp</b>					
5.9.1 NET Testing: User Acceptance Test	NET	0.25%	2.50%	\$ 5,000.00	Upon Successful completion of Opitz Blvd Ramp UAT
5.9.2 TMS Testing: User Acceptance Test	TMS	0.22%	1.50%	\$ 4,350.00	Upon Successful completion of Opitz Blvd Ramp UAT
5.9.3 BOS Testing: User Acceptance Test	BOS	0.50%	5.00%	\$ 10,000.00	Upon Successful completion of Opitz Blvd Ramp UAT
<b>6.0 TRAINING/DOCUMENTATION</b>					
6.1 TMS Training	TMS	0.15%	1.00%	\$ 2,900.00	UAT Complete
<b>7.0 TRANSITION, HYPERCARE, GO-LIVE, CLOSURE</b>					
<b>7.1 Go-Live Support - Dale Blvd Slip Ramp Start Up</b>					
7.1.1 NET Go-Live Support - Dale Blvd Slip Ramp Start Up	NET	0.10%	1.00%	\$ 2,000.00	At Dale Blvd Slip Ramp Start Up
7.1.2 TMS Go-Live Support - Dale Blvd Slip Ramp Start Up	TMS	0.15%	1.00%	\$ 2,900.00	At Dale Blvd Slip Ramp Start Up
7.1.3 BOS Go-Live Support - Dale Blvd Slip Ramp Start Up	BOS	0.25%	2.50%	\$ 5,000.00	At Dale Blvd Slip Ramp Start Up
7.1.4 SI Go-Live Support - Dale Blvd Slip Ramp Start Up	SI	2.62%	4.00%	\$ 52,355.76	At Dale Blvd Slip Ramp Start Up
<b>7.2 Go-Live Support - Service Commencement</b>					
7.2.1 NET Go-Live Support - Service Commencement	NET	0.10%	1.00%	\$ 2,000.00	At Go-Live - Service Commencement
7.2.2 TMS Go-Live Support - Service Commencement	TMS	0.15%	1.00%	\$ 2,900.00	At Go-Live - Service Commencement
7.2.3 BOS Go-Live Support - Service Commencement	BOS	0.25%	2.50%	\$ 5,000.00	At Go-Live - Service Commencement
7.2.4 SI Go-Live Support - Service Commencement	SI	2.62%	4.00%	\$ 52,355.75	At Go-Live - Service Commencement
<b>7.3 Punch List Completion - Dale Blvd Slip Ramp</b>					
7.3.1 NET Punch List Completion - Dale Blvd Slip Ramp	NET	0.20%	1.00%	\$ 2,000.00	Upon Successful completion of Dale Blvd Slip Ramp Start Up Punch List
7.3.2 TMS Punch List Completion - Dale Blvd Slip Ramp	TMS	0.73%	2.50%	\$ 7,250.00	Upon Successful completion of Dale Blvd Slip Ramp Start Up Punch List
7.3.3 BOS Punch List Completion - Dale Blvd Slip Ramp	BOS	0.50%	2.50%	\$ 5,000.00	Upon Successful completion of Dale Blvd Slip Ramp Start Up Punch List
<b>7.4 Punch List Completion</b>					
7.4.1 NET Punch List Completion	NET	0.10%	1.00%	\$ 2,000.00	Upon Successful completion of Punch List
7.4.2 TMS Punch List Completion	TMS	0.36%	2.50%	\$ 7,250.00	Upon Successful completion of Punch List
7.4.3 BOS Punch List Completion	BOS	0.25%	2.50%	\$ 5,000.00	Upon Successful completion of Punch List
<b>* SUBTOTALS</b>					
* TMS Enhancement - Vendor Contract		14.51%		\$290,000.00	
* Network Enhancement		10.01%		\$200,000.00	
* BOS Enhancement		10.01%		\$200,000.00	
* TTMS Systems Integration (SI)		65.48%		\$ 1,308,894.00	

**\$1,998,894.00**

## **Exhibit N**

# **Traffic Management System (TMS) Special Provisions**

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**TMS SPECIAL PROVISIONS**

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**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 238—ELECTRICAL AND SIGNAL COMPONENTS  
(OPITZ PROJECT TMS)**

July 15, 2020

**Section 238 – Electrical and Signal Components** is amended as follows:

**238.02 (a)** is amended to include the following:

Liquid-tight flexible metallic conduit shall meet the requirements of UL 360.

**238.02 (f)** is amended to include the following:

In bridge parapets, barriers, and similar structures, bolts and machine screws used to secure the lid to the box must have hexagonal heads.

Boxes for power cables shall meet the requirements for Type R junction boxes except that they need not have bottoms.

**238.02 (g) 2** is amended to include the following:

- e. **Copper communication cable between Traffic Management System cabinets** shall comply with IMSA specification 59-2 or 60-2 and shall use 19-gauge wire unless otherwise noted on the plans.

**238.02 (h)** is amended to add the following:

- 30. **Cable end caps** used on electrical and communication cables shall meet the requirements of 238.02(h)27.

**238.02** is amended to add the following:

- (i) **Innerduct** shall be three-inch, three-cell textile innerduct composed of nylon and polyester. It shall have a factory-installed pull tape in each duct and shall meet the following requirements:
  - 1. Breaking strength (ASTM D2256): 2,530 pounds.
  - 2. Coefficient of friction using HDPE cable and no additional lubricant (ASTM D4518): 0.12 maximum.
  - 3. Hydrocarbon resistance (Bellcore 356 4.3.2): 7.5% maximum tensile loss.
  - 4. Print durability: Meets Bellcore 356 5.3.5.
- (j) **Duct Plugs** shall be removable and reusable. They shall incorporate compression gaskets to form a watertight and gastight seal. They shall have an eye for attaching a pull tape to the plug on the face that is inside the conduit. Identical duct plugs may be used for conduit ends underground in junction boxes and exposed conduit stubs at sign structures.
- (k) **Labels.**
  - 1. Labels for cables. Use self-laminating vinyl labels at least 1.5 inches wide and long enough that the translucent portion of the label completely covers the white area bearing the legend. The vinyl shall be 0.004 inches thick with a 0.00059-inch layer of pressure sensitive acrylic adhesive. The labels shall resist oil, water, and solvents and shall be self-extinguishing. The legend shall be machine printed in letters at least 0.08 inches high. Prior to labeling any cables, submit a sample of the proposed material to the Engineer for approval. The samples shall be imprinted with a typical cable ID.

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2. Labels for pigtails. Use white, self-adhesive polypropylene labels applied as flags near the connector. The area available for the text shall be at least 1" by ¾" and the area in adhered to the jumper shall be at least 0.25 square inches.
3. Labels for jumpers shall be self-adhesive vinyl wire markers preprinted with letters.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 510—RELOCATING OR MODIFYING EXISTING MISCELLANEOUS ITEMS  
(OPITZ PROJECT TMS)**

July 15, 2020

**Section 510 – Relocating or Modifying Existing Miscellaneous Items** is amended as follows:

**510.03 – Procedures** is amended to include the following:

All work related to relocating or modifying existing miscellaneous items shall be in compliance with the requirements of the Technical Requirements and related addenda and the provisions set forth in this Section.

Modification of existing cables includes labeling the cables and sealing the ducts in accordance with Section 700.05. It also includes distributing the cable slack equally among the junction boxes and manholes through which the installed cable passes and storing the slack neatly on the hooks in the boxes and manholes. At no additional cost, replace cables that are damaged during removal and reinstallation. Proper operation and visual inspection of the cable will be adequate proof that the cable is undamaged. If a cable appears to be damaged prior to removal, do not remove it until the Engineer has inspected the cable and decided whether it should be reused. Similarly, if an existing cable appears damaged prior to installation, do not install it until the Engineer has determined that it is fit for installation.

Prior to relocating or modifying a cabinet, prepare a table or diagram of the existing fiber splices and connections in that cabinet. Replicate those splices and connections in the new location if the connection diagrams in the plans do not indicate otherwise.

Before relocating a cabinet, inspect it for damage. Bring any defects to the attention of the Engineer. The Engineer will then determine how to proceed. After relocation, repair or replace any damage occurring during the relocation. At the new location, provide lifetime silicone sealant on the bottom surface of the base adapter to seal the gap between the adapter and the foundation.

Foundation removal, which is part of cabinet and generator relocation, entails complete demolition of the existing concrete foundation to a depth of at least 2 ft. below grade and proper disposal of the resulting debris. Cap the conduits to prevent entry of water and rodents. Unless the foundation area is to be paved, it also entails provision of clean fill, compaction, application of 2 in. of Class B topsoil, and seeding with a grass seed mix appropriate for the location.

Relocation of electrical equipment entails testing the equipment prior to relocation to confirm that the equipment is working. If it is not working, demonstrate that fact to the Engineer's representative. The Engineer will then determine how to proceed. It also entails testing the relocated equipment using the same procedures developed for new equipment. For detectors and cameras, the work includes the same setup activities as for new installations. For dynamic message signs, the work includes all setup and testing recommended by the manufacturer of that equipment. For all relocated equipment, confirm proper communication from the HOT-OC.

Detector stations and Dynamic Message Signs, as identified on the plans, will be relocated or removed by the Contractor. Coordinate work in the area of this equipment with the Concessionaire or the Concessionaire's contractors before any work is performed.

Relocation or modification to reversible roadway gates and gate controller cabinets shall follow the provisions of Section 818.

Transitioning cabinets and service panels from VDOT operation to Express Lanes operation includes:

- Replacing the identification plaque on the cabinet with the type used for Express Lanes cabinets and modifying or replacing the lock so it uses the same keys as the other Express Lane equipment



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- cabinets or service panels. Coordinate with the Concessionaire, to obtain information on existing locks.
- Where a new splice pedestal cabinet is provided for VDOT fiber that is removed from a cabinet transitioned to 95 Express Lanes, provide a new cabinet ID plaque as required in Section 810. Adjust the size of the plaque as needed to accommodate the size of the splice pedestal cabinet provided. Cabinet ID shall be as directed by the Engineer.
  - Where an existing VDOT equipment cabinet is being converted to a splice through point only, provide a new cabinet ID plaque as required in Section 823. Cabinet ID shall be as directed by the Engineer.
  - Salvaged VDOT equipment shall be returned to NRO ITS Maintenance at the NROIC Facility at 8010 Mason King Court, Manassas, VA 20109.
  - Salvaged Express Lanes equipment shall be returned to Transurban Maintenance Facility at 10109 Giles Run Road, Lorton VA 22079. All returned equipment shall be coordinated with and approved by 95 Express Lanes.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 700—GENERAL  
(OPITZ PROJECT TMS)**

July 15, 2020

**Section 700 – General** is amended as follows:

**700.05 (a)** is amended to replace the fourth sentence with the following:

Ground rods shall include a No. 6 bare, solid copper conductor connected to the ground rod by a clamp or exothermic weld. If that connection is not inside a cabinet or building, exothermic welding must be used. If the Plans show a larger ground wire, use the size on the Plans.

**700.05 (e)** is amended to add the following:

If there is a gap between the base plate and a foundation containing conduits, then wrap a strip of stainless-steel hardware cloth around the gap to keep rodents out. The hardware cloth shall extend from the top of the concrete to the top of the base plate but shall not protrude above the base plate. The hardware cloth shall have ¼" mesh and shall be held in place by a stainless steel band around the base plate. The ends of the strip shall overlap by at least six inches.

**700.05 (h)**, seventh paragraph is replaced by the following:

Use the same type of sealant for conduits containing communication cables. At the top of occupied conduits in cabinets and pole bases, use a wad of copper wool or mesh stuffed a minimum of six inches into the conduit, blocking the path of rodents. During conduit installation, plug ducts as soon as they are installed and only remove the plug to join sections together or to pull cable through the duct. Plug the duct immediately after completing the pull. When installing conduit or cable to or through any cabinet, junction box, or manhole, ensure that all ducts are plugged, not just the ones in which work was performed.

For existing communications junction boxes replace stainless steel toggle bolts with washers and wing nuts (large enough to completely cover the openings) in communications junction boxes manhole hook openings, blocking the path of rodents.

**700.05 (h)**, tenth paragraph, is replaced by the following:

Non-metallic VDOT conduits with non-metallic cable (fiber optic) within shall be equipped with a No. 8 locator wire.

Non-metallic Express Lanes conduits with non-metallic cable (fiber optic) shall be locatable at all times. Where Express Lanes fiber optic cable is installed in a common trench and where VDOT locator wire is already installed in the same trench, a locator wire shall not be required in the Express Lanes conduits. Where Express Lanes non-metallic cables are installed and conduit system diverges from the common trench, a locator wire shall be installed.

Where a locator wire is required to make the conduit run locatable, the wire shall be an insulated #8 AWG stranded copper wire. The insulation shall not be green in color.

**700.05 (h) 2** is amended to include the following:

When boring, provide a means of collecting and containing drilling fluid/slurry that returns to the surface, such as vacuum truck or slurry pit, or a method approved by the Engineer. Provide measures to prevent drilling fluids from entering storm sewer systems. Prevent drilling fluid/slurry from accumulating on or flowing onto sidewalks, other pedestrian walkways, driveways, or streets. Immediately remove any slurry that is inadvertently deposited on pedestrian walkways. Transport waste drilling slurry from the

site and dispose of it. Do not allow slurry to enter wetlands or waterways. Protect wetlands and waterways using appropriate soil erosion control measures approved by the Engineer.

700.05 is amended to add the following:

- (l) **Blocked or Damaged Conduits:** If cable is to be installed into an existing conduit and the conduit is found to be blocked or damaged, clear the obstructions or repair the damage prior to installing cabling in existing conduits.

Conduit requiring cleaning shall be identified in writing by the Contractor. Once the Engineer provides approval for the cleaning, the Contractor shall clean the conduit. This cleaning shall be conducted in the presence of the Engineer's representative. Blockages shall be cleared by first rodding the conduit. Then, a mandrel having a diameter of at least 80 percent of the inside diameter of the conduit shall be pulled back through the conduit run. Finally, install a pull tape and plug the ends if cable will not be installed immediately.

If the blockage cannot be cleared or the conduit is crushed, propose a solution for the Engineer's approval.

- (m) **Cable Labeling:** Label every new or reinstalled cable or wire immediately upon installation. Label the cables at every point of access, including manholes, junction boxes, and termination points.

#### **Cables for ITS Communications and Power**

Cables and wires shall be labeled using the three-part ID system used for existing cables. The cable ID shall be the same at every point where the cable is labeled, from one termination or splice point to the other. The first part of the ID identifies the type of cable. The second part of the ID is the ID of a cabinet or other location where the cable is terminated or spliced. For example, 48SMF-B078 denotes a fiber optic cable with 48 single mode fiber strands that enters cabinet B078. The third part of the ID is a number assigned sequentially to differentiate between cables that have the first two parts of the ID the same. For example, 24SMF-B097-1 and 24SMF-B097-2 would be two different fiber optic cables, each made up of 24 single mode fiber strands that originate (or terminate) in Cabinet B097. Every communication cable should have a different ID. Power conductors in the same circuit, running together between the same two points, should have the same ID. Ensure that the labels accurately reflect as-built conditions.

#### **Cables for Roadway Lighting**

Cable label material and procedures shall be identical to that for ITS cables. Cable IDs shall identify the service panel, circuit number, and phase conductor.

- (n) **Textile Innerduct:** Innerduct shall be installed in all 4" Express Lanes and VDOT communications conduits that have cables installed as part of the project unless noted on the plans. Spare conduits and 2" communications conduits shall not have innerduct installed. In conduits between equipment cabinets and the nearest junction box or manhole, innerducts shall be omitted.

Arrange for the manufacturer of the innerduct to provide on-site training in the installation of this product. Only personnel who have been trained by the manufacturer are allowed to supervise the installation.

Use the swivels and grips recommended by the manufacturer.

Unless this project installs three strips of textile innerduct in a conduit, install a pull tape into the conduit on top of the innerduct, so that another innerduct can be pulled into the conduit if needed in the future.

Anchor the innerduct at the feed end before pulling cables into it, so the cables don't drag the innerduct into the conduit. To anchor, make a slit near the seam, pass a length of pull tape through the slit and tie it to the innerduct. Then tie the other end of the tape to a fixed object.

- (o) **Wall Penetrations:** To install conduit into junction boxes and manholes with reinforced concrete walls, enter through the bottom if the bottom is open. Otherwise, use existing knockouts or conduit stubs. If none of those options are available, drill, cut, or chisel a hole through the wall without cracking the concrete. Use a rebar detector to mark the location of reinforcing steel prior to making the hole. If the spacing of the rebar permits, make the holes without damaging the reinforcing steel. After the conduit has been installed, scrub the perimeter of the hole with water, apply an approved bonding agent to concrete, and grout the gap between the conduit and the wall. Use non-shrink grout.

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- (p) Cleaning Junction Boxes: Pump out standing water, clear all silt, debris, and foreign matter to the satisfaction of the Engineer. Remove and dispose of debris. Should additional silt, debris, or water accumulate in the box between the original cleaning and final inspection, remove them at no additional cost to the Concessionaire.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 703—TRAFFIC SIGNALS  
(OPITZ PROJECT TMS)**

July 15, 2020

**Section 703 – Traffic Signals** is amended as follows:

**703.02(f) Detectors** is amended to include the following:

6. **Microwave Vehicle Detector:** For both permanent and temporary detection, provide a Wavetronix SmartSensor HD. The detector shall include mounting hardware, device server, sealant, cable, Category 5E jumpers, power supply, and a surge protection module in the main cabinet. If the detector cable passes through a Type 1 cabinet, provide a second surge protection module in that Type 1 cabinet. All these items shall be recommended by, and supplied by, the detector manufacturer. If multiple detectors are connected to a single cabinet, each must be installed with separate communications cables, device servers, and surge protectors. Multiple detectors may share a single power supply.

Type 1 cabinets house a surge protection module at the structure supporting the detector. These cabinets also provide a place where a technician can plug in a laptop computer and calibrate the detector while observing traffic. The cabinets shall be small aluminum NEMA 3R enclosures with a DIN rail and, mounted to the DIN rail, a surge protector supplied by the detector manufacturer. The protector shall have an EIA-232 connector for the technician's laptop. Equip the cabinet with a lock that uses the same key as the other Express Lanes cabinets in this project. Provide a cabinet ID plaque per the requirements of Section 810. Cabinet IDs shall be as shown on the plans or as provided by the Engineer.

Detector cables shall be labeled in each equipment cabinet with the detector it servers and the destination cabinet ID. For cabinets serving multiple detectors, clear identification of the detector shall be provided. For example, identify detectors for ramps versus detectors for mainline express lanes.

**703.03(g) Installing Detectors** is amended to include the following:

6. Microwave Vehicle Detectors for both temporary and permanent installations must be installed in accordance with the manufacturer's recommended procedure for side-fired installation. Note that the recommended mounting height is relative to the road surface, not the base of the pole. Installation may be done by the Contractor's forces but must be checked by the manufacturer's representative and adjusted as recommended by the manufacturer's representative.

Installation includes connecting the detector to surge protection, power, and communication, aiming it, and setting operating parameters. Use EIA-485 communication and set the communication rate to 9.6kbps unless otherwise directed by the manufacturer and the Integrator.

If mounted on a metal pole or post, the Type 1 cabinets must be grounded to the pole or post that must, in turn be grounded. Use #6 AWG wire or an equivalent bonding strap between the cabinet and post.

Set up shall include speed calibration using measured reference speeds. Present evidence satisfactory to the Engineer that the speed measuring device used for detector calibration has been proven accurate. Provide all equipment, such as a radar gun, software, laptop computer, tools, and cables, needed for the set up work.

Develop test procedures in accordance with manufacturer recommended procedures and satisfactory to the Engineer. The tests shall include confirmation of the accuracy of counts and average speed in each lane. Both results shall be within ten percent of independently measured values during a continuous

period in which at least 100 vehicles are counted unless a lower count is approved by the Engineer or System Integrator representative on-site. Conduct the test in the presence of the Engineer's representative. When the detector passes the test, deliver the values of all parameters to the Engineer in printed or computer-readable form, along with the test report. For detectors monitoring a reversible lane, this test procedure shall be applied separately for each direction of traffic flow. Provide a table in the plans illustrating microwave detector lane coverage for Express Lanes and General Purpose Lanes where applicable.

7. **Microwave Vehicle Detector Reconfiguration:** At the temporary and permanent locations installed by the Contractor as part of the project, microwave vehicle detectors shall be set up as if they were new when shifts in traffic lanes warrant reconfiguration. Active detectors shall monitor traffic lanes as defined by the current maintenance of traffic lane arrangement or the permanent lanes as defined by the plans or construction operations. After all lanes are in their final configuration and carrying traffic, check the detector's operation and adjust the setup parameters as necessary to match existing conditions. Then test the detector using the same acceptance test as for those provided in this project. After it passes the test, give the Engineer a written or computer-readable copy of all the setup parameters along with the test report.

**COPNSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 800—SUMMARY OF WORK  
(OPITZ PROJECT TMS)**

**[NOT USED]**

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 813—UNINTERRUPTIBLE POWER SUPPLY  
(OPITZ PROJECT TMS)**

July 15, 2020

**813.01 – General.**

All work related to the installation and testing of Opitz Project UPS shall be in compliance with the requirements of the provisions set forth in this section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 802 of the 2020 Edition of the VDOT Road and Bridge Specifications.

Provide Uninterruptible Power Supplies (UPS) at locations as shown on plans. The UPS assembly shall provide complete non-interruptible power protection, voltage regulation, and surge and spike protection for all ITS devices and communications equipment powered by it. The UPS shall instantly transfer the cabinet to the battery back-up mode in the event the main AC power source goes offline.

- (a) **Express Lanes Configuration:** UPS shall be installed at the last DMS cabinet location before entering the Express Lanes. The UPS shall have an uninterruptible power supply (UPS) that supports the equipment in the event of a power outage for at least 1 hour. For Hub Sites install one UPS as shown on the plans and supports the equipment in the event of a power outage for at least 1 hour.

**813.02 – Materials.**

- (a) The Inverter/UPS shall be ZincFive UPStealth 170 Inverter/Controller with Simple Network Management Protocol. The 170 UPStealth Inverter/Controller shall be configured to match the power requirements of the traffic cabinet. Provide one USB port and one Ethernet RJ-45 connector for Category 5/6 copper wire connections. The Battery Panels shall be the Living-Hinge Battery type Panels which are designed for easy installation by sliding between the cabinet rack and the outside shell of the cabinet. Provide one 500W Battery Panel for each UPS installed.

**813.03 – Construction.**

- (a) The UPS shall be a commercially available package containing all wiring connectors, software, mounting brackets, and cables. The UPS assembly shall consist of a UPS with batteries, surge suppression, LED status indicators for "On-line," "Battery On," "Replace Battery," and "Overload," customizable output relays and input contacts, and network management cards (IP addressable).

**813.04- Procedures**

(a) **Installation:**

1. Install the UPS, power and wiring in accordance with the manufacturer's recommendations. The UPS shall be rack mounted below the controller in the DMS Cabinet.
2. Ground the UPS in accordance with the manufacturer's recommendations.
3. Label all cables at both ends, indicating the particular device it serves.
4. Set the operating parameters as directed by the System Integrator, including IP address, and location.

(b) **Testing:**

Acceptance Testing: Develop a test plan and procedures that demonstrate proper operation of the UPS under full load conditions and demonstrate the expected operating performance and uptime. The plan shall include all tests recommended by the manufacturer. When the plan is satisfactory to the Engineer, conduct the testing in accordance with the plan and prepare a test report. Provide any software and equipment needed to conduct the tests.



**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 814—CAMERA SYSTEM  
(OPITZ PROJECT TMS)**

July 15, 2020

**814.01 – General.**

All work related to the installation and testing of Opitz Project closed circuit television (CCTV) shall be in compliance with the requirements of the provisions set forth in this section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 803 of the 2020 Edition of the VDOT Road and Bridge Specifications.

Provide CCTV cameras, poles, mounting hardware, cables, and surge protection for surveillance and automatic incident detection (AID) as indicated in the plans.

**814.02 – Materials.**

(a) **Express Lanes surveillance camera Assembly:** shall be COHU Costar Electronics Model 4260HD-Rise Series Positioner with cables, power supplies, and mounting hardware recommended by the manufacturer. It shall use NTCIP communication.

(b) **Express Lanes AID camera assembly** shall be COHU Electronics Model 3430 Series Fixed Barrel AID camera with cables, power supplies, and mounting hardware recommended by the manufacturer. It shall use NTCIP communication.

(c) **Camera Pole**

1. **General:** Pole shall be a galvanized steel pole and shall comply with Section 226 of VDOT Standard Specifications and the Plans. Some camera pole foundations shall be built in accordance with designs in the Plans and others shall be designed by the Contractor. Regardless of who designs the foundation, poles of the same length shall be interchangeable unless the Engineer approves an exception. If the design requires a pole height greater than 50 feet, the Contractor shall provide a camera-lowering device.

2. **Design:** Design the pole and, if indicated on the Plans, the foundation. Submit the design to the Engineer for approval, including a structural analysis and calculations sealed by a professional engineer registered in Virginia. The structural calculations shall be based on soil samples from each proposed pole location. The design shall be adequate for a pole with two surveillance cameras, two AID cameras, and two detectors. The structural analysis shall use the procedures and parameters in the 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals to demonstrate that:

- The foundation meets all the requirements of the AASHTO *Standard Specifications*.
- The horizontal deflection of the top of the pole does not exceed 1/2 inch in a 30 mph wind.

The anchor bolts shall be designed in accordance with the 2001 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Do not construct or order the pole and foundation until the drawings and calculations are approved.

3. **Hand-holes** shall have steel frames with gasketed galvanized steel covers and captive stainless steel attachment screws. Finish handholes smoothly and neatly without rough edges. Handhole covers shall be connected to the pole with rustproof chain that connects the inside of the cover to an attachment point inside the pole, just below the handhole. The chain shall be long enough to permit the cover to dangle 6 inches below the handhole opening.

4. **Cable access holes** at the elevation of the AID cameras and Detectors shall be embedded two-inch galvanized steel couplings. Each shall be fitted with a weatherhead or a raintight removable

plug, depending on whether the hole is used.

5. **Identification tag:** The pole shall have an identification tag permanently attached in accordance with the requirements for identification tags set forth in Section 700.04(e). The tag shall state the length of the pole.
6. **Cable support:** Provide hooks securely fastened to the inside of the pole wall for cable grips. See the Plans.
7. **Air Terminal:** Provide a solid copper rod, 0.75 inches in diameter. The length of the rod shall be such that it projects 5 feet above the top of the camera. At the points where the rod bolts to the pole, use a conductive joint compound to minimize galvanic corrosion of the dissimilar metals.

**814.03 – Procedures.**

(a) **Installation.**

1. All conductors shall run continuously from the camera to the cabinet, with no splicing or connections along the way.
2. Camera cables shall be installed in junction boxes with a nominal slack length of 15 feet.
3. Inside the pole, support every cable with a cable grip hung from a hook inside the pole.
4. Install the surveillance camera such that when the camera is commanded to the factory default home position, the camera is pointed approximately north.
5. Pressurize the cameras with dry nitrogen to the pressure recommended by the manufacturer.

(b) **Setup:**

1. Set the camera operating parameters as directed by the Integrator. This includes the IP addresses. Video from the surveillance and AID cameras shall be sent using multicast.
2. Aim the AID cameras in accordance with the initial layouts provided in the plans. Then, verify them in the field with the support of the AID vendor. Adjust the cameras as recommended by the AID system vendor.

(c) **Acceptance Testing:** Develop a test plan and procedures that tests every camera function. Test plans shall include all tests recommended by the camera manufacturer. When the plan is satisfactory to the Engineer, conduct the testing in accordance with the plan and prepare a test report. The tests shall be conducted at the field equipment cabinets and shall include the following:

- All diagnostic tests recommended by the manufacturer and all self-tests of which the equipment is capable.
- Visual inspection for manufacturing and installation defects.
- Local operation of all CCTV equipment, exercising the iris and focus controls while observing the video picture on a laptop. For surveillance cameras, also check pan, tilt, and zoom.
- Verification that the camera enclosure is at proper pressure and maintains that pressure over time.
- Demonstration of camera sensitivity at low light levels.
- Demonstration of pan/tilt speed and extent of movement.
- Demonstration that the Preset test to ensure camera consistently goes to the proper preset position and that the presets have been properly titled.
- Demonstration that the sectors have been properly titled.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 815—DYNAMIC MESSAGE SIGNS  
(OPITZ PROJECT TMS)**

July 15, 2020

**815.01 – General.**

All work related to the installation and testing of Opitz Project DMS shall be in compliance with the requirements of the provisions set forth in this Section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 804 of the 2020 Edition of the VDOT Road and Bridge Specifications.

Provide dynamic message signs (DMS) as shown on plans.

**815.02 – Materials.**

(a) **Signs:** Provide two models of DMS:

1. **TYPE 2:** Provide Daktronics Model VF-2420-64x192-20-RGB complete with a Daktronics Model VFC controller (or successor model recommended by the sign vendor) and any other accessories needed for safe, effective operation.
2. **TYPE 2A:** Provide Daktronics Model VF-2420-96x288-20-RGB complete with a Daktronics Model VFC controller (or successor model recommended by the sign vendor) and any other accessories needed for safe, effective operation

**Cables:** Provide cables between the DMS and the controller cabinet as recommended by the manufacturer, except that fiber optic cables must be listed as round drop cable on the last edition of the Rural Utility Service List of Materials Acceptable for Use on Systems of USDA Rural Development Telecommunications Borrowers. It shall be round, dielectric cable with a single core and shall contain at least two spare fibers. All cables including patch cables and pigtailed shall meet EIA/TIA telecommunications standards. Fiber Optic cable between the DMS and controller cabinet shall be terminated in a wall mounted patch panel in both the DMS and controller cabinet.

**815.03 – Procedures.**

(a) **Installation:**

1. Install the sign and controller in accordance with the manufacturer's recommendations. The controller goes in the equipment cabinet on or near the sign support structure.
2. After installing the cables running from the controller cabinet to the sign, terminate copper cables on terminal blocks and provide surge protection meeting the requirements of Section 801. In the equipment cabinet, terminate fiber optic cables in small, DIN rail-mounted interconnect centers that provide no openings through which a mouse can pass. Use jumpers to connect the interconnect center to the equipment. Terminate fibers in the sign in an interconnect center recommended by the sign manufacturer and connect fibers to the sign communication panel using jumpers. Fan-out kits and field termination of fibers in the cabinet and the sign are prohibited.
3. Configure the controller with a network address and other parameters in accordance with a plan provided by the system integrator.

(b) **Brightness Adjustments:** Adjust the sign and controller to achieve 16 or more brightness levels appropriate for the particular sign and set up the lighting conditions for which each brightness level will be used. The Engineer's representative will observe the operation of the sign under a variety of lighting conditions. Make changes requested by the Engineer until the brightness adjustments are approved by the Engineer.

(c) **Acceptance Testing:** For Express Lanes signs, develop a test plan and procedures that demonstrates proper operation of the sign. The plan shall include all tests recommended by the manufacturer. When the plan is satisfactory to the Engineer, conduct the testing in accordance with the plan and prepare a test report. Provide any software and equipment needed to conduct the tests. Testing must include the following:

1. **At the DMS site:**

- Visual inspection for manufacturing and installation defects.
- All tests recommended by the manufacturer and all self-tests of which the equipment is capable.
- DMS housing ventilation system.
- Restart of DMS controller following loss of power.
- Verification of contents of non-volatile, changeable memory following loss of power.
- Operation of stored messages and schedule.
- Functionality of each pixel.
- Automatic dimming.
- For gate signs, proper response to control signals from the gate controller.

2. **At the HOT-OC:** Demonstrate that the sign operates properly under the control of the HOT-OC's central software. Confirm proper operation in the field during the testing.

- Acceptance of properly addressed messages.
- Message selection command and response.
- Immediate message command and response.
- Parameter download command and response.
- Parameter upload command and response.
- Time broadcast command.
- Reporting of high temperature.
- Detection and reporting of errors.
- After final acceptance of the installation and operation of each DMS, capture the sign configuration files and provide them to the System Integrator.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 816—FIBER OPTIC COMMUNICATION  
(OPITZ PROJECT TMS)**

July 15, 2020

**816.01 – General.**

All work related to the installation and testing of Opitz Project Fiber Optic Communication shall be in compliance with the requirements of the provisions set forth in this Section. In addition to these Supplemental Specifications, the Contractor shall adhere to the applicable requirements of Section 808 of the 2020 Edition of the VDOT Road and Bridge Specifications.

**816.02 – Materials.**

- a) **Fiber optic cable** shall be loose tube, single mode, metallic single-armored cable. The cable shall meet the requirements of ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-2006 and GR-20-CORE and have a tensile rating of at least 600 lbs. The cable sheath shall have length markings in feet and shall indicate that the unit of measure is feet. The cable shall have an operating temperature range of -40° F to 157° F.

All fibers shall be suitable for transmission using both 1310 nm and 1550 nm wavelengths. Attenuation shall not exceed 0.35 dB/km and 0.25 dB/km for 1310 nm and 1550 nm signals, respectively. Cables shall be constructed with twelve fibers per tube.

Armored cables without an inner jacket shall have an armor layer applied directly over the water swellable tape and cable core. The armor shall be a corrugated steel tape, plastic-coated on both sides for corrosion resistance, and shall have an overlapping seam. The outer jacket shall be applied over the corrugated steel armor tape.

(b) **Number of Fibers:**

Fiber optic cables shall be provided as shown on the plans with the number of fibers as follows:

XPL Trunk – 36 fibers: Install trunk and distribution cables in separate conduits. (Trunk shall be installed in primary 4" conduit)

XPL Distribution – 36 fibers (except where noted on the plans: Install trunk and distribution cables in separate conduits. (Distribution shall be installed in spare 4" conduit)

VDOT Trunk – New installations – 48 fibers

VDOT Trunk – Replace/Relocate – Replace in kind, to be verified in the field

VDOT Distribution – New installations – 36 fibers

VDOT Distribution – Replace/Relocate – Replace in kind, to be verified in the field

- (c) **Connectors** shall be LC compatible, with ceramic ferrules unless otherwise approved for specific manufacturer device connections. They shall be suitable for use in traffic cabinets and shall be designed for single mode fibers. The connector loss at terminal equipment shall not exceed 1 dB. All connectors in VDOT and new Express Lanes cabinets shall be Ultra Polished Connectors (UPC).
- (d) **Rack-Mounted Interconnect Center:** Provide a Corning Cable Systems Model CCS-03U interconnect center or approved equal, with enough connector panels and splice trays to accommodate all the terminations and splices made at its location. Splice trays shall be 0.2 inches high, made of aluminum with clear plastic covers, designed for outdoor use. Each shall accommodate 24 or more fusion splices

in heat-shrink sleeves. All trays shall have a black powder coat finish. The trays shall have both perforations for cable ties and crimpable metal tabs for buffer tube strain relief.

All Express Lanes splices shall be in cabinets or pedestals as shown on the plans. Underground splices will not be permitted unless approved by the Engineer.

- (e) **Pigtails** shall be factory-made, buffered, and strengthened with aramid yarn to reduce the possibility that accidental mishandling will damage the fiber or connection. Pigtails shall be yellow. They must use LC type of connectors unless otherwise specified. Each must contain one fiber. Length shall suffice to provide two feet of slack after installation.
- (f) **Jumpers** shall meet the requirements for pigtails, but shall have a connector on each end. The second connector shall be as specified in Sections 808, 809 and 810 except where a different connector is required for compatibility with the equipment to which the jumper connects. Length shall suffice to provide approximately three feet of slack after installation.
- (g) **Splice Enclosures (where approved by the Engineer)** shall be suitable for underground installation in manholes and junction boxes. Splice enclosures shall meet the standards of Telcordia GR-771. The splice closure shall allow for splicing of fibers within uncut cables. The splice closure shall be installed with all necessary splice trays and accessories to support up to 72 splices. The splice closure shall be wall mountable inside a junction box or manhole.
- (h) **Ground Kits** shall be provided for the bonding and grounding of armored cable, splice enclosures, and interconnect centers (i.e., patch panels). The kits at a minimum shall include armor ground clamps, bonding jumpers, and connectors; and shall be in accordance with the cable manufacturers' recommendations, NEC, and industry standards.

#### 816.03 – Procedures.

- (a) **Fiber Optic Cable Installation:** Use installation techniques that do not degrade the optical and mechanical characteristics of the fiber. Do not violate the minimum bend radius or maximum tension during installation or afterwards.

When pulling cable, use a clutch device or breakaway swivel to ensure the allowable pulling tension is not exceeded.

Use a lubricant recommended by the cable manufacturer to facilitate pulling the cable. After the cable has been installed, wipe the exposed cable in each junction box, manhole, or cabinet clean of cable lubricant with a cloth.

For proposed cables, store 20 feet of slack in every intermediate manhole or junction box. If multiple fiber cables pass through the junction box or manhole, store 20 feet of slack for each. At cabinet locations, where cable runs from the junction box directly to an equipment cabinet, store 30 feet of slack cable in the junction box. Additionally, treat the cable returning from the cabinet to the junction box as a separate cable, and store 30 feet of slack for it. Store slack cable neatly on the walls of the junction box or manhole using racking hardware acceptable to the Engineer. Store one loop of cable in the base adapter of ground mounted cabinets. Ensure the cable is supported and neatly organized in the cabinet base.

Seal the fiber optic cable ends to prevent the entry of water.

- (b) **Splicing:** Before splicing, use an optical loss test set to collect the data needed to demonstrate that the splice is acceptable. See the section on testing, below.

All fibers, including spares, shall be spliced to provide continuous runs. Splices shall be allowed only in equipment or splice cabinets unless otherwise shown on the plans or approved by the Engineer. If the connection diagrams in the plans indicate that the splices are to be housed in existing splice enclosures or interconnect centers, provide additional splice trays or other hardware as required to make the splices.

All splices shall be made using a Sumitomo FastCat Type-39 or Quantum Q101 fusion splicer or approved equivalent. Average splice loss for both 1310 and 1550 nm wavelengths shall not exceed 0.1 dB, and no single splice may have a loss above 0.2 dB. Any splice with a loss exceeding 0.2 dB shall be remade

until its loss falls below 0.2 dB. Provide all equipment and consumable supplies.

Use a separate splice tray for each buffer tube color, unless that would require more trays than the existing splice enclosure can hold. If there are too few existing trays in the enclosure, provide additional trays. Provide the same type of trays as the existing ones.

Protect each splice in a heat-shrink sleeve.

- (c) **Termination:** Terminate fibers by splicing them to pigtails. For each pigtail, label the corresponding position on the patch panel with the cable ID and fiber number. Label the pigtail with the fiber number. All labeling must legible and done with indelible markings.
- (d) **Jumper management:** Use latching cable rings to guide and protect bundles of jumpers between the interconnect center and equipment. Affix the rings to wall of the cabinet or a vertical member of the equipment rack. Label the jumpers at each end, assigning each jumper a unique letter of the alphabet.
- (e) **Bonding and Grounding:** Bond and ground the fiber optic cable armor and other metallic components of splice enclosures and interconnect centers (i.e., patch panels) at each cable splice and cable termination location. In addition, bond and ground the cable armor at intermediate pull box locations (i.e., boxes used as cable pull points between cable splices and terminations) where required. Perform the work in accordance with the cable manufacturers' recommendations, NEC, and industry standards.
- (f) **Testing:** Test the fiber after installation, including all splicing and terminations, is complete. Note, however, that this test procedure involves measuring the optical loss of existing fiber before splicing to it. For each fiber optic link, including spare fibers, determine whether the optical loss is within the limits permitted by these specifications. A link is a continuous segment of fiber between one connector (or unterminated end) and another connector (or unterminated end). When testing links that do not have connectors on both ends, use a mechanical splice to attach a pigtail to the unterminated fiber for the duration of the test.
- (g) **System Cutover:** The existing 95 Express Lanes Trunk and Distribution fiber shall remain in place during construction and after the new OPITZ trunk and distribution becomes active. The Contractor shall coordinate with the Concessionaire's Engineer for transitioning the existing new communications infrastructure and the proposed Traffic Management System devices to the existing 95 Express Lanes communications network segment. All work authorizations shall be coordinated and approved by the Concessionaire.

Before taking the measurements, provide evidence satisfactory to the Engineer that a power meter and light source test set produces accurate results at both 1310 nm and 1550 nm wavelengths. This can be a demonstration that the set correctly measures the loss of a test fiber whose loss is known.

For each fiber link, follow this procedure:

1. If the link includes existing fiber cable, use an optical loss test set (power meter/light source) to measure and record the optical loss over that portion of the link before it is spliced to new fiber.
2. Calculate the maximum allowable loss for the completed link, both at 1310 nm and at 1550 nm. Use the following formula:

$$\begin{aligned} \text{Maximum link loss} = & \\ & \text{Measured loss over existing cable portion} + \\ & (\text{New fiber length in km}) \times (0.35 \text{ for } 1310 \text{ nm and } 0.25 \text{ for } 1550 \text{ nm}) + \\ & (\text{Number of fusion splices}) \times (0.1) + \\ & (\text{Number of mechanical splices [for temp. connection]}) \times (0.3) + \\ & (\text{Number of connections}) \times (1.0) \end{aligned}$$

Provide this calculation to the Engineer along with the test results.

3. Use the test set (power source/light meter) whose calibration has been approved by the Engineer to measure the loss of the link under test. Record the result at both 1310 nm and 1550 nm. Arrange for the Engineer or his representative to witness these tests.

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4. If the measured loss exceeds the calculated maximum, use an optical time domain reflectometer and other test equipment to troubleshoot the link. Take whatever corrective action is required, including cable replacement, to achieve a loss less than the calculated maximum. Such corrective actions shall be at no additional cost.
5. Prepare a diagram showing all of the links tested in this project. For the portions installed in this project, show the equipment cabinets, splices, and pigtails. On each line representing a link, show the maximum allowable loss and the actual loss. The actual loss shall be the one measured after all corrective actions have been taken. Submit 10 copies of this diagram to the Engineer, along with the calculations for the maximum allowable losses.

At each bonding and grounding location test the installation to demonstrate that the installation is in accordance with cable manufacturer recommendations, NEC, and industry standards. Prior to performing the tests, submit a test procedure to the Engineer for approval.



**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 817—ETHERNET SWITCHES  
(OPITZ PROJECT TMS)**

July 15, 2020

**817.01 – General.**

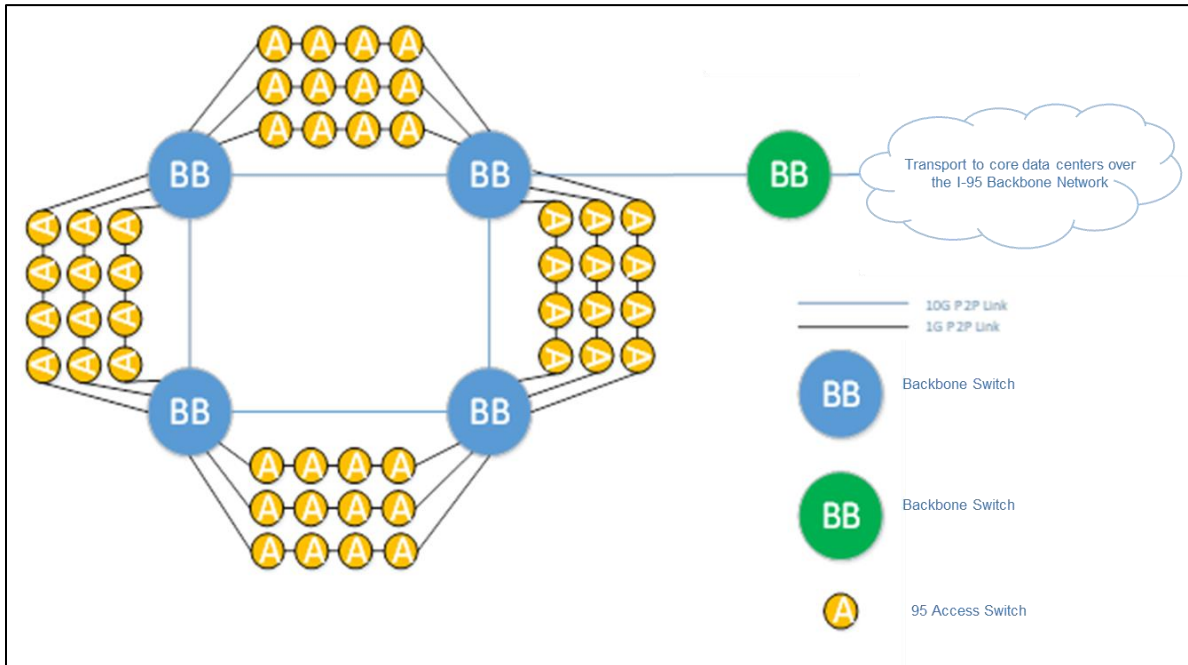
All work related to relocating or modifying existing networks or the installation of new networks shall be in compliance with the requirements of the provisions set forth in this section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of section 809 (Access) and 810 (Backbone) of the 2020 Edition of the VDOT Road and Bridge Specifications.

This work entails expansion of a wide area network connecting proposed roadside equipment to the HOT-OC. It also entails modifying the Concessionaire's existing network by adding proposed cabinets and transferring some cabinets from the existing Express Lanes Southern Terminus network. The connection diagrams in the plans show the communication equipment to be provided in each cabinet and how the equipment connects to the fiber optic cables.

- (a) **Express Lanes Network Topology:** The Express Lanes network is built over two cables, a trunk cable and a distribution cable. The trunk (backbone) cable runs directly from one toll location or hub site to the next. It is used for backbone network control data as well as transport of endpoint traffic. Endpoint traffic originates from distribution and backbone connected devices, onto and off of the network. The backbone uses 10 Gigabit Ethernet communications and is built over a single fiber pair between each backbone switch.

The distribution cable generally runs parallel to the backbone cable in the same duct bank. Instead of running directly between tolling points or hub sites, it is run into and out of each roadside cabinet and tolling point that it passes. A distribution link built over this cabling infrastructure connects the equipment in the roadside cabinets to the 10 Gbps backbone. Where possible, distribution links connect to separate tolling points on either side of a given link. The distribution links operate at 1 Gbps. The roadside cabinets are not all connected to the same pair of fibers in the distribution cable; multiple pairs are used so that no more than seven (7) access switches are on any pair running between adjacent tolling points. Access switches shall be connected as shown on the plans. Also, cabinets at generators are on a separate pair of fibers from other cabinets so that communication to the generators is maintained even when neither the generator nor the power company is supplying power. (If the generator cabinets, which have battery backup power, were on the same fibers as cabinets without battery backup, then the cabinets without power would interrupt communication between the generator cabinet and the HOT-OC.) Similarly, cabinets connected to generator power are always on separate fibers from cabinets that do not have generator power.

The Express Lanes Network diagram below illustrates the topology to be used, it is representative and does not reflect the actual number of Access or Backbone Switches. Each line represents a pair of fibers. The circles containing A are roadside cabinets containing access switches. The circles containing BB are tolling points (or the EOC) containing Backbone switches. The network shall be configured as a 'IP to the edge' solution. Each access switch will have a set of local virtual local area networks (VLANs), and associated switched virtual interface (SVI), to be assigned per-port depending on the connected endpoint service. Each endpoint will use the local SVI as their designated IP gateway which will be advertised into the network via Open Shortest Path First (OSPF). Inter-access switch, backbone to backbone, and access to backbone switch, communication will be established via point-to-point (P2P) routed links.



Express Lanes Network Topology

(b) **Express Lanes Network Operation:** The operation of the network shall be as follows. When a packet is sent from the operations center computer, it travels around the backbone ring until it reaches a tolling point or hub site that connects to the pair of distribution fibers serving the destination equipment. Then the switch in the Technical Shelter or Hub Site transfers the packet from the backbone to the distribution cable, where it continues on to its ultimate destination. If a cable cut or switch failure interrupts the usual path between the operations center and the destination equipment, the switches use the OSPF protocol to route data packets around the break.

**817.02 – Materials.**

- (a) **General:** Along with each switch, provide all required licenses, mounting hardware, power supplies, SFP transceivers, cables, jumpers, and connectors needed to connect the switch to power, communication cables, and neighboring devices. Access switches installed in roadside cabinets shall use LC optical connectors and be mounted on DIN rail. Backbone switches shall use LC optical connectors and be rack-mountable.
- (b) **Backbone switches (existing) for the Express Lanes communication network** are Cisco C9500-16X-A with the C9500-NM-8X expansion module at the tolling points. Provide enough SFP optical transceivers to accommodate all the fiber connections shown on the plans. Ensure that the transceivers are recommended by the switch manufacturer and have sufficient optical power to communicate reliably with the adjacent switches on the ring. Transceivers shall use two fibers. Provide three SFP transceivers with RJ-45 connectors for Category 5/6 copper wire connections. Any remaining SFP ports shall be blank. Note: Existing backbone switches to remain for this project. The Contractor shall coordinate with 95 Express Lanes for approval before connections and modifications are made.
- (c) **Backbone switches for the HOT-OC** will not be required by the Contractor. The Express Lanes existing Backbone core switch stack will integrate the proposed network segments.
- (d) **Access switches for the Express Lanes communication network** shall be Cisco Model IE-4000-8T4G-E and will include the IP Services feature set. Provide enough SFP optical transceivers to accommodate all the fiber connections shown on the plans. Ensure that the transceivers are recommended by the switch manufacturer and have sufficient optical power to communicate reliably with the adjacent switches on the ring. Transceivers shall use two fibers. All available ports on the IE-4000-8T4G-E model not utilized for fiber optic connections shall be populated with SFP transceivers with RJ-45 connectors for Category 5/6

copper wire connections.

(e) **Device servers for Express Lanes communication network** shall meet the following requirements:

1. The number of serial ports shall be sufficient to provide a separate port for each serial device in the cabinet, except where the connection diagrams show multiple devices sharing the same serial port.
2. The device server and its power supply shall have an operating temperature range of -31 degrees to +165 degrees F and an operating humidity range of 5 % to 90 %.
3. The device server shall be managed via SNMP and also a web browser in addition to any specific applicable vendor software.
4. The device server must automatically resume normal operation after a power outage or irregularity.
5. Every serial port shall be switchable among EIA-485, EIA-422, and EIA-232 communication.
6. Provide DIN rail mounting.

Device servers for microwave vehicle detectors are not applicable to this section. See Section 703.

**817.03 – Construction.**

- (a) Obtain the IP addresses, VLAN setup, and multicast route information from the System Integrator for all devices to be added to the Express Lanes network. Obtain the same information from the Engineer for any proposed or relocated VDOT devices.
- (b) Configure equipment for initial installation such as setting IP addresses, IGMP snooping for switches, multicast routes for cameras, and VLAN setup in switches. Configure the switches to support multicasting of the surveillance and AID video and to direct multicast video to the HOT-OC, not to devices in roadside cabinets. If the switches are capable of filtering out video that is not being used at the operations center, implement that feature.
- (c) Connect the switches to the equipment and fibers as shown on the connection diagrams in the plans.
- (d) Configure the network to operate in accordance with the description in Section 809 and 810 respectively. Configure the 10 Gigabit ports between Backbone switches as trunk ports, carrying the trunked VLANs between the Backbone switches.
- (e) After the acceptance testing described in Section 816 is complete and all communication equipment is operational, capture the configuration files from each Access switch, backbone switch, and device server in a computer readable file. Store this data on two identical CDs or DVDs pertaining to VDOT equipment and two other identical CDs or DVDs pertaining to Express Lanes equipment. Organize the data to facilitate quick access when needed for maintenance. Deliver the discs to the Engineer's representative.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 818 - REVERSIBLE ROADWAY GATES  
(OPITZ PROJECT TMS)**

July 15, 2020

**818.01—General.**

This work involves modifying the existing reversible roadway gate system to match the proposed roadway design and provide new gate groups at new ramps to and from the reversible roadway. Together with the existing gates at other entrances and exits, the gates in this project must operate as part of a system remotely controlled by the Concessionaire from the Express Lanes Operations Center (HOT-OC). The work requires careful planning and coordination to keep the reversible roadway safe and to comply with the operational restrictions of the Contract. Work shall be in accordance with the requirements of the Turnover Plan and all related addenda and the provisions provided herein.

The work entails the following:

Provide gates at locations as shown on the plans.

**818.02—Existing Gate System.**

This section describes the operation of the existing gate system. The existing gate groups and new gate groups installed as part of the project shall be consistent with this existing operation unless specifically noted otherwise or approved by the Concessionaire. Each entrance to the reversible roadway along I-95 is equipped with a Model 170E gate controller, a set of closely spaced gates, and a few dynamic message signs in advance of the entrance. Each of these sets of gates is remotely controlled by the TMS computer in the HOT-OC. Communication is via the Express Lanes fiber optic network.

(a) The gate system incorporates several features called “interlocks” that are intended to promote safety.

- An interlock among all the gate sets attempts to ensure that no gate set may open unless all gates allowing traffic in the conflicting direction are closed. Whenever all gates allowing traffic to flow southbound are closed, the central computer sends an “OK to open” message to the northbound gate controllers and vice versa. A gate controller will normally not open its gates if it has not received the “OK to open” message. However, this interlock can be disabled by a switch in the gate controller cabinet, a feature that is helpful during maintenance and snow removal.
- Gate controllers also communicate with traffic signal controllers at certain locations. The gate controller will not close its gates unless the traffic signal controller confirms that it is omitting the display that allows vehicles to turn onto the ramp. This interlock applies regardless of whether the gate is under local or remote control. The gate controller will not raise the gates unless the traffic signal controller confirms that it is omitting any displays that conflict with the displays directing traffic onto the ramp.

(b) **Inputs:** There are 39 inputs to each gate controller, some of which may not be used at a particular location.

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INPUT NAME	FUNCTION	NUMBER
Local/Remote switch	Tells the controller whether to respond to commands from the computer in the HOT-OC or commands from the control panel in the gate controller cabinet.	1
Open/Off/Close Switch	Indicates whether a technician at the gate controller cabinet wants the controller to open the gate set, close it, or leave it in its present condition.	2
Gate Interlock Bypass Switch	Indicates whether a technician at the gate controller cabinet wants the gate set to be able to open despite other gate sets being open in the opposing direction.	1
Gates Ready Sensor	Indicates whether any gates in the set have one of these conditions: housing door open, motor overload, hand crank engaged, no power, or switched to manual control in the gate housing. These conditions preclude the controller from sending commands to any gate.	1
Gate Open Sensor	Indicates that an individual gate is fully open	12
Gate Closed Sensor	Indicates that an individual gate is fully closed	12
Required Status Confirmation	Indicates whether something that is supposed to happen before a gate set closes has happened. Two of the inputs are normally used for traffic signal phase omits and the rest for indications that DMSs are displaying "CLOSED" warnings.	6
Expected Status Confirmation	Indicates whether something that was supposed to happen after a gate set opens has happened. These inputs are normally used for indications that DMSs are displaying "OPEN" messages.	4

(c) **Outputs:** There are 28 outputs from each gate controller, some of which may not be used at a particular location.

OUTPUT NAME	FUNCTION	NUMBER
Open Command	Signals an individual gate to open	12
Close Command	Signals an individual gate to close	12
Prepare to Close Command	Signals connected devices to change to the condition used for gate closures. Two of the outputs are normally used to signal individual traffic signal controllers to omit a left turn phase. The third is normally used to signal all connected DMSs to post the "CLOSED" message.	3
Gates Open Announcement	Signals connected devices to change to the condition used for open gates. Normally used to signal all connected DMSs to post the "OPEN" message.	1

The two traffic signal phase omit outputs are intended for applications where two separate phases are to be omitted at different times. Where two traffic signals are tied to the same gate controller, and only one phase within each controller is to be omitted at identical times, a single control signal is sent to both simultaneously when the gate controller is about to close the gates, so only one gate controller output is used for this purpose.

Similarly, even though there may be four signs tied to the gate controller, a single control signal is sent to all of them simultaneously to command them to display the open message, so only one controller output is required for this purpose. The same is true of the signal commanding the signs to display the closed message.

Some gate sets are equipped with a beacon in advance of the first gate. This beacon is controlled by the gate controller

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so that it is lit when the gates are closed and dark when the gates are open. If construction does not require an existing beacon to be moved, maintain its current operation. If the beacon cannot remain in its present location, remove and dispose of it. Do not install beacons at locations that do not already have them.

(d) **Gate Controller Operation:** The gate controller receives commands to open and close from two sources:

- A three-position (open/off/close) switch in the gate controller's cabinet; and
- Commands sent from the TMS computer in the HOT-OC.

If the local/remote switch in the cabinet is in the remote position, as it normally is, the controller ignores the position of the open/off/close switch in the cabinet and responds to commands from the TMS computer. Otherwise, it responds to the open/off/close switch and does not act on the commands from the TMS computer.

When the controller receives a command to open its gates, it does so only if two conditions exist:

- The TMS computer has sent it a message within the last five seconds indicating that it is safe to open the gates. That message is not sent if gates are open in the opposing direction. This condition does not apply if the gate interlock bypass switch is in the bypass position.
- The gate ready input indicates that all the gates are in normal condition and under the controller's control.

If these conditions are met, the controller commands the most downstream gate to open. When the input from the gate indicates that it is fully open, the controller waits the prescribed amount of time (a configuration parameter) and then opens the next gate. This process continues until all the gates have been opened in sequence, ending with the most upstream gate.

If the controller does not receive a signal that a gate has fully opened within 20 seconds of the controller's sending it the open command, the controller reports a gate failure.

Once all the gates are open, the gate controller stops sending the phase omit signal to the associated traffic signals. It also sends the command to display the open message to all dynamic message signs connected to it. The controller reports a failure if it does not receive the appropriate response signal from all the traffic signal controllers and signs. In order for no failure to be reported, a signal controller must respond within four minutes and the dynamic message signs within ten seconds.

When the gate controller receives a command to close gates, it follows the reverse process. If under local control, it begins by sending the dynamic message signs the command to display the closed message and waits for each of the signs to confirm that they are displaying that message. If any sign fails to respond properly within ten seconds, the controller reports the failure and does not proceed with closing the gates.

If the ramp entrances are controlled by traffic signals, the controller sends the traffic signal controllers a command to omit the phase that allows vehicles to enter the ramp. If any signal fails to confirm within four minutes that it is skipping the phase, the controller reports the failure.

The controller does not begin closing the gates until all of the following conditions apply:

1. The signs are all displaying the closed message, if the gates are under local control.
2. The signals are omitting the phase that gives access to the gates, if the ramp has a signal.
3. The programmed delay has passed since posting the closed message on the signs.
4. The programmed delay has passed since the traffic signal controllers reported that they were omitting the phase.

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If those conditions have been met, the gate controller commands the upstream gate to close. When the first gate is closed, the controller waits the programmed interval and then closes the next gate. If the inputs from a gate indicate that it has not closed within 20 seconds of receiving the command from the gate controller, the controller reports the gate failed and continues to close the gates.

The controller continuously monitors the gate position sensors and automatically sends the appropriate open or close command to restore a gate to its proper position. When the sensors indicate that a gate has been out of position for more than 30 seconds, the controller reports a gate failure.

#### 818.03—Materials.

(a) **Gate controllers** shall be Model 170E controllers with sufficient random access memory (RAM) to operate the existing gate controller software. Controllers shall be equipped with Model 412C program modules, complete with erasable programmable read-only memory (EPROM) and 170 Ethernet Card for communicating with the network.

The EPROM shall be of the same type as is used in the existing gate controllers. The controllers shall be on the Caltrans Transportation Electrical Equipment Specifications (TEES) Qualified Products List (QPL).

(b) **Isolator modules** shall be Model 252 isolators on the TEES QPL.

(c) **Output modules** shall use two socket-mounted relays to send 120 VAC signals to the gates, signaling them to open and close. (The relays do not carry the power to run the gate motors.) Relays shall include light-emitting diodes indicating that the corresponding input or output is active. They shall be mechanically held into their sockets so that they do not vibrate loose. Connection points on the modules must be labeled and use keyed connectors to minimize the risk of erroneous connections. Shop drawings and circuit diagrams must be approved by the Engineer before manufacturing.

#### (d) **Technician Control Panel:**

1. The panel shall use LEDs to show the current status of each gate. For each gate, there shall be a column of three LEDs. A green LED shall be illuminated when the gate is fully open. A red LED shall be illuminated when the gate is fully closed. The red and green LEDs shall be controlled by the output of the Model 252 isolators monitoring the “open” and “closed” status signals from the gate. An orange LED shall flash when the gate does not send a “gate ready” status signal. Label the rows and columns to avoid misinterpretation. Do not install LEDs on the panel for nonexistent gates.
2. Circuitry on the panel shall consolidate the status information arriving from the gates, sending a “gates ready” input to the controller only if every gate reports that it is ready.
3. The panel shall pass the open and closed status information from the Model 252 isolators to the controller.
4. The panel shall have two key switches with keys matching those in the Concessionaire’s existing gate control panels. One switch shall control the remote/local input to the controller. The other shall control the interlock bypass input.
5. The panel shall have a three-position switch for use when the gate set is under local control from the control panel. The positions shall be labeled “OPEN”, “OFF”, and “CLOSE” and they shall control the open and close inputs to the controller. When the switch is in the “OFF” position, the control panel shall send neither an “OPEN” nor a “CLOSE” input to the controller.
6. Shop drawings and circuit diagrams must be approved by the Engineer before manufacturing.

(e) **Accessory Equipment:** Provide enough input files to hold the number of isolators required at the location. They shall be supplied by a manufacturer on the TEES QPL. Provide a power distribution assembly #3 on the TEES QPL. Provide mounting hardware, cables, and any other item needed to render the equipment operational and safe.

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(f) **Gates** shall have the following features when installed new for the project. Should it be determined that existing gates must be replaced during the course of construction or relocation, the gates and any components shall be field verified and matched in kind.

1. Three-phase, 480 VAC, half horsepower motors. Lower voltages for heater, lights, and GFI receptacle shall be generated by a 1.5 KVA step-down transformer inside the housing. Note that some existing gates in the project use 120 volt motors and three-phase 480 volt motors. In the event that one of these must be replaced, provide a gate with the same type of motor as is in the existing gate group.
2. All gates shall be semaphore type gates unless otherwise noted on the plans. Vertical movement gates shall have aluminum housings. Horizontal movement gates shall have hot-dipped galvanized steel housings.
3. Warning lights on gate arm shall be red, 12 volt LED lights, a minimum of three inches in diameter. Provide lights on each arm as shown on the details. Wire the lights to flash together when the arm is in motion, to burn steady when the gate is fully closed, and to be off when the gate is fully open.
4. The doors to the gate housing shall have CCL locks utilizing keys identical to those for other Express Lanes cabinets or as specified by the System Integrator. Replace door locks on existing gate housing as needed.
5. Gate housings shall be ventilated through louvers in the doors on the side of the housings. Louvers shall include a replaceable filter.
6. An external auto/manual local control switch that can be locked within an external aluminum housing to allow for local, motorized control of the gate.
7. Wiring and control systems shall be compatible with the connection diagrams in the Plans.
8. Wiring shall ensure that the "gate ready" signal is interrupted by:
  - Housing door open.
  - Hand crank engaged.
  - Motor overload.
  - Loss of power.
  - Switched to manual control.
9. Semaphore (vertical movement) gates shall be B&B Roadway Model VW-4 or a modified VW-4 with a reverse counterweight mechanism as noted on the plans.
10. Swing (horizontal movement) gates shall be B&B Roadway Model HW-4, modified to have a door on one side only. The layout of the internal equipment shall be such that all installation and maintenance activities can be performed through that one side. Note that not all of the swing gates will have the door on the same side. At each location, provide a gate with a door on the side most accessible by a technician (generally on the opposite side of barrier or guardrail). Housings shall also include a maintenance access door on the top of the housing.

(g) **Gate arms** shall be manufactured by B&B Roadway and shall be 4-inch square 6005-T5 aluminum tubing unless the manufacturer recommends a different arm for the particular gate receiving the arm. Gate arms shall be constructed with colors and retroreflective sheeting in accordance with the most current version of the MUTCD. The MUTCD option for diagonal striping shall be applied.

#### 818.04—Procedures.

(a) **Installation:** Install the gates as recommended by the manufacturer and as shown in the plans. Take care to



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construct the foundation so that the gate arms are level and at the proper elevation above the pavement. Select the gate arm length based on the actual location of the gate housing and the pavement markings.

1. Gate foundations shall be installed as shown on the plans.
2. Gate arms shall be installed as shown on the plans.
3. Offset brackets for gate arms will not be accepted unless approved by the 95 Express Lanes Engineer.

(b) **Firmware:** Obtain a PROM chip with VDOT's gate controller firmware from the Concessionaire. Copy the firmware onto new PROM chips and install them in the Model 412C program modules of each proposed gate controller.

(c) **Modifications to Existing Gate Controller Cabinets:** In addition to any work called for on the plans, do the following:

1. Add input modules, output modules, terminal blocks, and any other required items if gates have been added.
2. Add contact closure interfaces to control dynamic message signs whose controllers are not at the same location as the gate controller. Only provide enough to connect to the signs that will be remain at the end of the project.
3. Replace the existing control panel with one meeting the requirements of 802.03(d) and change the controller's configuration parameters to indicate the proper number of gates. Whenever the controller's configuration is changed, contact the Concessionaire's system manager in advance, and also immediately after the change, to ensure that the central computer's database matches the information in the controller.
4. If the number of associated dynamic message signs or traffic signals changes, change the controller's configuration parameters to indicate the proper number of signs and signals. Whenever the controller's configuration is changed, contact the Concessionaire's system manager in advance, and also immediately after the change, to ensure that the central computer's database matches the information in the controller.

(d) **Control wiring** between the gate controller and each gate shall be IMSA 19-1 cable containing seven 14 AWG conductors. Use the colors for the functions indicated:

COLOR	FUNCTION
Black	120 VAC hot for status from gate
White	Gate ready status from gate
Red	Close command from controller
Green	Open command from controller
Orange	Open status from gate
Blue	Closed status from gate
White with black tracer stripe	Common for commands from controller

For every gate set where work is performed, check to make sure that the control wiring follows this convention. If it doesn't, reconnect the wires to bring it into compliance. If existing control cables do not correspond to the colors listed in this provision, apply permanently fixed colored tabs/labels such that the color coding is clearly discernible.

(e) **Acceptance Testing:** Develop a test plan and submit it to the Engineer. It shall include:

- Visual inspection to confirm good workmanship and compliance with the approved submittals.
- Demonstration of proper operation of the gates under local isolated control including both manual hand cranking of the gates and local motorized control at the gate housing and technical panel in the cabinet. Tests shall include all recommended tests by the gate manufacturer.
- Demonstration of proper operation of the gates under local control, including proper communication with the

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associated dynamic message signs and traffic signals.

- Demonstration of proper operation under the control of the Concessionaire's central software where applicable for existing gate groups that will be transitioned and under the HOT-OC's central software.
- All testing shall be coordinated with the Concessionaire as required by the Turnover Plan.

(f) **Integration:** As proposed gate sets are ready for incorporation into the EXPRESS- OC's system, provide the Concessionaire with the information necessary to integrate the proposed gates into the TMS. Program the gate controllers with the addresses and other parameters stipulated by the System Manager. Assist in testing and troubleshooting during the integration process.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 819—GENERATOR ASSEMBLIES  
(OPITZ PROJECT TMS)**

July 15, 2020

**819.01 – Description.**

All work related to the installation and testing of Generator Assemblies shall be in compliance with the requirements of the provisions set forth in this Section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 801.03(f) of the 2020 Edition of the VDOT Road and Bridge Specifications.

Provide and test backup power generator assemblies at the electrical service panels shown on the plans. Generator sites shall include service panel telemetry stations that include a cabinet, remote terminal unit, and DC power system that shall be used for generator assembly monitoring and control.

**819.02 – Materials.**

- (a) **Generator** shall be a Cummins Power Generation spark-ignited set fueled by liquid propane. It shall produce three-phase, four-wire, 277/480 volt AC power and have at least the capacity shown on the plans. Each generator shall be equipped with:
- A vaporizer for the fuel.
  - A battery, battery charger, and battery heater to ensure cold weather starts. The battery charger shall have status outputs (including low battery alarm) compatible with the PowerCommand PCC500 system.
  - A coolant heater to ensure cold weather starts.
  - A Level II (F173-2) sound-attenuating, weather protective enclosure.
  - Heavy duty air cleaner.
  - A full set of sensors, status outputs, and control inputs compatible with the PowerCommand PCC500 system.
- (b) **Automatic transfer switch** shall be a Cummins Power Generation Model OTPC with programmed open transition and Level 2 PowerCommand control. The capacity shall be as recommended by the manufacturer for the associated generator. The switch shall have a locking interface panel for monitoring and setting up the switch and also a full set of sensors, status outputs, and control inputs compatible with the PowerCommand PCC500 system.
- (c) **Remote monitor** shall be a Cummins Power Generation PowerCommand PCC500 (SNMP) PowerCommand PCC500 or successor product. The device shall permit remote monitoring and control, including starting and stopping the generator and switching the transfer switch. It shall include mounting hardware and all cables, modules and accessories needed to perform all remote monitoring and controlling functions that the generator, transfer switch, and battery charger allow. The device shall incorporate a web server and all remote functions shall be performed via a web browser.
- (d) **Generator communication cabinet** shall be suitable for mounting on the rails of the service panel. It shall be a locking aluminum NEMA 3R cabinet large enough to hold the uninterruptible power supply battery (see below) and the following DIN rail-mounted equipment: uninterruptible power supply; remote monitor (PowerCommand PCC500 PowerCommand PCC500); Ethernet switch, fuse block, and remote terminal unit. The cabinet shall have screened, filtered intake vents in the rear floor and screened, downward-facing exhaust vents in the overhang above the door. It shall have one or more thermostat-

controlled fans capable of moving a total of 100 cubic feet per minute. It shall have a light bar consisting of at least 12 white LEDs positioned to illuminate the equipment. Both the fan and light bar shall be at the top of the cabinet and both shall be powered by 24 VDC. The lights shall be on when the door is open and off when it is closed.

- (e) **Telemetry power system** for the PowerCommand PCC500, the Ethernet Switch, cabinet light, cabinet fan, and the remote terminal unit shall consist of the following:
- A power supply with a three-phase 480 VAC input and a 20 amp, 24 VDC output. The power supply shall mount on DIN rail or other suitable mounting bracket for the cabinet and have an operating temperature range of at least -25° C to +70° C. The power supply shall be mounted inside the service panel breaker cabinet.
  - A DC uninterruptible power supply (UPS) that is able to produce at least 10 amps at 24 VDC. The UPS shall store power in two batteries rated at 12 volts, 14 ampere-hours. The UPS shall have an operating temperature range of -25° C to +60° C. The UPS shall have alarm contacts for loss of input power and low battery. The batteries shall be sealed, maintenance-free, and have a built-in lifting strap. The operating temperature range of the batteries shall be -40° C to +70° C.
  - A fuse block that distributes the power from the UPS to five appropriately fused 24 VDC circuits, one for the Ethernet switch, one for the remote terminal unit, one for the fan, one for the light, and one for the PowerCommand PCC500. The fuse block shall be modular with the modules on DIN rail. Each module shall have a label and each shall have a fuse carrier that can be rotated out of its normal position to interrupt the circuit without interrupting other circuits.
  - An inverter to power the PowerCommand PCC500. The input shall be 24 VDC and the output shall be 120 VAC, pure sine wave. The operating temperature range shall be -15° C to +55°C.

- (f) **Remote terminal unit** shall be Moxa ioLogik E4200 that shall be configured as directed by the System Integrator to send status information to the HOT-OC. The RTU shall include input modules to monitor the status of the DC UPS and issue an SNMP trap to the central computer when alarm conditions begin or end. It shall also include input modules to monitor the fuel level in the tank and issue traps when the level drops below set levels.

The RTU shall be as used for the 95 HOV/HOT lanes project for propane tank monitoring. Coordinate with the System Integrator for specific model information. Otherwise, the RTU shall accommodate the necessary number of input and output modules that could monitor up to 200 inputs. Provide one module to monitor all the contact closures from the UPS and another to monitor the 4-20 milliamp signal from the fuel level sensor. The RTU shall have modules available (but not provided) for analog voltage inputs (0-10 V), and analog and digital outputs.

The device shall include a web server that permits setup and troubleshooting using only a web browser.

- (g) **Fuel tank** shall be a 500 gallon horizontal ASME tank. Equip it with all features and fittings needed for safe operation and compliance with codes and the requirements of the propane delivery service. It shall have supports for mounting the tank on a concrete pad and a belly valve for feeding liquid propane to the generator. Equip the tank with two devices that measure the amount of liquid propane in the tank. One shall indicate the level visually on an indicator on the tank. It shall not require power and shall be calibrated in gallons or percent full. The other device shall produce a 4-20 mA signal and shall require no other power than that provided by the input module of the remote terminal unit. Both devices shall resist impact, temperature extremes, corrosion, moisture, and bright sunlight. A single sensor with both a visible indicator and a 4-20 mA output is acceptable.
- (h) **Fuel line** carrying the liquid propane to the generator shall be installed underground and shall be in compliance with pertinent codes and the recommendations of the generator manufacturer. Include fittings.
- (i) **Vaporizer** kit for conversion of an existing Cummins generator from propane vapor to liquid propone fuel. This must be recommended by Cummins and installed by a contractor approved by Cummins.

**819.03 – Procedures.**

- (a) **Generator assembly installation.** Ensure that all aspects of the site, equipment, and installation comply with NFPA 58 and pertinent state and local codes. Coat the threads of all fittings with a compound suitable for propane.
1. **Generator.** Design and construct a reinforced concrete pad and mount the generator and transfer switch in accordance with the generator manufacturer's recommendations. Prior to construction, submit the proposed pad design, including concrete strength, to the Engineer for approval. Provide fuel, power, and control connections in accordance with the manufacturer's recommendations. For existing generators to be reused, equip the generator with a vaporizer and fuel lines so that it uses a liquid propane fuel supply.
  2. **Fuel tank.** Design and construct a reinforced concrete pad for the propane tank and the fuel line from the tank to the generator. Ensure that the bottom of the tank is at least as high as the vaporizer at the generator. Prior to construction, submit the proposed pad and fuel line designs to the Engineer for approval. Include the raceway for the connection between the fuel sensor and the remote terminal unit. Install the tank level on the pad and make the connections to the fuel line, electrical ground, and remote terminal unit. Do not put propane into the tank yet.
  3. **Telemetry system.** Install all elements of the PowerCommand and fuel level monitoring systems, including connections to power and the fiber optic communication network. At locations that already have service panel telemetry cabinets, use those cabinets and equipment. In those locations, connect the PowerCommand and inverter to the existing DC UPS and Ethernet switch. At those locations, also connect the fuel sensor to the existing RTU, providing an additional 4-20 mA module if needed. At all locations, set up the generator for automatic tests at a frequency provided by the Concessionaire. Set up SNMP traps in the remote terminal unit to notify the HOT-OC when alarm conditions involving the DC UPS begin and end. Set up traps to notify the operations center when the fuel tank is 25 % full and 10 % full. Configure the Telemetry System to provide the following data via SNMP: generator status (run/stop), ATS status (utility/generator), and utility power (on/off).
  4. **Code Inspection.** Inform the Engineer when all site work, propane work, and electrical work has been completed, so that the Engineer can arrange for inspection by the authority having jurisdiction. Be present at the inspection, providing information and assisting in the inspection as requested by the inspector. Correct all deficiencies found by the inspector.
  5. **First Fill.** When the site passes the inspection, vacuum purge the tank and fill it to the regulatory limit. However, use the filling of the tank as an opportunity to test the accuracy of the visual and electronic indications of the fuel level. If the two fuel level sensors are not within 10% or if they don't correspond to the amount of propane that has been dispensed, stop the filling process, empty the tank, and fix the fuel level sensing devices.
- (b) **Acceptance testing.** Develop a test plan for the generator assembly and submit it to the Engineer for approval. Incorporate every test recommended by the manufacturer of each component including the generator, propane tank, remote terminal unit, and telemetry system. Include a visual inspection. Demonstrate proper operation in response to a power outage and to a power restoration. Demonstrate remote monitoring of the generator, fuel tank, and DC UPS over the fiber optic communication network. Demonstrate remote control of generator operation. Demonstrate that the light and fan in the generator communication cabinet work, and that the cabinet shows no evidence of leaks. Revise the test plan until it is satisfactory to the Engineer. Then conduct the tests in the presence of the Engineer's representative.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 820  
(OPITZ PROJECT TMS)**

**[NOT USED]**

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 821  
(OPITZ PROJECT TMS)**

**[NOT USED]**

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 822  
(OPITZ PROJECT TMS)**

**[NOT USED]**



**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 823—CABINET ASSEMBLIES  
(OPITZ PROJECT TMS)**

July 15, 2020

**823.01 – General.**

All work related to the installation and testing of Cabinet Assemblies shall be in compliance with the requirements of the provisions set forth in this Section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 703 and 801.04(a) of the 2020 Edition of the VDOT Road and Bridge Specifications.

This section governs all cabinets furnished in this project except Type 1 cabinets.

**823.02 – Materials.**

**(a) General Requirements applicable to all cabinets:**

1. All VDOT cabinets shall have door locks equipped with the VDOT's standard tumbler lock Number 9R48773. Provide a total of ten (10) keys.
2. All Express Lanes cabinets shall have locks from CCL Security similar to the locks on VDOT cabinets. They shall be keyed to match cabinet locks provided on the I-95 HOV/HOT Lanes project. Provide a total of 30 keys.
3. Provide an engraved plaque on the front door, displaying the cabinet ID indicated on the plans. Characters shall be at least 4 in. high with a minimum stroke width of 0.4 in unless smaller characters are required to fit the ID on one line. The plaque shall be made of multilayered plastic. Plaques on Express Lanes cabinets shall have a black surface over a white interior.
4. The connection to ground must be bare, solid AWG # 6 copper wire. For multiple cabinets on a single foundation, bond each ground bus bar using a solid AWG #6 copper wire and bond one of the bus bars to the grounding electrode.
5. All cabinets shall have a natural aluminum or stainless steel finish, free from blemishes. All seams shall be continuously welded and ground smooth.
6. Fasteners must be stainless steel.
7. Cabinets shall have sunshields on all four sides and the top, except that no shield is required on the back of Type 3 cabinets. Also, where two or more cabinets are mounted side-by-side, no sun shield is required on facing sides.
8. Shall support a removable standard 19" EIA rack.
9. Provide mounting panels for terminal blocks, surge protectors, and other small items on both sidewalls.
10. Provide terminal blocks for all conductors entering the cabinet. Except for blocks used for coaxial cable, the blocks shall be the barrier type with nickel-plated brass screw terminals and solid backs. Each terminal shall be clearly and permanently labeled on a contiguous surface using silk screening or other approved method. Terminal blocks for conductors carrying more than 60 volts must be covered by a clear acrylic shield.
11. Provide an interior fluorescent light above each door. Each door shall have a door switch controlling the light. In cabinets with two doors, both lights shall light when either door is opened.

12. Provide a duplex ground fault interrupt outlet for use by technicians. If several cabinets are mounted side-by-side, only one must have a convenience outlet.
  13. Provide a thermostatically controlled fan that moves 100 CFM through vents at the top of the cabinet. The air intake shall be through louvers in the door, and the air shall pass through a replaceable filter as it enters the cabinet.
  14. If the cabinet receives 480-volt power, provide a step-down transformer to convert it to 120-volt power. All transformers shall be designed for outdoor use. The transformer shall be inside cabinets unless noted on the plans. Transformers at cabinets supplying dynamic message signs shall have center-tapped secondaries, producing 120/240-volt power. Other transformers shall produce only 120-volt power.
  15. In each cabinet with a transformer, provide a panel or DIN rail-mounted, two-pole main breaker on the primary side of the transformer. Base the capacity of the breaker on the rating of the transformer. The breaker shall be a UL489 listed.
  16. In each cabinet, provide a 120 VAC main breaker and branch circuit breakers, all DIN rail mounted.

The breakers shall be UL489 listed. The main breaker shall be rated at 25 amps unless the load requires a larger rating. Branch circuits shall have 15 amp breakers unless the load requires a larger breaker. One or more branch circuits shall serve the communication and traffic management equipment in the equipment cabinet. Connect that circuit to the second stage of the surge suppressor and to the equipment. A second branch circuit shall power auxiliary devices in the equipment cabinet, such as the fan, heater, light, and GFI outlet.
  17. In cabinets serving dynamic message signs or gates, provide a multi-pole breaker to cut off power to the sign or gates. Power running from the transformer secondary or incoming power terminal block to this breaker shall bypass the 120 VAC breakers in the cabinet.
  18. Before buying any cabinets, provide shop drawings, layout drawings, catalog cuts, and schematics for the Concessionaire's approval. The layout drawings shall be dimensioned drawings showing the proposed location of all equipment for each cabinet. The drawings shall demonstrate that all the equipment will fit and that all controls, connections, convenience outlet, and other service points are readily accessible for use and maintenance. They should also demonstrate that incoming conductors reach surge suppressors as soon as they enter the cabinet. Layout all cabinets that have the same equipment in the same way and submit a single drawing for all like cabinets. Revise the layout as instructed by the Engineer and resubmit the drawings until they are accepted.
- (b) **Ground-Mounted Cabinets:** The cabinets shall be Model 334C cabinets on the Caltrans Transportation Electrical Equipment Specifications (TEES) Qualified Products List (QPL). Acceptable equivalent products must meet one of the following conditions: 1) previously approved for use on the I-95 HOV/HOT Lanes Project or 2) references provided from agency where cabinet has been used for similar purpose and found suitable by the Concessionaire. No input panel, input file, C1 harness, or power distribution assembly is required, except for gate controller cabinets. Police panels are not required. Provide bolts, nuts, washers, and lock washers to secure the cabinet to the base adapter.
- (c) **Base Adapters for Ground-Mounted Cabinets:** The base adapter has two functions. It raises the cabinet 12" above the foundation, making it easier for a technician to work in the lower part of the cabinet. In addition, it provides a raceway between adjacent cabinets on the same foundation. Base adapters shall be as follows:
1. The base adapter shall be a hollow aluminum box 12 inches high, 30 inches wide, and 30.25 inches deep (the same depth as the cabinet). It shall have a cutout opening centered in the top, 15 inches wide and 21 inches deep, matching the opening in the bottom of the cabinet. It shall have a similar cutout on the bottom, directly below the top cutout. Around the top cutout shall be four punched holes that match the anchor bolt holes in the cabinet. Around the bottom cut out shall be four punched holes that match the anchor bolts in the foundation.
  2. Construct the adapter so that it does not sag under the weight of the fully loaded cabinet. Any internal members must not obstruct cables going from the cabinet to adjacent cabinets, nor to the conduits below.

3. Construct the adapter of the same material used for the cabinet and give it a matching finish. All seams shall be continuously welded and ground smooth.
  4. Provide anchor bolts, nuts, washers, and lock washers to secure the base adapter to the foundation.
- (d) **Type 2 Cabinets:** The cabinets shall be Model 336A. If no vendors for this cabinet available, provide a Model 336A from a vendor of Model 332 or Model 334 cabinets. Equivalent products will be allowed per the requirements for Ground Mounted cabinets. No input panel, input file, output file, C1 harness, or power distribution assembly is required, except for gate controller cabinets. Police panels are not required.

**823.03—Procedures.**

- (a) **Ground-Mounted Cabinet Installation:** Apply a coat of silicone sealant to the bottom of the cabinet immediately before bolting it to the base adapter. Ensure that the cabinet is plumb, using shims if necessary, and ensure that it is properly aligned with the front edge of the base adapter.
- (b) **Type 2 Cabinet Installation:** Securely fasten the cabinets to their supporting structures using mounting brackets. Ensure that conduits enter the cabinet only from the bottom. Bond the cabinets to the support structure, if metal, and the support structure to a ground rod. If the support structure is not metal, run a # 6 solid copper ground wire from the cabinet to a ground rod.
- (c) **Testing:** Develop a proposed test procedure for the cabinets and submit it to the Engineer for approval. It shall include visual inspection, testing of lights, fan, and power outlets. It shall also include a test in which each branch circuit is shorted to the ground bus bar to confirm that the breaker trips. Revise the proposed test procedure until it is acceptable to the Engineer.

Provide all equipment and personnel needed to safely conduct the tests. Arrange for the Engineer's representative to witness the tests. Give the Engineer a report documenting the result of every visual inspection and test. Include a summary indicating whether the cabinet passed every test. The cabinet must pass every test to be accepted.

If the cabinet fails, correct the problems and arrange for a new test. If the test of the breakers reveals breakers that do not trip, the resistance to ground is too high; lower the resistance by adding more ground rods and improving the connections in the ground system.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 824—COMMUNICATION SYSTEM TESTING  
(OPITZ PROJECT TMS)**

July 15, 2020

**Section 824.01 – Procedures.**

(a) **Objectives:** Test the constructed communication system to confirm the following:

1. All 95 Express Lanes roadside equipment to be relocated or modified in this project communicates normally with the HOT-OC.
2. All VDOT roadside equipment that was provided in this project communicates normally with a test computer at the communication node to which the roadside equipment reports.
3. All Express Lanes equipment communicates normally with the HOT-OC central computer.
4. Tested communication channels operate at the data rates and error rates anticipated, based on the components used in the channel.
5. Communication over the Express Lanes network continues normally despite a single cable cut or switch failure anywhere on the network.

(b) **When to Test:**

1. **Express Lanes network:** Conduct the tests when the entire network is complete and all communication and traffic management equipment is in its final configuration. Test existing Express Lanes fiber at cabinets installed on the 95 Express Lanes project when modifications to the cabinet are made as part of the Opitz Project.

(c) **How to Test Express Lanes Cabinets:**

1. Arrange for the tests to be witnessed by the Engineer's representative.
2. Do the following at each cabinet to be tested, proceeding sequentially around the network from cabinet to cabinet. If testing reveals a problem, such as an improperly configured switch, that can be fixed immediately, fix it and retest. If a distribution ring has an even number of cabinets, only one of the two middle cabinets need be subjected to the communications tests.
  - a. Use software on the test computer at the HOT-OC to communicate bi-directionally with the traffic management equipment in the cabinet. If the cabinet is a CCTV cabinet, display the video.
  - b. Disconnect the switch at the cabinet under test from one pair of optical fibers and confirm that any interruption in communication lasts only a few seconds. Use switch manufacturer console interface to test the communication channel for throughput, latency, frame loss, and back-to-back frames. Reconnect the pair of fibers and confirm that any communication lapse lasts only a few seconds.
  - c. Repeat the previous step with the other pair of fibers connected to the switch.
  - d. If the cabinet under test is at the midpoint of a distribution ring, turn off the power to the Backbone switch at one of the Backbone switches that is on the distribution ring. Confirm that any communication lapse lasts only a few seconds. Repeat communications tests. Power up the Backbone switch. Confirm that any communication lapse lasts only a few seconds.

- e. If the second Backbone switch in the distribution ring is also in a IRU (rather than the HOT-OC), repeat the previous step with the second Backbone switch.  
Note: All testing shall be coordinated with and approved by the 95 Express Lanes Engineer.

**(d) Acceptance and Corrective Action:**

1. Prepare a table containing all the data collected during the testing: whether the equipment performed as expected; duration of communication lapses during faults and restorations, and the communications test results. Display this data in a way that facilitates comparisons among the communication channels. Supplement the table with graphs if that makes the data easier to understand.
2. Highlight test results that are significantly different from the rest. For each such anomaly, identify possible causes. Investigate and correct anomalies caused by defects in materials or workmanship.
3. When all the defects have been fixed, retest the corrected communication channels in the presence of the Engineer's representative. Conduct any additional tests the Engineer's representative requests to demonstrate that the actions taken to correct the anomalies have not impaired the performance of other communication channels.

- (e) **Documentation:** Submit the table and graphs described above, but with both the original and final test results. For each anomaly corrected, identify the corrective action taken. Submit proposed fixes and corrective actions of defects for approval prior to commencing work.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR  
SECTION 825—WIRING AND SURGE PROTECTION  
(OPITZ PROJECT TMS)**

July 15, 2020

**825.01 – General.**

All work related to the installation and testing of Wiring and Surge Protection shall be in compliance with the requirements of the provisions set forth in this section. In addition to these Supplemental Specifications, the Contractor shall adhere to the applicable requirements of Section 801 of the 2020 Edition of the VDOT Road and Bridge Specifications.

**825.02 – Wiring.**

- (a) Protect personnel from accidental contact with dangerous voltages.
- (b) In equipment cabinets and housings, every conductor, except conductors contained entirely within a single piece of equipment, must terminate either in a connector or on a terminal block. Provide connectors and terminal blocks where needed.
- (c) Within equipment cabinets, use wire saddles to keep wiring, including fiber optic pigtails, out of the way of service activities. Ensure that any removable assembly can be removed without disturbing wiring that is not associated with the assembly being removed.
- (d) Do not install conductors carrying 120 volt AC power or greater in the same wiring harness as conductors carrying lower voltage control or communication signals.
- (e) Equipment and wiring shall be arranged so that the distance between each conductor's point of entry and the surge protector shall be as short as possible, and the protector shall be located as far as possible from electronic equipment. All wiring between the surge protectors and the point of entry shall be free from sharp bends.
- (f) At locations where modifications to existing wiring is required, the Contractor shall note deficiencies or code violations and bring to the attention of the Engineer.
- (g) Phase taping of electrical conductors shall not be permitted. Electrical conductors shall have a continuous phase colored jacket between connection and termination points. Neutral conductors shall have a continuous white or gray colored jacket between connection and termination points. Ground conductors shall have a continuous green colored jacket between connection and termination points.
- (h) Cable reducing compression adapters shall be used at circuit breaker locations where oversized cable is used to reduce voltage drop on long runs or where neutral conductors are upsized for power quality. Compression adapters shall contain insulating covers supporting termination of Class B 600 V conductors. Compression reducing terminal adapters shall meet Underwriters Laboratories (UL) standards and listings and additional associated standards.
- (i) Provide 2 feet of electrical wiring slack at every junction box. Electrical wiring shortage or excessive amounts of wiring will not be accepted.

**825.03 – Surge Protection.**

- (a) **General:** All ungrounded conductors entering or leaving any equipment cabinet shall be equipped with surge protectors. For purposes of this section, multiple cabinets on a single foundation are considered a single cabinet.

- (b) **Microwave vehicle detector cables** shall be protected by surge protectors recommended by, and supplied by, the detector manufacturer. At locations where multiple detectors or sensors are used, a separate surge protector shall be used for each power and communication circuit to the detectors.
- (c) **Other low-voltage signal pairs** shall be protected by protectors meeting the following requirements:
  1. The protectors shall suppress a peak surge current of up to 10K amps.
  2. The protectors shall have a response time less than five nanoseconds.
  3. The protector shall clamp the voltage between the two wires at a voltage that is no more than twice the peak signal voltage, and clamp the voltage between each wire and ground at 50 volts or less.
  4. It shall be possible to replace the protector using only common hand tools.
- (d) **Cables carrying power** from an equipment cabinet to a camera or other external device shall be protected by grounded metal oxide varistors of appropriate voltages. All metal oxide varistors used for surge protection shall be 0.79 in. in diameter or larger. Power-Over-Ethernet (POE) equipment shall be protected by Ethernet Extender's Enable-IT 265LP or approved equal.
- (e) **Main AC power** shall be protected by a protector that is UL 1449 listed and bears the UL label. If the main power uses a step down transformer at the cabinet or toll point, then the surge protector shall be on the primary side of the transformer, on the load side of the main breaker. If the voltage on the primary side of the transformer is 480 volts, the surge suppressor shall be designed to protect three phases and the neutral, even though only two phases are used.

The surge protector shall have the following characteristics:

- For each phase, the sum of the line-to-neutral and line-to-ground surge capacities shall be at least 80 kA.
- It shall be a Type 1 surge protective device with a tested normal current (In) of 20 kA.
- The short circuit current rating shall be 200 kA.
- Depending on the voltage of the lines being protected, the voltage protection ratings and maximum continuous voltage shall be as follows:

	277/480 V WYE	120/240 V SPLIT
Line-to-neutral voltage protection rating	1200 V	700 V
Line-to-ground voltage protection rating	1200 V	700 V
Neutral-to-ground voltage protection rating	1200 V	600 V
Line-to-line voltage protection rating	2000 V	1000 V
Maximum continuous operating voltage (line-to-neutral)	320 V	150 V

- The protector shall be in the equipment cabinet for the electronics being protected.
- Its operating temperature range shall be -25° C to 60° C
- The protector shall have one or more status LEDs giving a visual indication when any suppression element has failed.
- The protector shall have a ten year warranty.

**CONSTRUCTION PROJECT  
SPECIAL PROVISION FOR**

**SECTION 826—NETWORK BOOT BAR  
(OPITZ PROJECT TMS)**

**813.01 – General.**

All work related to the installation and testing of Opitz Project Network Boot Bars (NBB) shall be in compliance with the requirements of the provisions set forth in this section. In addition to these Supplemental Specifications, the Contractor shall adhere to applicable requirements of Section 802 of the 2020 Edition of the VDOT Road and Bridge Specifications.

- Provide NBB's at locations as shown on plans. The NBB is a smart network cabinet power strip, which shall instantly reboot, start or stop roadside equipment in cabinets and shall provide complete non-interruptible power protection, voltage regulation, and surge and spike protection for all ITS devices and communications equipment powered by it.
- **Express Lanes Configuration:** NBB shall be installed in all ITS cabinets as shown on the plans. The NBB shall be installed in the cabinet where all ports are viewable and accessible.

**813.02 – Materials.**

- The Network Boot Bar shall be Digital Loggers Web Power Switch 7 with Simple Network Management Protocol. The NBB shall be configured to match the power requirements of the ITS cabinet. The NBB shall be connected to the network access switch. Port assignments for the network access switch and NBB will be provided by 95 Express. Provide necessary cables and power cords for connecting roadside equipment.

**813.03 – Construction.**

- The NBB shall be a commercially available package containing all wiring connectors, software, mounting brackets, and cables.

**813.04 -Procedures**

**(a) Installation:**

1. Install the NBB, power and wiring in accordance with the manufacturer's recommendations. The NBB shall be rack mounted in the ITS Cabinet per the approved rack layout elevations.
2. Ground the NBB in accordance with the manufacturer's recommendations.
3. Label all cables at both ends, indicating the particular device it serves.
4. Set the operating parameters as directed by the System Integrator, including IP address, port assignments and location.

**(b) Testing:**

Acceptance Testing: Develop a test plan and procedures that demonstrate proper operation of the NBB under full load conditions and demonstrate the expected operating performance. The plan shall include all tests recommended by the manufacturer. When the plan is satisfactory to the Engineer, conduct the testing in accordance with the plan and prepare a test report. Provide any software and equipment needed to conduct the tests.



**EXHIBIT O**  
**TMS INTERFACE PLAN**

# Exhibit O

## TMS Interface Plan

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**Appendix A**

Detailed Division of Responsibilities between the Construction Contractor  
and TMS Contractor ..... A-1

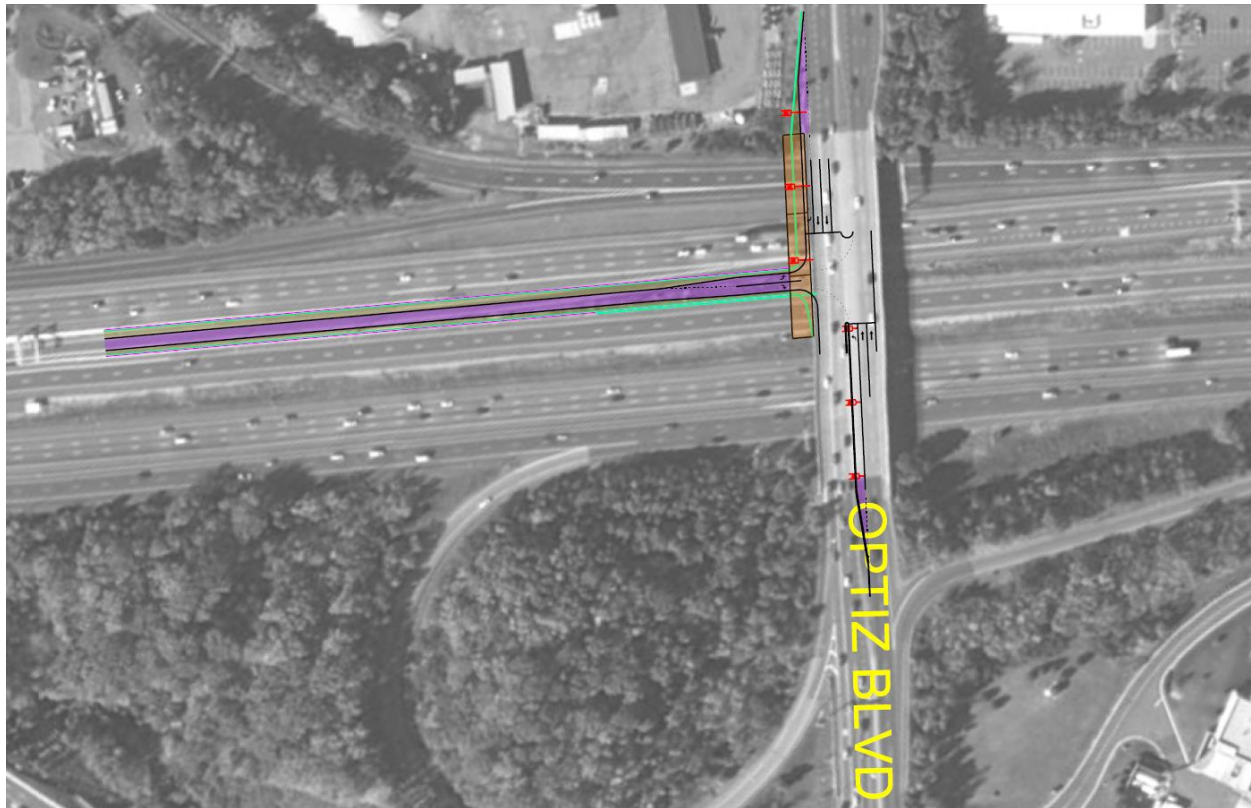
**Appendix B**

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# 1 Introduction

## 1.1 Description of Project

The 95 Express Lanes Opitz Boulevard Ramp Project (“Project Opitz” or “Project”) will add new access opportunities for the 95 Express Lanes in the vicinity of Potomac Mills in Prince William County. Project Opitz will add a south-facing access T ramp connecting the 95 Express Lanes and Opitz Boulevard. During northbound operations, the ramp will provide northbound 95 Express Lanes users the opportunity to exit onto Opitz Boulevard near Potomac Mills mall and Sentara Northern Virginia Medical Center. During southbound operations, the ramp will provide a new entrance from Opitz Boulevard onto the southbound 95 Express Lanes. Figure 1 below illustrates the proposed south-facing ramp connecting Opitz Boulevard and the 95 Express Lanes. Improvements on Opitz Boulevard includes Opitz Bridge widening and reconfiguration including a new eastbound right turn lane and new westbound left turn lane, both of which would only be open during southbound operations, with access managed by gates. This new reversible T ramp will be controlled by a new traffic signal on Opitz Boulevard between the existing signals at Telegraph Road and at River Rock Way.



**Figure 1. Project Opitz Boulevard Access Ramp**

The existing southbound GP slip ramp to the southbound Express Lanes will be relocated south of Dale Boulevard. Figure 2 below illustrates the proposed relocation of the southbound Express Lanes slip ramp.



Figure 2. Project Opitz Relocated Southbound Express Slip Ramp

### 1.2 Project Structure

Figure 3 provides an overview of Project Opitz delivery structure and contracting relationships. The proposed project structure will require a collaborative approach between the Construction Contractor and TMS Contractor to ensure successful and timely delivery of the project.

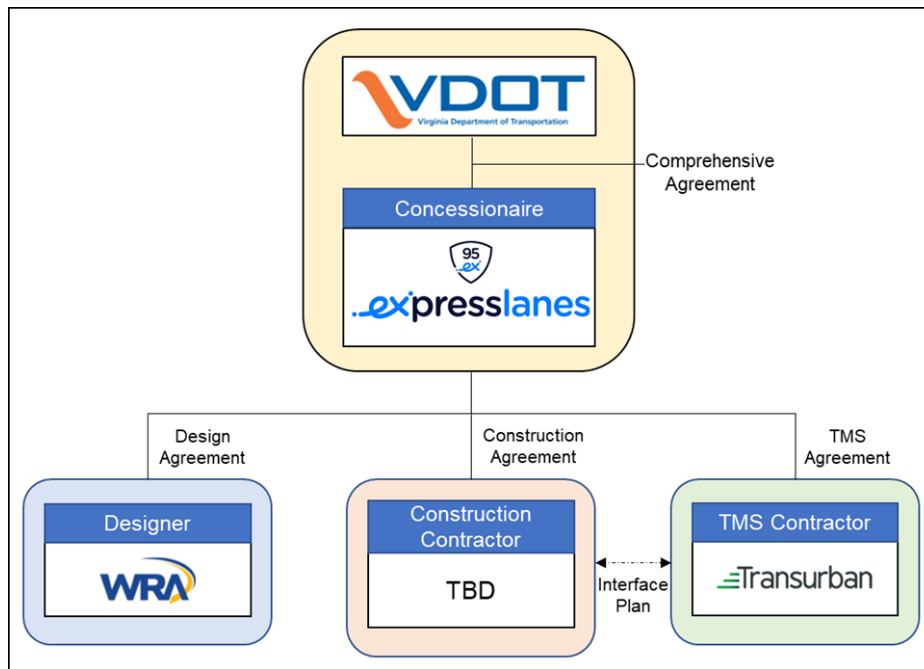


Figure 3. Project Contracting Structure

### 1.3 95 Express Lanes LLC (Concessionaire)

95 Express Lanes LLC (Concessionaire) is responsible for the design, construction, financing, and ongoing operations and maintenance of the Project in accordance with the Third Amended and Restated Comprehensive Agreement Relating to the I-95/395 HOV/HOT Lanes Project with Virginia Department of Transportation (VDOT) for the Project (“Comprehensive Agreement”).

### 1.4 Construction Contractor

The Construction Contractor will be the principal contractor under contract to Concessionaire to complete the construction of Project Opitz. The Construction Contractor is responsible for providing the civil works and a number of component elements of the Traffic Management System (TMS), including all required civil infrastructure and TMS roadside equipment. The Construction Contractor will also be responsible for interfacing with TMS Contractor throughout the project in relation to TMS systems integration and sub-system components.

### 1.5 TMS Contractor (Transurban (USA) Inc.)

Transurban (USA) Inc. will be the designated TMS Contractor under contract to the Concessionaire to provide systems integration and commissioning services. The TMS Contractor is responsible for upgrades and updates to the existing 95 Express Lanes traffic management systems software necessary to operate Project Opitz, and integration and commissioning of the new TMS roadside equipment provided by the Construction Contractor into the 95 Express Lanes operating systems and operations center.

### 1.6 Document Purpose

The purpose of the TMS Interface Plan is to further define the specific scope of work responsibilities of the Construction Contractor and the TMS Contractor for Project Opitz that form the basis for the design, installation/construction, turnover, testing, and integration of the various TMS component elements and to identify the interfaces and obligations between the two parties required to support the delivery of Project Opitz.

The Interface Plan establishes a framework for interface management and protocols to identify, coordinate and control the interfaces and interface points between the Construction Contractor scope of services and TMS Contractor scope of services. This document will identify the division of responsibilities between the Construction Contractor and TMS Contractor, as it pertains to the broader Traffic Management System (TMS) delivery of the project, and defines installation, testing and integration responsibilities, information exchange, review process, notifications, and appropriate documentation and deliverables required for delivery of the TMS as part of the overall complete project. This document does not address VDOT ITS equipment.

This TMS Interface Plan is included in the Construction Contract and will be incorporated by reference into the TMS Contract between the Concessionaire and Transurban (USA) Inc.

### 1.7 Tolling and Traffic Management System Overview

Figure 4 provides an overview of the major elements and subsystems that comprise the tolling and traffic management system used for the 95 Express Lanes. A summary of each is provided below.

The **Tolling System** is used for collection and enforcement of tolls, and consists of electronic toll collection (ETC) roadside equipment located in the field, and ETC system and back office system

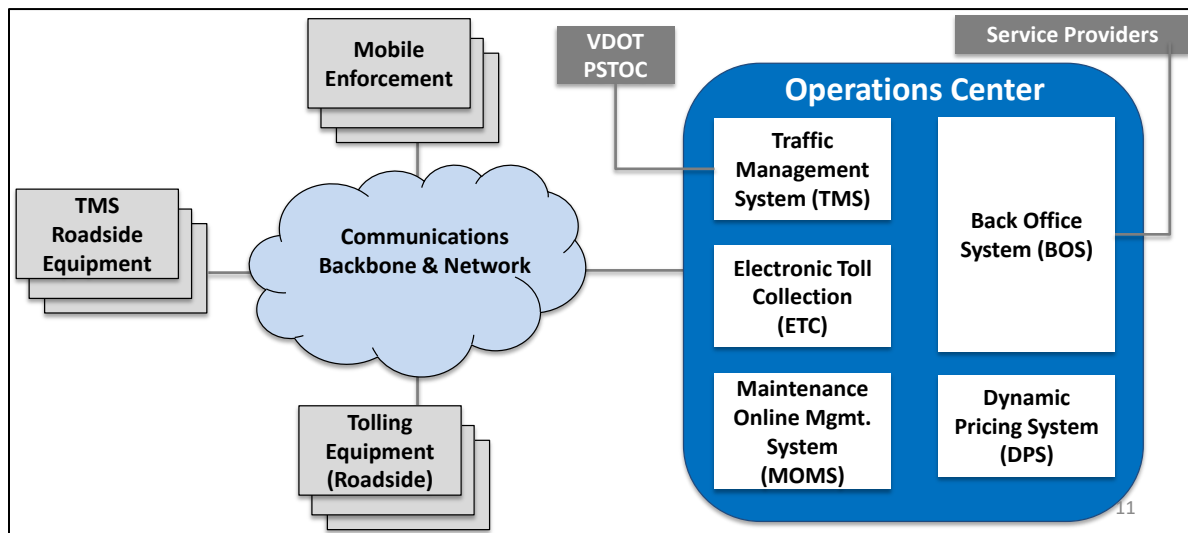
(BOS) software and hardware located in the Express Lanes Operations Center (also known as HOT-OC).

**There are no additional toll points or tolling system upgrades included in the scope of Project Opitz. This Project involves only TMS components as mentioned below.**

The **Traffic Management System** provides a centralized platform for the traffic control room operators to manage the various TMS roadside equipment installed in the field. With the TMS, the operators conduct gate reversibility, monitor traffic conditions, and provide real time information to motorists to support roadway and en-route traffic management, and report and manage incidents along the Express Lanes. The TMS roadside equipment is located in the field and TMS software and hardware is located at the Express Lanes Operations Center. The TMS roadside equipment includes:

- a. Dynamic message signs (DMS) to provide dynamic pricing and traveller information to motorists on the road,
- b. Microwave vehicle detectors (MVDS) to collect traffic data, including volume, speed, and occupancy,
- c. Closed circuit television (CCTV) cameras, and
- d. Automated incident detection (AID) cameras,

The existing **Communications Network** is comprised of fiber optic cable forming a trunk and distribution topology. This network also provides system redundancy to the Express Lanes Operations Center. Other TMS roadside equipment will complete the communications and roadside infrastructure, including TMS cabinets, UPS (uninterrupted power supply), generators, device enclosures, and network equipment.



**Figure 4. Express Lanes Systems Overview**

## **1.8 Existing TMS Roadside Equipment**

The Project also includes work by the Construction Contractor related to the existing 95 Express Lanes Communications and TMS Roadside Equipment, which is integrated back to the Express Lanes Operations Center and the Traffic Management System. Requirements for this work are addressed in the Design Documents, Technical Requirements and Special Provisions.

## **1.9 Commitment to Work Collaboratively and Openly**

Construction Contractor and the TMS Contractor each commit to working together in a collaborative and open manner, in accordance with the applicable requirements of the Opitz Contract Documents and TMS Interface Plan, to avoid conflicts and disputes. As a result, Construction Contractor and the TMS Contractor agree to promptly notify the other, as well as Concessionaire, of: (a) any actual or perceived problems, concerns, issues, differences of opinion or conflicts in relation to the work on the Project, whether involving physical Site conflicts, workspace or schedule conflicts, or equipment and system performance conflicts; and (b) any other matter which may be contrary to the principles reflected in this Interface Plan.

## **1.10 Communications and Coordination Protocol**

As a means of implementing the commitments noted in Section 1.9 above, the parties agree that they will participate in regular coordination meetings (at least monthly) and hold additional meetings as required during the Contract period to address open or unresolved issues related to TMS interfaces. One of the primary purposes of the coordination meetings is to create an environment whereby issues that could impact performance of either Construction Contractor or the TMS Contractor are identified and brought to the attention of the Concessionaire and the other party at the soonest opportunity, and that such issues are resolved or mitigated in a timely manner. Construction Contractor will be responsible for leading and administering these coordination meetings. Meeting shall be held at least monthly, with more frequent meetings as needed to accomplish to complete the TMS Work. Construction Contractor will also be responsible for integrating the activities of the TMS Contractor into the Baseline Schedule and all updates to such schedule.

Construction Contractor and the TMS Contractor recognize that their ability to perform work efficiently and effectively is dependent upon receiving timely and accurate information from the other party. Each agrees that it will give the other reasonable advance notice of its needs and/or requirements, and that the other party will reasonably attempt to meet the needs of the other party. Construction Contractor will have primary responsibility for coordinating and administering the process of submitting and exchanging information (including but not limited to design changes and documentation) with the TMS Contractor.

Construction Contractor and the TMS Contractor recognize that it is possible that their ability to perform certain work may shift because of field progress. One of the primary functions of this communications and coordination protocol is to provide a framework for the parties to discuss these issues and obtain advance knowledge of any such issues. Construction Contractor and the TMS Contractor each agree to provide the other with reasonable notice (3 calendar days) of any field delay issues, and the affected party will make best efforts to reasonably work around these issues. This is not intended to affect the contractual rights of any of the parties for Contract Price or Contract Time adjustments that may be due.



Construction Contractor and the TMS Contractor further recognize that one of the critical issues for Project success is to deal effectively with the interface points between and among their respective work. While Construction Contractor will have primary responsibility to schedule and coordinate these interfaces, it is understood that Construction Contractor and the TMS Contractor will work together collaboratively and cooperatively to focus on this issue and to cooperate with each other to identify interfaces that could create problems and work cooperatively to resolve such problems.

## 2 Interface Roles and Responsibilities

Construction Contractor will be responsible for managing, coordinating and scheduling the work related to supply, installation, testing, and integration of the TMS roadside equipment and related infrastructure, including active coordination and engagement with TMS Contractor throughout the entire project duration.

Construction Contractor will be responsible for ensuring that milestones and all related predecessor activities are being met and reviews are requested from TMS Contractor to meet schedule requirements. The TMS Contractor will be responsible for supporting the Construction Contractor to complete integration of the TMS roadside equipment with the existing TMS subsystems.

The scope of services related to the delivery of the TMS for the project stakeholders are listed below. The responsibilities of the Construction Contractor and the TMS Contractor are further defined for the design, construction and testing phases of the project.

A detailed scope split of Construction Contractor and TMS Contractor activities is provided in **Appendix A**.

### 2.1 Concessionaire Responsibility

Concessionaire will provide oversight of the interface management between the Construction Contractor and TMS Contractor to ensure that the civil works and TMS scope of services are properly coordinated and managed throughout all phases of the project delivery.

### 2.2 Construction Contractor Scope

Construction Contractor will be responsible for following scope of services related to the delivery of the TMS:

- a. overall management associated with the delivery of the TMS roadside equipment, including incorporating and integrating all necessary TMS activities and milestones related to the civil works-system interfaces into the Construction Contractor's overall project schedule,
- b. supply and construction of all civil works necessary for the installation of TMS roadside equipment, including utilities (new service and relocations), drainage, foundations, structures (e.g. sign structures and/or poles), TMS roadside cabinets and enclosures, TMS equipment access points, and roadway barriers required to protect TMS equipment,
- c. supply, installation, and commissioning of all power and communications cabling deemed necessary to support the TMS roadside equipment, structures and roadside cabinets,
- d. supply, installation and testing of TMS roadside equipment, including dynamic messaging signs, microwave traffic detectors, CCTV cameras, automated incident detection cameras, and gate control system equipment,
- e. supply, installation, and commissioning of the fiber optic communications backbone along the entire project length and connections to the Express Lanes Operations Center, and

- f. demonstrating the proper performance of the TMS roadside equipment, communications backbone and network and ancillary roadside equipment as part of testing and commissioning.
- g. relocation of existing VDOT ITS and Concessionaire TMS roadside equipment located within the Project Opitz Right of Way that is affected by construction, including power and communication service to the equipment, and shall ensure that loss of functionality is minimized.

## 2.3 TMS Contractor Scope

TMS Contractor will be responsible for following scope of services related to TMS:

- a. coordinating with the Construction Contractor to ensure all necessary TMS integration and testing activities and milestones related to civil works interfaces are properly incorporated in the Construction Contractor's overall project schedule throughout all phases of project delivery,
- b. providing to the Construction Contractor the technical and performance requirements and specifications for the TMS subsystem, including associated roadside equipment,
- c. integrating the TMS roadside equipment with the existing Express Lanes traffic management software and other subsystems at the Express Lanes Operations Center, and
- d. completing the overall integration, testing and commissioning of the Express Lanes Traffic Management Systems needed for revenue operations.

## 2.4 Systems Design Phase

### 2.4.1 Construction Contractor Responsibilities

Construction Contractor will be responsible for following scope of services:

- a. providing the Concessionaire a formal design and factory review of the typical TMS cabinets to be provided by Construction Contractor,
- b. using the TMS Roadside Equipment (TMS RSE) Asset Database provided by Concessionaire, the Construction Contractor will maintain all asset location, configuration and other pertinent data in a single database. The database will be maintained through all phases of construction, installation, and turnover. Database will be maintained by Construction Contractor and regularly updated and available to all parties.

### 2.4.2 TMS Contractor Responsibilities

During the TMS Contractor System design phase, the TMS systems and components will undergo requirements definition phase, detailed system design, including a Design Review, leading to a detailed System Design that meets the Technical Requirements and the TMS System Requirements specification. The timing of the Design Review will be performed to support the Construction Contractor's schedule for turnover.

The TMS Contractor will be responsible for following scope of services related to design:

- a. Network High Level Design document, which provides an overview for the design of the roadside Wide Area Network (WAN), bandwidth requirements, and data center networks,
- b. Network Detailed Design document, which provides detailed design of the network,
- c. TMS roadside equipment configuration requirements.

The TMS Contractor will provide the roadside equipment configuration requirements and the Network Interface Protocol (IP) Schema to the Construction Contractor.

## **2.5 Construction/Installation Phase**

Construction Contractor acknowledges that its Work may be affected by the carrying out of the work by the TMS Contractor performed within or near the project site, and shall ensure that the planning, integration, programming, testing and performance of work by both contractors are properly coordinated, taking into account their concurrent and sequential nature. In particular, the Construction Contractor shall: a) plan, program and perform its Work so as to not unnecessarily interfere with or hinder the activities of the TMS Contractor and b) at all times take all reasonable steps to protect the TMS Contractor's Work from accidental damage caused by the Construction Contractor's personnel and Work.

The Construction Contractor shall allow the TMS Contractor access to the project site to the extent necessary or appropriate for TMS Contractor to simultaneously or progressively, as appropriate, carry out its obligations under the TMS Interface Plan. The Construction Work and the TMS Work, as applicable, shall be delivered in a fit-for-purpose condition such that the Construction Contractor or TMS Contractor, as applicable, can integrate or tie-in its Work without modification, re-design or delay.

While on the project site, the TMS Contractor and its subcontractors shall at all times (a) adhere to the health, safety and security directions, procedures and guidelines established by Construction Contractor (b) if required by Construction Contractor, with respect to matters that deviate from the agreed schedule, confine their activities to a specified location on the project site or vacate the project site if the Construction Contractor reasonably determines that the presence of TMS Contractor or its contractors and/or their activities are materially interfering with the performance of the Construction Work or creating an immediate and serious threat to public health, safety, security or the environment. In the event that the Construction Contractor so confines or removes the TMS Contractor, it shall provide TMS Contractor with a reasonable, alternate time to conduct such activities.

### **2.5.1 Construction Contractor Responsibilities**

The Construction Contractor will be responsible for the following activities related to construction:

- a. Provide access network switches to TMS Contractor for configuration
- b. Configure all other equipment
- c. providing safe and secure access to the TMS work locations, including all Maintenance of Traffic (MOT), safe access, and any fencing and barricades. Construction Contractor shall

provide all labor materials and miscellaneous items required to install, maintain any required safety provisions relating to the TMS work,

- d. maintaining clean project site and provide required access to TMS work sites generally clear of mud, standing water, ice, and snow, and

### **2.5.2 TMS Contractor Responsibilities**

The TMS Contractor will be responsible for the following activities related to construction:

- a. configuration of the access network switches provided by Construction Contractor
- b. preventing mud or soil from TMS Contractor or its subcontractors' vehicles being tracked off project work site to any roadway, and
- c. following the Construction Contractor's safety rules and precautions for the project site.

## **2.6 Testing and Commissioning Phase**

The testing and commissioning of the TMS will be achieved through the following test phases and activities. The purpose of the test phases is to validate that each subsystem, and combinations of subsystems, progressively meets the functional and performance requirements defined by System Requirements and the System Design. The TMS subsystems will follow a progressive commissioning and testing process, therefore reducing subsequent test phases from undergoing redundant tests performed in the previous phases.

### **2.6.1 Factory Acceptance Test (FAT)**

All required FATs will be conducted by the Construction Contractor for the TMS roadside equipment. The TMS Contractor shall be provided an opportunity to witness and participate in any scheduled FATs.

The TMS Contractor will conduct the FAT for any necessary modifications to the Back Office System and the Traffic Management System at the Express Lanes Operations Center and TMS Provider facility, as appropriate.

### **2.6.2 Incremental Installation and Level A and B Testing for TMS Roadside Equipment**

Level A and B testing will be conducted by the Construction Contractor.

Level A testing is to certify TMS roadside equipment installed by the Construction Contractor is installed and fully operational in line with agreed design requirements as demonstrated by executed test procedures approved and witnessed by TMS Contractor.

Level B testing is to certify TMS roadside equipment is successfully integrated with Express Lanes communication network as demonstrated by executed test procedures approved and witnessed by the Concessionaire and TMS Contractor.

### **2.6.3 Integration and Level C Testing for TMS Roadside Equipment**

Level C testing will be conducted by TMS Contractor to certify that TMS systems at the Express Lanes Operations Center can communicate and control TMS roadside equipment as demonstrated by executed test procedures defined by TMS Contractor. TMS Contractor will be

responsible for this test and the Construction Contractor will provide support to TMS Contractor for successful and on-time execution of this test, including but not limited to Maintenance of Traffic and safe access to the Site.

#### **2.6.4 Training**

Construction Contractor will provide training on new or next generation Express Lanes TMS Roadside Equipment procured and installed by Construction Contractor.

#### **2.6.5 Integration Acceptance Test**

The Integration Acceptance Test(s) will be conducted by TMS Contractor to validate that the fully integrated TTMS systems, in a normal operational environment, complies with the System Requirements, System Design and other Contract Documents. TMS Contractor will be responsible for this test and the Construction Contractor will provide support to TMS Contractor for successful and on-time execution of this test, including but not limited to promptly addressing items identified that are related to roadside equipment installed by Construction Contractor.

#### **2.6.6 User Acceptance Test**

The User Acceptance Test will be conducted by the Concessionaire's Operations and Maintenance personnel to verify that the TMS meets operational requirements and system functionality. The Concessionaire is responsible for the independent verification of the system prior to commissioning of the system after completion of IAT. Concessionaire will be responsible for this test and the Construction Contractor and TMS Contractor will provide support to Concessionaire for successful and on-time execution of this test, including but not limited to promptly addressing items identified that are related to roadside equipment installed by Construction Contractor and TMS Contractor.

#### **2.6.7 Operational Readiness**

Construction Contractor and TMS Contractor will coordinate and provide support to Concessionaire for Operational Readiness, including but not limited to promptly addressing items identified that are related to TMS roadside equipment installed and operating system updates by Construction Contractor and TMS Contractor respectively.

#### **2.6.8 Start-Up and Service Commencement**

Construction Contractor and TMS Contractor will coordinate and provide support to Concessionaire for Start-Up and Service Commencement, including but not limited to promptly addressing items identified that are related to roadside equipment installed by Construction Contractor and TMS Contractor respectively.

#### **2.6.9 Construction Contractor Responsibilities**

The Construction Contractor shall support all testing and commissioning phases and activities as follows:

- a. develop a Turnover Plan for the TMS roadside equipment that includes representative equipment, schedule for installation, Level A and B Testing, and documentation submission to TMS Contractor,
- b. develop a Wide Area Network (WAN) Turnover Plan for integrating the proposed RSE devices and new network infrastructure into the existing Express Lanes System and

Network. The Turnover plan shall demonstrate how to maintain the current system operations, while building and integrating the proposed infrastructure based on the construction sequencing and schedule.

- c. provide interim and final updated TMS RSE Asset Database.
- d. develop test procedures to test the fiber optic cable, communications network and the ancillary equipment,
- e. conduct tests of the fiber optic cable, communication network and ancillary equipment and provide test report as part of Turnover of the communications network and ancillary equipment to TMS Contractor,
- f. conduct required FATs for the TMS Roadside Equipment,
- g. develop Level A test procedures for the TMS Roadside Equipment,
- h. develop Level B test procedures for the TMS Roadside Equipment based on the templates provided by TMS Contractor,
- i. conduct Level A and B test for the TMS Roadside Equipment and provide test report as part of the Turnover of the TMS roadside equipment to TMS Contractor for integration, and
- j. coordinate and provide MOT to support TMS Contractor and others' test activities, including Level C testing, IAT, UAT, Operational Readiness and Start-Up.
- k. provide field support to troubleshoot and resolve any RSE, network or power related issues.

#### **2.6.10 TMS Contractor Responsibilities**

The TMS Contractor shall support testing and commissioning phases and activities as follows:

- a. develop TMS Test Strategy and Plan, to provide framework for the test strategy and commissioning strategy for the TMS, and outlines sequence of testing and commissioning and preliminary schedule and milestone dates and related documentation and responsible and participating parties,
- b. develop FAT, and IAT procedures related to TMS and systems integration,
- c. conduct FAT, and IAT tests related to TMS and systems integration,
- d. support UAT test conduct related to TMS and systems integration,
- e. provide FAT, and IAT Test Reports related to TMS and systems integration,
- f. support UAT Test Report development related to TMS and systems integration,

- g. coordinate with Construction Contractor to schedule and conduct Level C and IAT tests related to TMS and systems integration,
- h. provide training, as needed, on the TMS subsystems to Concessionaire personnel, and
- i. develop Level B test procedure templates for the TMS Roadside Equipment.



### 3 Interface Management Process

Construction Contractor and TMS Contractor will be responsible for implementing the interface management processes and procedures necessary to identify, control and manage the interfaces and interface points between parties' respective scopes of work related to overall TMS delivery.

These TMS interface management protocols will be used to ensure project stakeholders are aware of the required interfaces, and are working proactively to ensure that integration activities are focused on reducing the potential impacts to the Project cost, schedule, design changes, construction quality, or operations and maintenance of Project Opitz TMS.

#### 3.1 Interface Protocols

Interface management shall include following protocols:

- b. Construction Contractor Representative and TMS Contractor Representative will identify technical representatives for interface activities throughout all phases of delivery, including construction, integration, testing and commissioning, and start-up.
- c. Construction Contractor and TMS Contractor will exchange any entity dependency related information as required.
- d. Interface requirements and deliverables will be documented and placed under appropriate levels of configuration management, and available to Construction Contractor and TMS Contractor, as required.
- e. Construction Contractor will require TMS Contractor input and agreement prior to formal submission of deliverables to Concessionaire for components related to civil works infrastructure and TMS system interface.
- f. Construction Contractor and TMS Contractor will provide a review period of 15 business days for documents exchanged between parties as part of the Interface Plan to allow adequate time for review, comments and updates by other parties of the agreement.
- g. Construction Contractor shall provide documentation to TMS Contractor a minimum of 1 week (5 business days) prior to scheduled reviews.
- h. Construction Contractor shall include TMS Contractor on any potential design changes relating to TMS components and/or interfaces.

#### 3.2 Interface Documents

To facilitate coordination and collaboration between the project stakeholders, a series of interface documents will be developed as part of the project scope of work related to TMS. These documents will ensure information is being exchanged and jointly coordinated throughout the entire project duration. This section identifies these documents and who is responsible for their respective development and delivery. Documents will typically involve multiple submissions, including draft and final versions.

**3.2.1 Concessionaire Documents**

- a. Concept of Operations for Project Opitz, provided to TMS Contractor
- b. Business Rules and Requirements for Project Opitz, provided to TMS Contractor
- c. Technical Requirements, provided to Construction Contractor and TMS Contractor
- d. TMS Special Provisions and Equipment Sole Source List, provided to Construction Contractor and TMS Contractor
- e. TMS RSE Asset Database (Preliminary)
- f. UAT Test Procedures (Draft and Final) provided to the TMS Contractor
- g. UAT Test Report (Draft and Final) provided to the TMS Contractor
- h. Design Plans (Preliminary, Updated, 100% Approved for Construction, Design Changes)

**3.2.2 Construction Contractor Documents**

- a. Construction Contractor's Project Schedule (e.g. Initial Baseline, Baseline, Regular Updates, and as required, Revised Baseline)
- b. TMS RSE Asset Database (Regular Updates, Final)
- c. TMS Cabinet Factory Review
- d. TMS RSE Turnover Plan (Draft and Final)
- e. WAN Turnover Plan (Draft and Final)
- f. TMS Roadside Equipment Level A and B Test Procedures (Draft and Final)
- g. Communications Backbone Test Procedures (Draft and Final)
- h. Communications Backbone Test Report (Draft and Final)

**3.2.3 TMS Contractor Documents**

- a. TMS Contractor's Project Schedule (e.g., Initial Baseline, Baseline, Regular Updates, and as required, Revised Baseline)
- b. Design Document
- c. Template for Test Procedures for Level B Testing of TMS Roadside Equipment
- d. TMS Test Plan
- e. Level C Test Procedures for TMS Roadside Equipment

- f. FAT Test Procedures (Draft and Final)
- g. FAT Test Report (Draft and Final)
- h. IAT Test Procedures (Draft and Final)
- i. IAT Test Report (Draft and Final)

## 4 Schedule

The Construction Contractor shall consult with TMS Contractor when preparing the Initial Baseline Schedule, and shall include therein the specific work elements that the Construction Contractor must complete before TMS Contractor can commence or complete performance of related elements of the TMS Work. The Construction Contractor shall accommodate the TMS Contractor's requests regarding scheduling and timing of TMS Contractor access necessary to complete the TMS Work. Should there be any changes to the construction deadlines related to TMS Work in the approved Baseline Schedule, the Construction Contractor shall accommodate TMS Contractor's requests in relation to the revised schedule and use good faith efforts to provide sufficient lead time so as to allow the TMS Contractor a reasonable opportunity to work around the delay.

Construction Contractor will incorporate, track, and update the following key activities in the Baseline Schedule and subsequent updates.

### 4.1 General

- a. Construction Contractor will provide notifications to the Concessionaire twenty-one (21) days prior to date of any factory reviews.
- b. Construction Contractor will provide documentation to the Concessionaire at least fourteen (14) days prior to scheduled date of factory review.
- c. Construction Contractor's Schedule will include interface milestones in support of the TMS Contractor's work. Appendix B includes a minimum list of interface milestones to be included in the Construction Contractor's schedule. These activities and milestones will be expanded as needed to support Construction Contractor's project sequencing and to streamline coordination between Construction Contractor's and TMS Contractor's work.
- d. Turnover of the Communications Network is a predecessor activity to be completed prior to the turnover of TMS Roadside Equipment.

### 4.2 Post-TMS Roadside Equipment Turnover Handover Durations

- a. Construction Contractor and TMS Contractor acknowledge that for the Opitz Project, it is necessary for the relocated slip ramp to be constructed and put into service prior to the existing slip ramp being taken out of service. It is further acknowledged that the new Opitz Boulevard Ramp to the Express Lanes cannot be constructed until the existing slip ramp is taken out of service. That being the case, there will be two distinct handovers and service commencements on the Opitz Project, the Dale Boulevard Slip Ramp Opening and the overall Opitz Boulevard Ramp Project Service Commencement, both of which are time critical.
- b. Dale Boulevard Slip Ramp Opening:
  - i. The "Dale Boulevard Slip Ramp TMS Turnover" will be deemed to have occurred once the Construction Contractor has provided all TMS Roadside Equipment required for the Dale Boulevard Slip Ramp Opening to the TMS Contractor for integration, testing and commissioning, provided the Construction Contractor has given the TMS Contractor at least thirty (30)

days' notice of the planned turnover. If the Construction Contractor does not provide the 30 days' notice, the Dale Boulevard Slip Ramp TMS Turnover will occur within the notice period at the sole discretion of the TMS Contractor and upon written notification from the TMS Contractor that it is prepared to proceed with its integration, testing and commissioning work. All associated TMS Roadside Equipment and network infrastructure and components must be fully operational and have successfully completed Level A and B testing by the Construction Contractor in order for the Dale Boulevard Slip Ramp TMS Turnover to be deemed to have occurred. After the Dale Boulevard Slip Ramp TMS Turnover, the TMS Contractor will have one hundred twenty (120) days to complete its integration and Level C Testing for the TMS Scope of Work.

- ii. Early turnover of portions of TMS roadside equipment shall not obligate the TMS Contractor to commence Integration and Level C Testing of the TMS Scope of Work.

c. Service Commencement

- i. The "Opitz Boulevard Ramp TMS Turnover" will be deemed to have occurred on the earlier date of either (i) 30 days following written notice from the Construction Contractor of the planned turnover date and once the Construction Contractor has provided all remaining TMS Roadside Equipment required for the Project to the TMS Contractor for integration, testing and commissioning, or (ii) 120 days before the Scheduled Service Commencement Date and the Construction Contractor has provided all remaining TMS Roadside Equipment required for the Project to the TMS Contractor for integration, testing and commissioning. Notwithstanding the foregoing, if the TMS Contractor is prepared to proceed with its integration and Level C Testing for the TMS Scope of Work prior to 120 days before the Scheduled Service Commencement Date but within any 30-day notice period provided by the Construction Contractor, the Opitz Boulevard Ramp TMS Turnover will be deemed to have occurred within the notice period at the sole discretion of the TMS Contractor and upon written notice from the TMS Contractor that it intends to proceed with its integration, testing and commissioning work. All associated TMS Roadside Equipment and network infrastructure and components must be fully operational and have successfully completed Level A and B testing by the Construction Contractor in order for the Opitz Boulevard Ramp TMS Turnover to be deemed to have occurred. After the Opitz Boulevard Ramp TMS Turnover, the TMS Contractor will have one hundred twenty (120) days to complete its integration and Level C Testing for the TMS Scope of Work.
- ii. Early turnover of a portion of the TMS roadside equipment shall not obligate the TMS Contractor to commence field installation sooner than one hundred twenty (120) days before the Scheduled Service Commencement Date.

## Appendix A

### Detailed Division of Responsibilities between the Construction Contractor and TMS Contractor

#### Traffic Management System

Class	Item	Who	Comment
Operational Configuration	Concept of Operations	95 Express	Overall framework for the design and operation of the Express Lanes system (TMS and operations).
Operational Configuration	TMS Requirements Layout	TMS	TMS Contractor to provide functional and performance requirements for TMS system and TMS roadside equipment.  CC to finalize design and configuration based on TMS system requirements and overall civil design or As-Builts.
VDOT ITS	VDOT ITS Equipment and Structures	CC	Relocation/Replacement of Existing VDOT ITS Roadside Equipment and supporting infrastructure
Civil Works	Utilities	CC	Service connections and utility relocations necessary to install and operate TMS roadside equipment and associated infrastructure (e.g., lighting, cabinets, etc.)
Civil Works	Other Civil Works	CC	Necessary drainage, retaining walls, barrier structures, protective structures, and equipment access points.
Civil Works	Foundations for TMS Structures and Other Equipment Structures	CC	Footings and conduits necessary for communications and power cabling as per TMS Contractor and CC-provided equipment requirements.
Civil Works	Foundations for TMS Roadside Cabinets	CC	Footings and conduits necessary for communications and power cabling as per CC-provided equipment requirements.
Communications & Cabling	Wide Area Communications Network and Cabling (Communications "Backbone")	CC	Redundant fiber optic telecommunication network along the full length of the Project, connected to all roadside cabinets.  Minimum of two connections from this network to Express Lanes Operations Center.

**Traffic Management System**

<b>Class</b>	<b>Item</b>	<b>Who</b>	<b>Comment</b>
Communications & Cabling	TMS Roadside Cabling	CC	All communications cabling for the TMS devices – from equipment (sensors) mounted on gantries/sign structures/poles/other to the junction box in the footing of the sign structures, then to the cabinets. Terminations of TMS equipment within roadside cabinets.
Electrical Power & Cabling	TMS Roadside Equipment Cabling	CC	Power supply and all distribution cabling and conduits necessary for the operation of the TMS roadside equipment and associated cabinets. Includes conduits and cabling from the junction box located in the footing of gantry to the cabinets.  Placement, layout, and sizing of generators to provide temporary operating power and/or uninterrupted power supply equipment.  Installation and integration of associated equipment, including site access.
TMS Roadside	Overhead and Dynamic Signage	CC	Quantity, placement, layout, sizing, and configuration of overhead and roadside dynamic message signs. Construction of approved signage.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.
TMS Roadside	Closed Circuit TV Cameras (Pan-Tilt-Zoom)	CC	Quantity, placement, layout, sizing, and configuration of CCTV cameras. Installation, configuration, integration, and site-testing of approved cameras configuration.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.
TMS Roadside	Automated Incident Detectors	CC	Quantity, placement, layout, sizing, and configuration of AID devices. Installation, configuration, integration, and site-testing of approved AID configuration.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.

**Traffic Management System**

<b>Class</b>	<b>Item</b>	<b>Who</b>	<b>Comment</b>
TMS Roadside	Microwave Traffic Detectors	CC	Quantities, placement, layout, sizing, and configuration of microwave traffic detectors. Installation configuration, integration, and site-testing of approved sensor/detector configuration.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.
TMS Roadside	Network Equipment	CC	Quantities, placement, layout and sizing of Network Equipment. Installation and site-testing support.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.
TMS Roadside	Gate Control System	CC	Quantity, placement, layout, sizing, and configuration of Gate Control devices. Installation, configuration, integration, and site-testing of approved gate system.  Performance specifications and functional requirements provided by TMS Contractor to be confirmed and finalized by CC.
TMS Roadside	Sign Structures, Pole and/or Mounting Structures	CC	Placement, layout and installation of: <ul style="list-style-type: none"> <li>▪ TMS Sign Structures</li> <li>▪ Monopoles and/or other mounting structures</li> <li>▪ Lighting, including power supply</li> </ul> Designed per specifications from TMS Contractor provided to CC, including clearances, loads, deflection, and specialized installation requirements.
TMS Roadside	Testing and Commissioning	CC	Required testing and commissioning of CC-installed roadside equipment. Includes Level A and Level B Testing.
TMS Roadside	Manuals	CC	O&M manuals for CC-provided equipment and systems



**Traffic Management System**

<b>Class</b>	<b>Item</b>	<b>Who</b>	<b>Comment</b>
TMS System	TMS Delivery and Integration	TMS	Delivery of TMS, including IT infrastructure and commissioning at the Express Lanes Operations Center.  Integration of TMS Roadside Equipment with system.  TMS testing, including the conduct of FAT and IAT, as well as UAT support.
TMS Roadside	Testing and Commissioning	TMS	Required testing and commissioning of CC-installed roadside equipment. Includes Level C Testing.
TMS System	Training	TMS	Training for TMS Contractor-provided equipment and systems
Systems Engineering	Network Architecture and Configuration	TMS	Systems engineering for TMS systems, including network architecture, configuration management, system interface control, and systems integration
System Integration	End-to-end Integration	TMS	Development, integration and commissioning of the end-to-end integrated systems.

**Key:****CC** = Construction Contractor**TMS** = TMS Contractor**95 Express** = Concessionaire

## **Appendix B**

### **Minimum List of TMS Interface Milestones**

1. TMS Roadside Equipment Design Review
2. Factory Acceptance Testing
3. Level A & B Testing (by Type of TMS Roadside Equipment) - Start and Finish
4. TMS Roadside Equipment Turnover (by Type of TMS Roadside Equipment)

**EXHIBIT P**

**SCOPE OF WORK**

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## 1 PURPOSE AND SCOPE

This Scope of Work captures the 95 Express Lanes Opitz Boulevard Ramp Project (“Project Opitz” or “Project”) Traffic Management System (TMS) requirements and describes the services that Transurban, herein referred to as the TMS Subcontractor, will perform. It outlines the role and responsibilities of the TMS Subcontractor, as well as specific requirements for TMS delivery, testing and commissioning. The TMS Scope of Work also provides the high-level requirements that will form the basis of project activities (e.g., design, development, and testing) and serves as the starting point for the verification, validation, and traceability of requirements.

In terms of overall scope, the TMS Subcontractor will be responsible for performing and supporting all systems engineering, design, development, procurement, testing, installation, commissioning, and systems integration activities, herein referred to as the TMS Work.

## 2 MANAGEMENT

### 2.1 Related Documents

The following documents are incorporated by reference into this Scope of Work:

- Project Opitz Design Plans (Exhibit B-2 to Construction Contract Relating to 95 Express Lanes Opitz Boulevard Project)
- Project Opitz TMS Interface Plan (Exhibit O to Turnkey Lump-Sum Design-Build Contract Relating to Opitz Boulevard Ramp Project of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System)

### 2.2 Deliverables and Schedule

- a. The TMS Subcontractor shall provide the scope of services outlined herein in accordance with the TMS Work Schedule and the Construction Contractor’s approved Baseline Schedule. The Construction Contractor will incorporate the TMS Work Schedule into the overall Opitz Baseline Schedule.
- b. All TMS Roadside Equipment shall be delivered by the Construction Contractor and fully available to the TMS Subcontractor no later than one hundred twenty (120) days before Service Commencement.

- c. TMS Subcontractor and Construction Contractor will coordinate regarding dependencies throughout the design and construction phases.
- d. Any delay in the turnover of TMS Roadside Equipment by the Construction Contractor shall result in a day-for-day delay for the TMS Subcontractor achieving Service Commencement. The Service Commencement Date shall be per Construction Contract

## **2.3 Warranty and Support**

- a. TMS Subcontractor shall deliver the TMS Work with the specified warranties and guaranties in accordance with the terms of the TMS Subcontract.
- b. TMS Subcontractor shall establish agreements for commercial hardware and software prior to the service commencement date.
- c. TMS Subcontractor shall deliver the TMS Work source code and associated Version Description Documentation into escrow at the time of Service Commencement, and any updates to source code in escrow at the time of Final Completion.
- d. For all custom software, TMS Subcontractor shall provide the TMS Work source code and related documentation including instructions to compile executable code and any documentation required to install, configure, and maintain such software, into escrow.
- e. TMS Subcontractor shall provide any updates to the TMS Work source code to escrow along with updated Version Description Documentation during the Warranty Period.

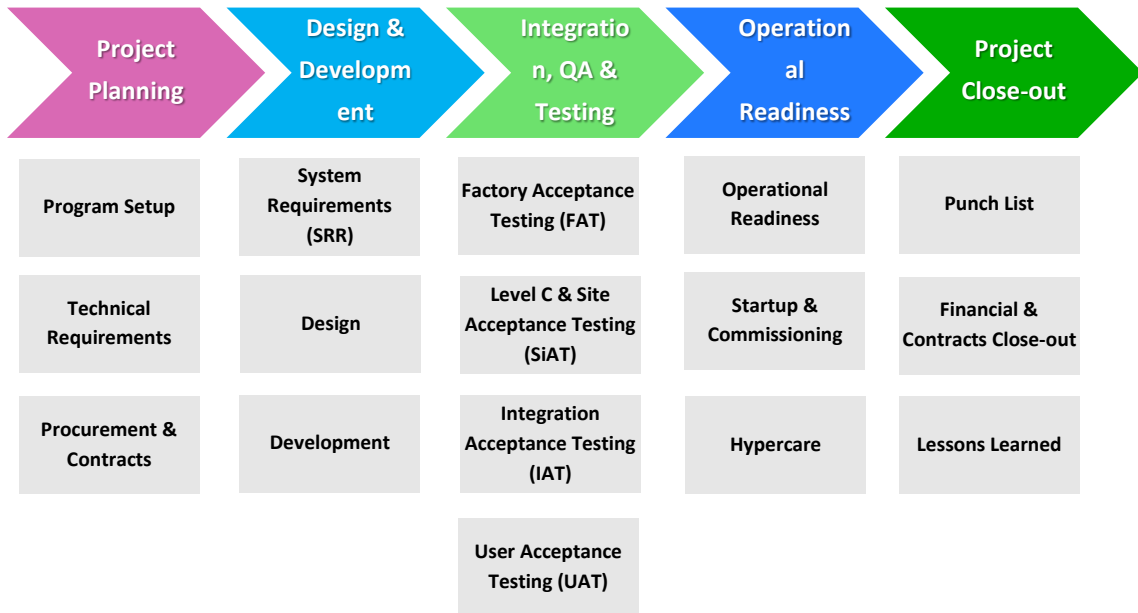
## **3 TMS WORK**

### **3.1 General**

#### **3.1.1 System Engineering**

- a. The TMS Subcontractor will implement the TMS Work using a system engineering approach.
- b. The TMS Work will progress in phases in the following order:
  - Project Planning
  - Design & Development
  - Integration, QA & Testing
  - Go-Live
  - Project Close Out (at the TMS Subsystem level)

- c. The TMS Work shall include overall Project Management, Quality Assurance, Document Management, and Quality Control.
- d. **Figure 1** below depicts the TMS Subsystem Delivery Framework, which includes the lifecycle phases of the activities that occur as a part of each phase. Each TMS Subsystem, including TMS, BOS, DPS, Network, and Maintenance Online Management System (MOMS) shall be progressed through the TMS Subsystem Delivery Framework.



**Figure 1 - TMS Subsystem Delivery Framework**

- e. The TMS shall continue to function per the baseline requirements of the existing 95/495/395 TMS Platform. Any TMS changes (e.g., enhancements, storage and capacity upgrades, and break/fix changes) that are introduced during the Project Opitz lifecycle will follow the current change control process and changes will be compliant with the Project Opitz requirements.

**3.1.2 Design**

- a. TMS Subcontractor shall update the TMS Requirements Documentation.
- b. TMS Subcontractor shall provide the design of the TMS, excluding TMS Roadside Equipment and Express Lanes fiber optic communications backbone and associated ancillary roadside facilities.
- c. TMS Subcontractor shall develop and maintain a requirements traceability matrix in accordance with the Requirements Traceability Matrix (RTM) and the Test Strategy. The traceability matrix shall provide traceability for all requirements for verification in the project, including the verification method for each requirement. The initial traceability matrix shall be delivered prior to the completion of the Design Documents and shall be based on the Fred Ex Requirements Traceability Matrices

and updated for any modified or new requirements. The Requirements Traceability Matrix shall be updated with each phase of the testing program.

- d. TMS Subcontractor shall conduct a Design Review.
- e. Construction Contractor shall provide the following:
  - Design of the TMS Roadside Equipment, including the Express Lanes fiber optic communications backbone, power and associated ancillary roadside facilities.
  - Civil and structural design of infrastructure.
  - Coordinate and design of the Express Lanes and Distribution conduit/fiber, including manholes, junction boxes and stub up locations. Coordinate and design of Express Lanes trunk and distribution fiber cables and terminations.
  - Coordinate and review plans to understand location and design of TMS Roadside Equipment devices, number and type of TMS Roadside Equipment devices and how the TMS Roadside Equipment devices are connected to the communications network design.
  - Coordinate the design for camera field-of-view for CCTV and AID and detection zones for MVDs to meet the Technical Requirements and the operational requirements.
  - Detailed schedules of equipment type, location with GPS coordinates, and other relevant information as necessary for the TMS Subcontractor to complete the design development and operational readiness, including input into the Asset Management System.
- f. TMS Subcontractor and Construction Contractor shall exchange design information on a regular basis to facilitate the total TMS design. This will include consideration for design layout and mounting to meet operational, maintenance and lifecycle requirements for TMS Roadside Equipment as well as coordination of the design for camera field-of-view for CCTV and AID and detection zones for MVDs.

## **3.2 Traffic Management System (TMS)**

### **3.2.1 General Requirements**

- a. The Project Opitz TMS will preserve the equivalent capabilities as the current TMS platform for the 95/395 and 495 Express Lanes.
- b. The TMS Subcontractor shall meet all Technical Requirements for the TMS and associated subsystems.



### 3.2.2 TMS Integration

- a. TMS Subcontractor shall provide updates to the current 495/95/395 TMS system necessary to integrate the Project Opitz roadway segments.
- b. TMS Subcontractor shall integrate additional TMS Roadside Equipment, listed below. Initial quantities indicated are based on the RFP Conceptual Plans and subject to change based on final designs:
  - Phase 1
    - CCTV Cameras (0)
    - AID Cameras (6)
    - Microwave Vehicle Detectors (MVD) (1)
    - DMS (4)
    - Gates (19)
  - Phase 2
    - CCTV Cameras (4)
    - AID Cameras (3)
    - Microwave Vehicle Detectors (MVD) (0)
    - DMS (3)
    - Gates (7)
- c. TMS Subcontractor shall modify Incident Response Manager static and dynamic plans, traffic plans, and DMS Message Library to support roadway operations.
- d. TMS Subcontractor shall integrate Project Opitz TMS Roadside Equipment into the Center to Center data and communications;
- e. TMS Subcontractor shall procure software and configuration services from Citilog for additional AID cameras.
- f. TMS Subcontractor shall conduct a witnessed Factory Acceptance Test (FAT).
- g. TMS Subcontractor shall deliver and install TMS updates to the Production system and Testing/Training system.
- h. TMS Subcontractor shall deliver and install AID configuration updates.
- i. TMS Subcontractor shall conduct Level 'C' testing of TMS Roadside Equipment
- j. TMS Subcontractor shall conduct TMS Site Acceptance Testing (SiAT).

- k. TMS Subcontractor shall update as-built drawings, data dictionary, database schema, block diagrams, and operational narratives/use-cases to reflect as-built conditions.
- l. TMS Subcontractor shall conduct Integration Acceptance Testing (IAT).
- m. TMS Subcontractor shall support User Acceptance Testing (UAT).
- n. TMS Subcontractor shall support post go-live 'Hypercare'.
- o. TMS Subcontractor shall update Disaster Recovery capabilities to incorporate the Project Opitz modifications and new equipment.
- p. Construction Contractor shall supply TMS Roadside Equipment vendors' professional control software and related infrastructure to facilitate any off-site testing of the TMS subsystems and equipment if requested. Construction Contractor shall provide sample units as agreed and shall be returned in a condition suitable for incorporation in the Work, or to be used as spares.
- q. The TMS Subcontractor shall coordinate any TMS related work in the Operations Center, which affects the existing TMS, with the Concessionaire and existing Operations and Maintenance Contractor. This work includes, but is not limited to, the installation of hardware and software, and testing and commissioning activities in the data center or the Traffic Control Room.

### **3.3 Back Office and Dynamic Pricing System**

#### **3.3.1 Back Office System - General Requirements**

- a. The BOS solution for Project Opitz will preserve the equivalent business capabilities as the current Back Office platform running on the 95/395 and 495 Express Lanes.
- b. TMS Subcontractor shall meet all Technical Requirements for the Back Office System and associated subsystems.

#### **3.3.2 Back Office System - Integration**

- a. TMS Subcontractor shall integrate and interface with new DMSs implemented via the Traffic Management System.
- b. TMS Subcontractor shall update configurations to support the DPS changes.
- c. TMS Subcontractor shall update as-built data dictionary, database schema, block diagrams, and operational narratives/use-cases as necessary to reflect as-built conditions.
- d. TMS Subcontractor shall map each virtual traffic sensor to a physical device.
- e. TMS Subcontractor shall extend online channel capabilities.

- f. TMS Subcontractor shall update BOS Reports to incorporate Project Opitz road network modifications and pricing zones.

### **3.3.3 Dynamic Pricing System – General Requirements**

- a. The DPS for Project Opitz will preserve the equivalent business capabilities as the DPS platform currently operating on the existing 95/395 and 495 Express Lanes. .

### **3.3.4 Dynamic Pricing System – Integration**

- a. TMS Subcontractor shall update the interface with TMS in compliance with the most current DPS-TMS Interface Control Document;
- b. TMS Subcontractor shall display toll rates on DMSs for data transferred from the DPS to the TMS for each pricing interval;
- c. TMS Subcontractor shall configure a set of virtual sensors for each lane and each direction of travel for the Project Opitz physical sensors;
- d. TMS Subcontractor shall ensure that when the DPS requests sensor status or sensor data for virtual devices, the TMS will respond using “live” sensor status and data;
- e. TMS Subcontractor shall compute dynamic rates for all configured pricing segments for Project Opitz;
- f. TMS Subcontractor shall transfer toll prices to the TMS via the DPS-TMS Interface for display on DMSs;
- g. TMS Subcontractor shall ensure the DPS receives a record of the messages displayed on the DMS from the TMS via the DPS-TMS Interface;
- h. TMS Subcontractor shall transfer toll prices to all additional configured virtual pricing DMSs that are included in DMS Groups;
- i. TMS Subcontractor shall update the DPS-BOS interface for the BOS to consume calculated toll prices.

### **3.3.5 Corporate Web and Mobile Applications**

- a. The Corporate Web and Mobile App solutions for Project Opitz will preserve equivalent business capabilities as the solution currently operating on the existing 95/395 and 495 Express Lanes.
- b. Provide Project Opitz traffic data (e.g. DMS message content, MVD data, and CCTV video feeds) in compliance with the most current TMS Interface Control Document and BOS Web Service Interface Control Document.

- c. Provide 'on-the-road-now' pricing information to support Project Opitz.
- d. Update interactive map to include Project Opitz.
- e. Integrate CCTV and AID camera feeds.
- f. Incorporate additional Center-to-Center data for display of current DMS messages.

### **3.4 Maintenance Online Management System (MOMS)**

- a. The MOMS solution for Project Opitz will preserve the equivalent capabilities as the platform running on the 95/395 and 495 Express Lanes.
- b. TMS Subcontractor shall coordinate with the Construction Contractor to monitor and manage Project Opitz cabinet or technical shelter access and backup generator status;
- c. TMS Subcontractor shall implement monitoring across all new ITS Roadside Equipment.

### **3.5 Network Design**

- a. TMS Subcontractor shall update current Network High Level Design Document to include the IP addressing schema and the IP plan;
- b. TMS Subcontractor shall lead roadside network integration Level 'C' testing;
- c. TMS Subcontractor shall integrate TMS with the existing monitoring systems;
- d. TMS Subcontractor shall provide Access Switch configurations.
- e. TMS Subcontractor shall configure Backbone Switches.
- f. TMS Subcontractor shall route IP video to video wall/switch.
- g. TMS Subcontractor shall update any Systems Maintenance Agreement(s), as required.
- h. Construction Contractor shall supply fiber optic communications backbone, including fiber, terminations, pigtailed, Access and Backbone switches, device servers, redundant equipment, necessary infrastructure, and other equipment required to facilitate fiber optic communication connection to the fiber backbone. Construction Contractor shall supply communication cabling between TMS Roadside Equipment, TMS equipment cabinets and TMS Roadside Equipment components located in cabinets or technical shelters.

### 3.6 Systems Infrastructure

- a. TMS Subcontractor shall modify the TTMS test environment to support Project Opitz development and operations.
- b. TMS Subcontractor shall provision new accounts and licenses as necessary to support the Development and Production environments.
- c. TMS Subcontractor shall provide database licenses for commercial-off-the-shelf applications.
- d. TMS Subcontractor shall provide registrations and/or support agreements with commodity hardware providers.
- e. TMS Subcontractor shall provide third-party service providers for web-based and mobile applications.
- f. TMS Subcontractor shall provide disaster recovery services or hardware, as applicable.
- g. TMS Subcontractor shall update system block diagrams, subsystem block diagrams, high-level and detailed architecture to reflect as-built conditions.

## 4 TESTING AND COMMISSIONING

### 4.1 Test Strategy

- a. TMS Subcontractor shall prepare a Test Strategy that addresses how testing and commissioning will be conducted to demonstrate conformance with the functional, technical, and performance requirements and provides the following:
  - Description of required testing, including the test stages and processes.
  - Description of the testing environments.
  - Roles and responsibilities of the testing participants and stakeholders.
  - Dependencies and specific requirements of 3<sup>rd</sup> parties in support of testing (e.g. VDOT NRO PSTOC)

### 4.2 Testing Process and Procedures

- a. TMS Subcontractor shall provide a template for Test Procedures for Level A and B Testing of TMS Roadside Equipment to the Construction Contractor;
- b. TMS Subcontractor shall approve Level A and B Test Procedures provided by the Construction Contractor;
- c. TMS Subcontractor shall witness Level A and Level B Testing per the TMS Interface Plan;
- d. TMS Subcontractor shall support User Acceptance Testing (UAT) as defined and conducted by the Concessionaire representatives. The Concessionaire will provide UAT test plans and procedures, acceptance criteria, and the UAT test report;
- e. TMS Subcontractor shall participate in UAT and support results analysis;
- f. TMS Subcontractor shall develop and provide testing and commissioning documentation including:
  - Test Procedures for Level C Testing, Factory Acceptance Testing (FAT), Site Acceptance Testing (SiAT), and Integration Acceptance Testing (IAT).
  - Test Reports, including a summary of the results for each test case clearly identifying the objective for each test case and supporting evidence.
- g. TMS Subcontractor shall coordinate and manage the system testing and commissioning process through IAT including the participation of O&M Contractor's start-up personnel, VDOT, and any required 3<sup>rd</sup> parties;
- h. TMS Subcontractor shall adhere to all testing and commissioning activities in accordance with the Technical Requirements, TMS Subcontract, and the TMS Test Strategy;

- i. Construction Contractor shall provide the following during testing and commissioning:
  - Level A and B Test Procedures
  - Level A and B Test Reports
  - Payment for any TMS Roadside Equipment communication and power service
  - Commissioned and operational communication link between TMS Roadside Equipment and the TMS Subsystem and equipment located in the Operations Center
  - TMS Roadside Equipment testing and commissioning equipment and devices, including test vehicles and drivers for traffic management sensor dynamic testing and for AID system commissioning as necessary
  - Handover documentation, to include As Built

## **5 SERVICE COMMENCEMENT AND STARTUP SCOPE**

- a. TMS Subcontractor shall support the update of start-up procedures for the TMS to include Project Opitz;
- b. TMS Subcontractor shall implement and coordinate TMS start-up;
- c. TMS Subcontractor shall provide a roll-back plan in the event that Project Opitz implementation negatively impacts revenue collection on 495/95/395 road network;
- d. TMS Subcontractor shall support TMS-related activities and deliverables required prior to Service Commencement;
- e. TMS Subcontractor shall provide system support for the TTMS subsystems and software updates to support business or operational changes during the pre-operations start-up phase.

## **EXHIBIT V**

# **FEDERAL REQUIREMENTS AND CIVIL RIGHTS REQUIREMENTS**

### **Exhibit Description**

Exhibit V-1 – Federal Requirements

Exhibit V-2 – Civil Rights Requirements



**EXHIBIT V-1**  
**FEDERAL REQUIREMENTS**

<b><u>Exhibit Description</u></b>	<b><u>No. of Pages</u></b>
Attachment 1 – Federal Requirements for Federal-Aid Construction Projects	3
Attachment 2 – FHWA Form 1273 (July 2022)	13
Attachment 3 – Federal Prevailing Wage Rates	6
Attachment 4 – Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)	4
Attachment 5 – Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)	3
Attachment 6 – Certification Regarding Use of Contract Funds for Lobbying	1
Attachment 7 – Compliance with Buy America Requirements	2
Attachment 8 – Special Provision for Use of Domestic Metal	3
Attachment 9 – Certification of Non-Discrimination in Employment	1
Attachment 10 – Not Used	

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## **ATTACHMENT 1**

### **FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS**

GENERAL. — The Work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to the Work as a result of the Project being financed in whole or part with Federal funds will apply to such Work. The "Required Contract Provisions, Federal-Aid Construction Contracts, Form FHWA 1273," are included in this exhibit. Whenever in said required contract provisions references are made to:

- a. "contracting officer", or "authorized representative", such references shall be construed to mean the Department or its Authorized Representative;
- b. "contractor" or "Contractor", "prime contractor", "bidder", "Federal-aid construction contractor", "prospective first tier participant or First Tier Participant", such references shall be construed to mean the Concessionaire or its authorized representative and/or the Construction Contractor or its authorized representative, as may be appropriate under the circumstances;
- c. "contract" or "Contract" or "prime contract", "Federal-aid construction contract" or "construction contract", such references shall be construed to mean the Construction Contract;
- d. "subcontractor" or "Subcontractor", "supplier", "vendor", "prospective lower tier participant", lower tier prospective participant, "Lower Tier participant" or "lower tier subcontractor", such references shall be construed to mean, as appropriate, any Contractors other than the Construction Contractor; and
- e. "department", "agency" or "department or agency with which this transaction originated" or "contracting agency", such references shall be construed to mean the Department, except where a different department or agency or officer is specified.

PERFORMANCE OF PREVIOUS CONTRACT. — In addition to the provisions in Section II, "Nondiscrimination," and Section VI, "Subletting or Assigning the Contract," of the Form 1273 required contract provisions, the Concessionaire shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of \$10,000 will be considered under the provisions of Section VI of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

**NON-COLLUSION PROVISION.** — The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary Projects. Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28 U.S.C., Sec. 1746, is included in the Proposal.

**PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN SUBCONTRACTING.** — Part 26, Title 49, Code of Federal Regulations applies to the Project. Pertinent sections of said Code are incorporated within other sections of the Contract and the Department Disadvantaged Business Enterprise Program adopted pursuant to 49 CFR Part 26.

### **CONVICT PRODUCED MATERIALS**

- a. FHWA Federal-aid projects are subject to 23 CFR § 635.417, Convict produced materials.
- b. Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal aid highway construction project if such materials have been: (i) produced by convicts who are on parole, supervised release, or probation from a prison, or (ii) produced in a prison project in which convicts, during the 12 month period ending July 1, 1987, produced materials for use in Federal aid highway construction projects, and the cumulative annual production amount of such materials for use in Federal aid highway construction does not exceed the amount of such materials produced in such project for use in Federal aid highway construction during the 12 month period ending July 1, 1987.

### **ACCESS TO RECORDS**

- a. As required by 49 CFR 18.36(i)(10), the Concessionaire and its Contractors shall allow FHWA and the Comptroller General of the United States, or their duly authorized representatives, access to all books, documents, papers, and records of the Concessionaire and Contractors or Subcontractors which are directly pertinent to any grantee or subgrantee contract, for the purpose of making audit, examination, excerpts, and transcriptions thereof. In addition, as required by 49 CFR 18.36(i)(11), the Concessionaire and its Contractors shall retain all such books, documents, papers, and records for three years after final payment is made pursuant to any such contract and all other pending matters are closed.
- b. The Concessionaire agrees to include this section in each Contract at each tier, without modification except as appropriate to identify the Contractor who will be subject to its provisions.

## **SUBCONTRACTING**

- a. Any distribution of work shall be evidenced by a written binding agreement on file at the project site. Where no field office exists, such agreement shall be readily available upon request to Department inspector(s) assigned to the project.
- b. The provisions contained in Form FHWA-1273 specifically, and other federal provisions included with the prime Contract are generally applicable to all Federal-aid construction projects and must be made a part of, and physically incorporated in all contracts as well as appropriate subcontracts for work so as to be binding in those agreements

## ATTACHMENT 2

FHWA-1273 -- Revised July 5, 2022

### REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

#### ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

#### I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

#### II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

**1. Equal Employment Opportunity:** Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

#### **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

**8. Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

**9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

#### **10. Assurances Required:**

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

**11. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

### III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

### IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

#### 1. Minimum wages (29 CFR 5.5)

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and



(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

## 2. Withholding (29 CFR 5.5)

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics,

including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## 3. Payrolls and basic records (29 CFR 5.5)

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or

subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 4. Apprentices and trainees (29 CFR 5.5)

##### a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State

Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the

corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

**6. Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

**9. Disputes concerning labor standards.** As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor

set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

#### **10. Certification of eligibility (29 CFR 5.5)**

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

#### **V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph 1 of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 of this section, in the sum currently provided in 29 CFR 5.5(b)(2)\* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 of this section. 29 CFR 5.5.

\* \$27 as of January 23, 2019 (See 84 FR 213-01, 218) as may be adjusted annually by the Department of Labor; pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990).

### **3. Withholding for unpaid wages and liquidated damages.**

The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this section. 29 CFR 5.5.

**4. Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section. 29 CFR 5.5.

## **VI. SUBLETTING OR ASSIGNING THE CONTRACT**

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or

equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on longstanding interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

## **VII. SAFETY: ACCIDENT PREVENTION**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance

with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

### **VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

### **IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)**

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.326.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders

or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.326.

### **X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

#### **1. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant

who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

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## **2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

## **3. Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is

submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

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**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(a) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(b) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(c) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

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**XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier

subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

## **XII. USE OF UNITED STATES-FLAG VESSELS:**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.
2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.



**ATTACHMENT A - EMPLOYMENT AND MATERIALS  
PREFERENCE FOR APPALACHIAN DEVELOPMENT  
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS  
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

**ATTACHMENT 3**  
**FEDERAL PREVAILING WAGE RATES**

General Decision Number: VA20220185 02/25/2022

Superseded General Decision Number: VA20210185

State: Virginia

Construction Type: Highway

Counties: Manassas Park\*, Manassas\* and Prince William Counties in Virginia.

\*including the independent cities of Manassas and Manassas Park

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>Executive Order 14026 generally applies to the contract.</p> <p>The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>Executive Order 13658 generally applies to the contract.</p> <p>The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

ELEC0080-011 06/01/2019

	Rates	Fringes
ELECTRICIAN, Includes Traffic Signalization .....	\$28.35	15.95%+7.00

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PLAS0891-011 06/01/2020

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	\$20.70	8.03

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SUVA2016-070 07/02/2018

	Rates	Fringes
CARPENTER, Includes Form Work .....	\$20.97	0.00
FENCE ERECTOR.....	\$15.28	0.00
IRONWORKER, REINFORCING.....	\$34.18	0.00
IRONWORKER, STRUCTURAL .....	\$34.18	0.00
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor .....	\$19.05	1.75
LABORER: Common or General .....	\$15.77	0.00
LABORER: Grade Checker.....	\$14.88**	0.00
LABORER: Pipelayer.....	\$20.48	0.00
LABORER: Power Tool Operator .....	\$15.69	0.00
OPERATOR: Backhoe/Excavator/Trackhoe .....	\$23.93	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader .....	\$19.00	3.49
OPERATOR: Broom/Sweeper .....	\$17.40	2.01

	Rates	Fringes
OPERATOR: Crane.....	\$29.46	0.00
OPERATOR: Drill.....	\$24.89	0.00
OPERATOR: Gradall .....	\$19.26	0.00
OPERATOR: Grader/Blade.....	\$23.21	0.00
OPERATOR: Hydroseeder.....	\$16.64	0.00
OPERATOR: Loader .....	\$18.35	2.90
OPERATOR: Mechanic.....	\$22.84	0.00
OPERATOR: Milling Machine .....	\$23.19	2.94
G OPERATOR: PAVEMENT PLANERROUNDSMEN.....	\$19.75	0.00
OPERATOR: PAVEMENT PLANER .	\$20.10	1.24
OPERATOR: Paver (Asphalt, Aggregate, and Concrete) .....	\$20.90	1.56
OPERATOR: Piledriver.....	\$21.83	4.08
OPERATOR: Roller (Finishing).....	\$18.40	3.87
OPERATOR: Roller .....	\$18.92	0.00
OPERATOR: Screed .....	\$22.13	4.89
OPERATOR: Asphalt Spreader and Distributor .....	\$19.27	2.51
OPERATOR: Bulldozer, Including Utility .....	\$20.64	0.00
PAVEMENT MARKING OPERATOR	\$22.15	0.00
PAVEMENT MARKING TRUCK DRIVER.....	\$18.78	0.00
TRAFFIC CONTROL: Flagger.....	\$14.86	0.21
TRUCK DRIVER : HEAVY 7CY & UNDER.....	\$15.53	0.00
TRUCK DRIVER: Fuel and Lubricant Service .....	\$18.25	0.00

	Rates	Fringes
TRUCK DRIVER: HEAVY OVER 7 CY .....	\$18.05	0.00
TRUCK DRIVER: Single & Multi Axle.....	\$19.22	3.15

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ““identifiers”” that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ““SU”” or ““UAVG”” denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

### Survey Rate Identifiers

Classifications listed under the “SU” identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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## WAGE DETERMINATION APPEALS PROCESS

- 1.) Has there been an initial decision in the matter? This can be:
  - an existing published wage determination
  - a survey underlying a wage determination
  - a Wage and Hour Division letter setting forth a position on a wage determination matter
  - a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

## ATTACHMENT 4

### STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As, used in these specifications:
  - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
  - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
  - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941;
  - d. "Minority" includes:
    - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
    - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
    - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
    - (ii) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors and Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing contracts in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the contract is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or any



Federal procurement contracting officer. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
  - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites in such facilities.
  - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
  - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union, or if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
  - d. Provide immediate written notification to the Director when the union or unions which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
  - e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
  - f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report. etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.
  - h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
  - i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.
  - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of Contractor's workforce.
  - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
  - l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training. etc. such opportunities.
  - m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
  - n. Ensure that all facilities and company activities are non-segregated, except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
  - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
  - p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a

group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. Nondiscrimination programs require that Federal-aid recipients, subrecipients, and contractors prevent discrimination and ensure nondiscrimination in all of their programs and activities, whether those programs and activities are federally funded or not. The factors prohibited from serving as a basis for action or inaction which discriminates include race, color, national origin, sex, age, and handicap/disability. The efforts to prevent discrimination must address, but not be limited to a program's impacts, access, benefits, participation, treatment, services, contracting opportunities, training opportunities, investigations of complaints, allocations of funds, prioritization of projects, and the functions of right-of-way, research, planning, and design.
11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director will proceed in accordance with 41 CFR 60-4.8.
14. The Contractor shall designate a responsible official to monitor all employment related activity, to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractor shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).
16. In addition to the reporting requirements set forth elsewhere in this contract, the contractor and the subcontractors holding subcontracts, not including material suppliers, of \$10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form PR 1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

**ATTACHMENT 5**  
**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE**  
**EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)**

1. **General.** In addition to the affirmative action requirements of Attachment 4 titled "Standard Federal Equal Employment Opportunity Construction Contract Specifications" as set forth elsewhere in this Contract, the Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" set forth herein.
  
2. **Goals.**
  - a. The goals for female and minority participation, expressed in percentage terms of the Contractor's aggregate work force in each trade on all construction works in the covered area, are as follows:

Females - 6.9%  
Minorities - See Attachment "A"
  
  - b. The goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area, whether or not it is Federal or federally assisted. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.
  
  - c. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Standard Federal Equal Employment Opportunity Construction Contract Specifications and its efforts to meet the goals. Equal Opportunity Clause, The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
  
3. **Subcontracting.** The Contractor shall provide written notification to the Department within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction works under this contract. The notification shall list the name, address and telephone number of the subcontractor, employer identification number, estimated dollar amount of the subcontract, estimated starting and completion dates of the subcontract and the geographical area in which the contract is to be performed.
  
4. **Reports.** The Contractor is hereby notified that he may be subject to the Office of Federal Contract Compliance Programs (OFCCP) reporting and record keeping requirements as provided for under Executive Order 11246 as amended. OFCCP will provide direct notice to the contractor as to the specific reporting requirements that he will be expected to fulfill.

**ATTACHMENT A**

<b>Economic Area</b>	<b>Goal (Percent)</b>
Virginia:	
021 Roanoke-Lynchburg, VA	
SMSA Counties:	
4640 Lynchburg, VA.....	19.3
VA Amherst; VA Appomattox; VA Campbell; VA Lynchburg.	
6800 Roanoke, VA.....	10.2
VA Botetourt; VA Craig; VA Roanoke; VA Roanoke City; VA Salem	
Non-SMSA Counties.....	12.0
VA Alleghany; VA Augusta; VA Bath; VA Bedford; VA Bland; VA Carroll;	
VA Floyd; VA Franklin; VA Giles; VA Grayson; VA Henry; VA Highland;	
VA Montgomery; VA Nelson; VA Patrick; VA Pittsylvania; VA Pulaski;	
VA Rockbridge; VA Rockingham; VA Wythe; VA Bedford City; VA Buena Vista; VA Clifton	
Forge; VA Covington; VA Danville; VA Galax; VA Harrisonburg;	
VA Lexington; VA Martinsville; VA Radford; VA Staunton; VA Waynesboro; WV Pendleton.	
022 Richmond, VA:	
SMSA Counties:	
6140 Petersburg - Colonial Heights - Hopewell, VA.....	30.6
VA Dinwiddie; VA Prince George; VA Colonial Heights; VA Hopewell;	
VA Petersburg.	
6760 Richmond,.....	24.9
VA Charles City; VA Chesterfield; VA Goochland, VA Hanover; VA Henrico; VA New Kent;	
VA Powhatan; VA Richmond.	
Non-SMSA Counties.....	27.9
VA Albermarle; VA Amelia; VA Brunswick; VA Buckingham, VA Caroline;	
VA Charlotte; VA Cumberland; VA Essex; VA Fluvanna; VA Greene;	
VA Greensville; VA Halifax; VA King and Queen; VA King William;	
VA Lancaster; VA Louisa; VA Lunenburg; VA Madison; VA .Mecklenburg;	
VA Northumberland; VA Nottoway; VA Orange; VA Prince Edward;	
VA Richmond; VA Sussex; VA Charlottesville; VA Emporia; VA South Boston	
023 Norfolk - Virginia Beach - Newport News VA:	
SMSA Counties:	
5680 Newport News- Hampton, VA.....	27.1
VA Gloucester; VA James City; VA York; VA Hampton; VA Newport News;	
VA Williamsburg.	
5720 Norfolk - Virginia Beach - Portsmouth, VA - NC.....	26.6
NC Currituck; VA Chesapeake; VA Norfolk; VA Portsmouth; VA Suffolk;	
VA Virginia Beach.	
Non-SMSA Counties.....	29.7
NC Bertie; NC Camden; NC Chowan; NC Gates; NC Hertford;	
NC Pasquotank; NC Perquimans; VA Isle of Wight; VA Matthews;	
VA Middlesex; VA Southampton; VA Surry; VA Franklin.	
Washington, DC:	
020 Washington, DC.	
SMSA Counties:	
8840 Washington, DC - MD – VA.....	28.0
DC District of Columbia; MD Charles; MD Montgomery MD Prince Georges;	
VA Arlington; VA Fairfax; VA Loudoun; VA Prince William	
VA Alexandria; VA Fairfax City; VA Falls Church.	
Non- SMSA Counties.....	25.2
MD Calvert; MD Frederick; MD St. Marys; MD Washington; VA Clarke;	

VA Culpeper; VA Fauquier; VA Frederick; VA King George; VA Page;  
VA Rappahannock; VA Shenandoah; VA Spotsylvania; VA Stafford;  
VA Warren; VA Westmoreland; VA Fredericksburg; VA Winchester WV Berkeley;  
WV Grant; WV Hampshire; WV Hardy; WV Jefferson; WV Morgan.

Tennessee:

052 Johnson City - Kingsport - Bristol, TN – VA

SMSA Counties:

3630 Johnson City - Kingsport -Bristol, TN-VA.....2.6

TN Carter; TN Hawkins; TN Sullivan; TN Washington; VA Scott;

VA Washington; VA Bristol.

Non-SMSA Counties .....3.2

TN Greene; TN Johnson; VA Buchanan; VA Dickenson; VA Lee;

VA Russell; VA Smyth; VA Tazewell; VA Wise; VA Norton; WV McDowell;

WV Mercer.

## **ATTACHMENT 6**

### **CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

By signing and submitting its proposal or bid, and by executing the Contract or Subcontract, the prospective Contractor and Subcontractors (at all tiers) shall be deemed to have signed and delivered the following:

1. The prospective Contractor and Subcontractor(s) certifies, to the best of its knowledge and belief, that:
  - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions, and shall include a copy of said form in its proposal or bid, or submit it with the executed Contract or Subcontract.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The Contractor and Subcontractor(s) shall require that the language of this certification be included in all lower tier Subcontracts which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.
4. The undersigned certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the undersigned understands and agrees that the provisions of 31 U.S.C. §3801, et seq., apply to this certification and disclosure, if any.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each expenditure or failure.]

## **ATTACHMENT 7**

### **COMPLIANCE WITH BUY AMERICA REQUIREMENTS**

The Contractor shall comply with the Federal Highway Administration (FHWA) Buy America Requirement in 23 CFR 635.410, which permits FHWA participation in the Contract only if domestic steel and iron will be used on the Project. To be considered domestic, all steel and iron used and all products manufactured from steel and iron must be produced in the United States and all manufacturing processes, including application of a coating, for these materials must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied. This requirement does not preclude a minimal use of foreign steel and iron materials, provided the cost of such materials does not exceed 0.1% of the contract price under the Contract.

Concurrently with execution of the Contract, the Contractor has completed and submitted, or shall complete and submit, to the Department a Buy America Certificate, in format below. After submittal, the Contractor is bound by its original certification.

A false certification is a criminal act in violation of 18 U.S.C. 1001. Should this Contract be investigated, the Contractor has the burden of proof to establish that it is in compliance.

At the Contractor's request, the Department may, but is not obligated to, seek a waiver of Buy America requirements if grounds for the waiver exist. However, the Contractor certifies that it will comply with the applicable Buy America requirements if a waiver of those requirements is not available or not pursued by the Department. A request for a waiver shall be treated as a Concessionaire request for a Deviation under the Agreement.



## **BUY AMERICA CERTIFICATE**

The undersigned certifies on behalf of itself and all proposed subcontractors (at all tiers) that only domestic steel and iron will be used in the Project.

A. The Contractor shall comply with the Federal Highway Administration (“FHWA”) Buy America Requirements of 23 CFR 635.410, which permits FHWA participation in the Contract only if domestic steel and iron will be used on the Project. To be considered domestic, all steel and iron used and all products manufactured from steel and iron must be produced in the United States, and all manufacturing processes, including application of a coating, for these materials must occur in the United States. Coating includes all processes which protect or enhance the value of the material to which the coating is applied. This requirement does not preclude a minimal use of foreign steel and iron materials, provided the cost of such materials does not exceed 0.1% of the Contract Price.

B. A false certification is a criminal act in violation of 18 U.S.C. 1001. Should this Contract be investigated, the Concessionaire has the burden of proof to establish that it is in compliance.

C. At the Contractor’s request, the Department may, but is not obligated to, seek a waiver of Buy America requirements if grounds for the waiver exist. However, the Contractor certifies that it will comply with the applicable Buy America requirements if a waiver of those requirements is not available or not pursued by the Department.

<b>CONTRACTOR</b>	
<b>SIGNATURE</b>	
<b>NAME (Printed or Typed)</b>	
<b>TITLE</b>	
<b>DATE</b>	

## ATTACHMENT 8

[SP102-000510-02](#)

### VIRGINIA DEPARTMENT OF TRANSPORTATION SPECIAL PROVISION FOR USE OF DOMESTIC MATERIAL

December 19, 2018

**SECTION 102.05 PREPARATION OF BID** of the Specifications is amended to include the following:

In accordance with the provisions of Section 635.410(b) of Title 23 CFR, hereinafter referred to as “Buy America”, except as otherwise specified, all iron and steel (including miscellaneous items such as fasteners, nuts, bolts and washers) to be permanently incorporated for use on federal aid projects shall be produced in the United States of America. This applies to any iron or steel item brought onto the project, regardless of the percentage of iron or steel that exists in the pay item or in the final form they take; however, electrical components (i.e., combination products such as signal controllers and similar products which are only sold as a unit) are not subject to Buy America provisions if the product as purchased by the Contractor is less than 50% steel and iron. "Produced in the United States of America" means all manufacturing processes occur in one of the 50 United States, the District of Columbia, Puerto Rico or in the territories and possessions of the United States. “Manufacturing processes” are defined as any process which alters or modifies the chemical content, physical size or shape, or final finish of iron or steel material (such as rolling, extruding, bending, machining, fabrication, grinding, drilling, finishing, or coating). For the purposes of satisfying this requirement “coating” is defined as the application of epoxy, galvanizing, painting or any other such process that protects or enhances the value of the material to which the coating is applied. Non-iron and non-steel materials used in the coating process do not need to be produced in the United States as long as the application of the coating occurred in the United States. The manufacturing process is considered complete when the resultant product is ready for use as an item in the project (e.g. fencing, posts, girders, pipe, manhole covers, etc.) or is incorporated as a component of a more complex product by means of further manufacturing. Final assembly of a product may occur outside of the United States of America provided no further manufacturing processes take place.

For the purposes of this provision, all steel or iron material meeting the criteria as produced in the United States of America will be considered as “Domestic Material.” All iron and steel items not meeting the criteria as produced in the United States of America will be considered “Non-Domestic Material.”

A minimal amount of “Non-Domestic” steel or iron material may be incorporated in the permanent work on a federal-aid contract provided that the cost of such materials or products does not exceed one-tenth of one percent of the Contract amount or \$2500, whichever is greater. The cost of the “Non-Domestic Material” is defined as its monetary value delivered to the job site and supported by invoices or bill of sale to the Contractor. This delivered-to-

site cost must include transportation, assembly, installation and testing.

Buy America provisions do not apply to iron or steel products used temporarily in the construction of a project such as temporary sheet piling, temporary bridges, steel scaffolding, falsework or such temporary material or product or material that remains in place for the Contractor's convenience.

Raw materials such as iron ore, pig iron, processed, pelletized and reduced iron ore, waste products (including scrap, that is, steel or iron no longer useful in its present form from old automobiles, machinery, pipe, railroad rail, or the like and steel trimmings from mills or product manufacturing) and other raw materials used in the production of steel and/or iron products may, however, be imported. Extracting, handling, or crushing the raw materials which are inherent to the transporting the materials for later use in the manufacturing process are exempt from Buy America.

Any items containing foreign source steel or iron billet shall be considered "Non-Domestic Materials." Additionally, iron or steel ingots or billets produced in the United States, but shipped outside the United States of America for any manufacturing process and returned for permanent use in a project shall be considered "Non-Domestic Materials."

**Waivers:**

The process for receiving a waiver for Buy America provisions is identified in 23 CFR 635.410(c). The Contractor shall not anticipate that any Buy America provisions will be waived.

**Certification of Compliance:**

The Contractor is required to submit a Certificate of Compliance prior to incorporating any items containing iron or steel items into the project. This shall be accomplished by the Contractor submitting the Form C-76 Certificate of Compliance to the Department when the items are delivered to the project site. The Certification of Compliance will certify whether the items are considered "Domestic Material" or "Non-Domestic Material" as referenced in this Special Provision. The certificate must be signed and dated by the Prime Contractor's Superintendent and include a Buy America Submittal Number. The Buy America Submittal Number is simply the Contractor's project specific sequential numbering system that will allow the Contractor and Department to track the total number of certificates provided and the individual items containing iron or steel associated with each certificate.

**Supporting Documentation:**

Supporting documentation to demonstrate compliance with Buy America provisions (such as mill test reports manufacturer/supplier certifications, etc.) shall be organized by Buy America Submittal Number and maintained by the Contractor from the date of delivery until three years after project acceptance. The Contractor may maintain this documentation electronically or in paper format.

The Department or FHWA may review the Contractor's supporting documentation to verify compliance with the Buy America provisions at any time. Supporting documentation shall be provided within five business days of the request. The burden of proof to meet the Buy America provisions rests with the Contractor. If the supporting documentation does not undeniably demonstrate to FHWA or the Department that the "Domestic Materials" identified in the Certificates of Compliance were produced in the United States of America, then the Department may deduct payment from moneys due the Contractor for the value of the iron and steel that did not meet the Buy America provisions.

## **ATTACHMENT 9**

### **CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT**

By signing this Contract, the Contractor certifies that he has participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, or if he has not participated in a previous contract of this type, or if he has had previous contract or subcontracts and has not filed, he will file with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b)(1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

## EXHIBIT V-2

### CIVIL RIGHTS REQUIREMENTS

#### **Modern Slavery Policy**

**Modern Slavery** means slavery, servitude, forced labor, trafficking in persons, forced marriage, child labor, debt bondage and any other slavery-like practices.

**“Guiding Principle on Business and Human Rights”** means the United Nations’ Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy Framework” (available at [https://www.ohchr.org/documents/publicatons/guidingprinciplesbusinessher\\_en.pdf](https://www.ohchr.org/documents/publicatons/guidingprinciplesbusinessher_en.pdf)).

Contractor represents and warrants, that at the time of entering into this Agreement and on an ongoing basis:

- (a) neither it, nor any of its officers, employees or agents, have been involved in any conduct constituting Modern Slavery;
- (b) neither it, nor any of its officers, employees or agents, have admitted to or been convicted of any offense relating to Modern Slavery;
- (c) neither it, nor any of its officers, employees or agents, have been, or are subject to or involved in, any past, current, pending or threatened investigation of any offense or allegation relating to Modern Slavery, including by any law enforcement, regulator or other governmental agency, or any customer or supplier;
- (d) neither it, nor any of its officers, employees or agents, are aware of any circumstances within its supply chain that is being investigated or could give rise to an investigation relating to Modern Slavery, including by any law enforcement, regulator or other governmental agency, or any customer or supplier;
- (e) it is not conducting, and has not conducted, any internal investigation in relation to allegations of Modern Slavery and no person has reported any instance or suspected instance of Modern Slavery;
- (f) it will use all reasonable endeavors to prevent and respond to Modern Slavery in its supply chain and activities, including performing appropriate due diligence for the identification of Modern Slavery in its supply chain and activities; and
- (g) it will not supply any goods or services that have their origin in, or are otherwise sourced, supplied, manufactured, assembled, developed, or otherwise provided or produced in any high risk jurisdiction. This includes, but is not limited to, the following countries and/or territories: Cambodia, Mauritania, the Democratic People’s Republic of Korea, the Democratic Republic of Congo, the Islamic

Republic of Pakistan, the Republic of Iraq, the Republic of Yemen, the Federal Republic of Somalia, Eritrea, the Republic of South Sudan, the Republic of Sudan, and the Syrian Arab Republic.

If at any time the Contractor becomes aware of any potential or actual incidence of Modern Slavery in the operations and supply chains utilised in its performance of the Contract, the Contractor must promptly:

- (a) notify the Concessionaire of the potential or actual incidence of Modern Slavery and provide any information reasonably requested by the Concessionaire in relation to such incidence;
- (b) take all reasonable action to address or remove such incidence of Modern Slavery, including where relevant by addressing any incidence identified in relation to other entities in its supply chains; and
- (c) take all reasonable steps to remediate any adverse impacts caused or contributed to by the Contractor from a potential or actual incidence of Modern Slavery in accordance with the Guiding Principles on Business and Human Rights.

### **Equal Employment Opportunity**

- (a) The Contractor shall comply with the applicable provisions of presidential executive orders and the rules, regulations, and orders of the President's Committee on Equal Employment Opportunity ("EEO"). The Contractor shall maintain the following records and reports as required by the EEO provisions:
  - record of all applicants for employment
  - new hires by race, work classification, hourly rate, and date employed
  - minority and non-minority employees employed in each work classification
  - changes in work classifications
  - employees enrolled in approved training programs and the status of each
  - minority subcontractor or subcontractors with meaningful minority group representation
  - copies of Form C-57 (Contractor's Monthly EEO Report) submitted by subcontractors

The Contractor shall cooperate with the Department in carrying out EEO obligations and in the Department's review of activities under the Agreement. The Contractor shall comply with the specific EEO requirements specified in this Exhibit and shall include these requirements in every subcontract of \$10,000 or more with such modification of language as may be necessary to make them binding on the subcontractors.

- (b) EEO Policy: The Contractor shall accept as operating policy the following statement:

It is the policy of this Company to assure that applicants are employed and that employees are treated during employment without regard to their race, religion, sex, sexual orientation, gender identity, color, or national origin. Such action shall include employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship or on-the-job training.

- (c) EEO Officer: The Contractor shall designate and make known to the Department an EEO Officer who can effectively administer and promote an active Contractor EEO program and who shall be assigned adequate authority and responsibility to do so.
- (d) Dissemination of Policy:
  - 1. Members of the Contractor's staff who are authorized to hire, supervise, promote, and discharge employees or recommend such action or are substantially involved in such action shall be made fully aware of and shall implement the Contractor's EEO policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. The following actions shall be taken as a minimum:
    - a. Periodic meetings of supervisory and personnel office employees shall be conducted before the start of work and at least once every 6 months thereafter, at which time the Contractor's EEO policy and its implementation shall be reviewed and explained. The meetings shall be conducted by the EEO Officer or another knowledgeable company official.
    - b. New supervisory or personnel office employees shall be given a thorough indoctrination by the EEO Officer or another knowledgeable company official covering all major aspects of the Contractor's EEO obligations within 30 days following their reporting for duty with the Contractor.
    - c. The EEO Officer or appropriate company official shall instruct employees engaged in the direct recruitment of employees for the Project relative to the methods followed by the Contractor in locating and hiring minority group employees.
  - 2. In order to make the Contractor's EEO policy known to all employees, prospective employees, and potential sources of employees such as, but not limited to, schools, employment agencies, labor unions where appropriate, and college placement officers, the Contractor shall take the following actions:
    - a. Notices and posters setting forth the Contractor's EEO policy shall be placed in areas readily accessible to employees, applicants for employment, and potential employees.



The Contractor shall furnish, erect, and maintain at least two bulletin boards having dimensions of at least 48 inches in width and 36 inches in height at locations readily accessible to all personnel concerned with the project. The boards shall be erected immediately upon initiation of the Agreement work and shall be maintained until the completion of such work, at which time they shall be removed from the project. Each bulletin board shall be equipped with a removable glass or plastic cover that when in place shall protect posters from weather or damage. The Contractor shall promptly post official notices on the bulletin boards.

- b. The Contractor's EEO policy and the procedures to implement such policy shall be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

(e) Recruitment:

1. When advertising for employees, the Contractor shall include in all advertisements for employees the notation "An Equal Opportunity Employer" and shall insert all such advertisements in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
2. Unless precluded by a valid bargaining agreement, the Contractor shall conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, state employment agencies, schools, colleges, and minority group organizations. The Contractor shall identify sources of potential minority group employees and shall establish procedures with such sources whereby minority group applicants may be referred to it for employment consideration.
3. The Contractor shall encourage its employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all employees. In addition, information and procedures with regard to referring minority group applicants shall be discussed with employees.

(f) Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel action of any type shall be taken without regard to race, color, religion, sex, or national origin.

1. The Contractor shall conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of personnel.
2. The Contractor periodically shall evaluate the spread of wages paid within each classification to determine whether there is evidence of discriminatory wage practices.

3. The Contractor periodically shall review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Contractor promptly shall take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, corrective action shall include all affected persons.
4. The Contractor shall investigate all complaints of alleged discrimination made to it in connection with obligations under the Agreement, attempt to resolve such complaints, and take appropriate corrective action. If the investigation indicates that the discrimination may affect persons other than the complainant, corrective action shall include those persons. Upon completion of each investigation, the Contractor shall inform every complainant of all avenues of appeal.

(g) Training:

1. The Contractor shall assist in locating, qualifying, and increasing the skills of minority group and women employees and applicants for employment.
2. Consistent with work force requirements and as permissible under Federal and state regulations, the Contractor shall make full use of training programs, i.e., apprenticeship and on-the-job training programs for the geographical area of Contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation should be in their first year of apprenticeship or training.
3. The Contractor shall advise employees and applicants for employment of available training programs and the entrance requirements for each.
4. The Contractor periodically shall review the training and promotion potential of minority group employees and shall encourage eligible employees to apply for such training and promotion.

(h) Unions: If the Contractor relies in whole or in part on unions as a source of employees, best efforts shall be made to obtain the cooperation of such unions to increase opportunities for minority groups and women in the unions and to effect referrals by such unions of minority and women employees. Actions by the Contractor, either directly or through its agents or subcontractors, shall include the following procedures:

1. In cooperation with the unions, best efforts shall be used to develop joint training programs aimed toward qualifying more minority group members and women for membership in the unions and to increase the skills of minority group employees and women so that they may qualify for higher-paying employment.
2. Best efforts shall be used to incorporate an EEO clause into union agreements to the end that unions shall be contractually bound to refer applicants without regard to race, color, religion, sex, sexual orientation, gender identity or national origin.

3. Information shall be obtained concerning referral practices and policies of the labor union except that to the extent the information is within the exclusive possession of the union. If the labor union refuses to furnish the information to the Contractor, the Contractor shall so certify to the Department and shall set forth what efforts he made to obtain the information.
  4. If a union is unable to provide the Contractor with a reasonable flow of minority and women referrals within the time limit set forth in the union agreement, the Contractor shall, through its recruitment procedures, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity or national origin, making full efforts to obtain qualified or qualifiable minority group persons and women. If union referral practice prevents the Contractor from complying with the EEO requirements, the Contractor shall immediately notify the Department.
- (i) Subcontracting: The Contractor shall use best efforts to use minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. The Contractor shall use best efforts to ensure subcontractor compliance with its EEO obligations.
1. Records and Reports: The Contractor shall keep such records as are necessary to determine compliance with its EEO obligations. The records shall be designed to indicate the following:
    - i. the number of minority and nonminority group members and females employed in each work classification on the Project;
    - ii. the progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and females if unions are used as a source of the work force;
    - iii. the progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
    - iv. the progress and efforts being made in securing the services of minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees
  2. Records shall be retained for a period of three years following completion of the Work and shall be available at reasonable times and places for inspection by authorized Representatives of the Department.
  3. Form C-57 shall be submitted each month for the first three months after each Contractor commences the Work pursuant to a Notice to Proceed issued by the Concessionaire and every month of July thereafter for the duration of the Project. Form C-57 shall be completed to indicate the number of minority, nonminority, and female employees currently engaged in each work classification shown on the form. The completed

Form C-57 shall be submitted within three weeks after the reporting period. Failure to do so may result in delay of approval of the Contractor's monthly Application for Payment.

### **Civil Rights Compliance**

- (a) DBE-SWaM Forms: The Contractor shall complete the following forms or equivalent forms as part of its compliance with the DBE-SWaM goals set forth in the Contract.

Form C-111 (Minimum DBE Requirements)

Form C-112 (Certification Of Binding Agreement)

Form C-48 (Subcontractor/Supplier Solicitation And Utilization Form)

Form C-49 (DBE Good Faith Efforts Documentation)

- (b) Payments made to DBE and SWaM consultants must be submitted on form C-63 (DBE Report) or an equivalent form on a quarterly basis. Form C-63 and submittal information for the form is set forth in the Department's Construction Directive Memorandum CD-2007-6.

- (c) Construction Requirements and Submittals:

1. EEO Contract Compliance:

- i. The following forms and associated submittal information are required from the Contractor and its subcontractors (including haulers and suppliers as applicable).

Form C-64 (Company Employment)

Letter Designating EEO Officer

Semi-annual Minutes of an EEO Meeting

Form C-57 (Contractor's Monthly EEO Report)

- ii. The Contractor and its subcontractors are subject to formal Department EEO Contractor Compliance Reviews at least annually.

2. Labor Compliance: The Contractor shall submit, or cause the submission, of the following. In addition, the Contractor's employees (and the employees of its subcontractors) may be subject to interviews by the Department.

- i. weekly payrolls from the Contractor and its subcontractors and haulers;

- ii. Form C-28 (Basic Hourly Rates paid by Contractor); and
  - iii. Form C-56 (Statement of Compliance).
3. DBE Compliance: The Contractor shall comply with all the requirements of “Virginia Department of Transportation Special Provision for Section 107.15 [Use of Disadvantaged Business Enterprises (DBEs)] For Design-Build Projects” dated January 4, 2017, attached hereto as Attachment 1. Use of the term “Design-Builder” or “Offeror” in Attachment 1 shall be read to mean “Contractor”.
- i. DBE subcontractors, suppliers, manufacturers and haulers must be listed and submitted on Form C-111 or an equivalent form, indicating the task(s) assigned and the approximate dollar value of the planned work pursuant to Attachment 1.
  - ii. Payments made to DBE firms must be submitted on form C-63 on a quarterly basis. Form C-63 and submittal information for the form is provided in the Department’s Construction Directive Memorandum CD-2007-6.
  - iii. All DBE firms are subject to formal DBE contract compliance reviews at least once during active participation on the project.
  - iv. Attachment 1 provides guidance on removal of a DBE firm from the contract or for substituting another firm for all or portions of items of work designated to be performed by a DBE firm. Advance approval must be obtained from the VDOT district Civil Rights Office.
4. SWaM Compliance: The Contractor shall comply with all the requirements of “Virginia Department of Transportation Special Provision for Section 107.15 Use of Small, Women-Owned and Minority-Owned-Businesses (SWaM) for Design-Build Projects” dated January 4, 2017, attached hereto as Attachment 2. Use of the term “Design-Builder” in Attachment 2 shall be read to mean “Contractor”.
- i. SWaM subcontractors, suppliers, manufacturers and haulers shall be listed and submitted on Form C-111 or an equivalent form, indicating the task(s) assigned and the approximate dollar value of the planned work pursuant to Attachment 2.
  - ii. Payments made to SWaM firms must be submitted on form C-63 on a quarterly basis in order to receive credit. See Construction Memorandum CD-2007-6.

## ATTACHMENT 1

### VIRGINIA DEPARTMENT OF TRANSPORTATION SPECIAL PROVISION FOR SECTION 107.15 FOR DESIGN-BUILD PROJECTS

January 4, 2017

Section 107.15 of the Specifications is replaced by the following:

#### **Section 107.15—Use of Disadvantaged Business Enterprises (DBEs) for Design-Build Projects**

##### **A. Disadvantaged Business Enterprise (DBE) Program Requirements**

Any Design-Builder, subcontractor, supplier, DBE firm, and contract surety involved in the performance of work on a federal-aid contract shall comply with the terms and conditions of the United States Department of Transportation (USDOT) DBE Program as the terms appear in Part 26 of the Code of Federal Regulations (49 CFR as amended), the USDOT DBE Program regulations; and the Virginia Department of Transportation's (VDOT or the Department) Road and Bridge Specifications and DBE Program rules and regulations.

For the purposes of this provision, Offeror is defined as any individual, partnership, corporation, or Joint Venture that formally submits a Statement of Qualification or Proposal for the work contemplated there under; Design-Builder is defined as any individual, partnership, or Joint Venture that contracts with the Department to perform the Work; and subcontractor is defined as any supplier, manufacturer, or subcontractor performing work or furnishing material, supplies or services to the contract. The Design-Builder shall physically include this same contract provision in every supply or work/service subcontract that it makes or executes with a subcontractor having work for which it intends to claim credit.

In accordance with 49 CFR Part 26 and VDOT's DBE Program requirements, the Design-Builder, for itself and for its subcontractors and suppliers, whether certified DBE firms or not, shall commit to complying fully with the auditing, record keeping, confidentiality, cooperation, and anti-intimidation or retaliation provisions contained in those federal and State DBE Program legal requirements. By submitting a Proposal on this contract, and by accepting and executing this contract, the Design-Builder agrees to assume these contractual obligations and to bind the Design-Builder's subcontractors contractually to the same at the Design-Builder's expense.

The Design-Builder and each subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Design-Builder shall carry out applicable requirements of 49 CFR Part 26 in the award, administration, and performance of this contract. Failure by the Design-Builder to carry out these requirements is a material breach of this contract, which will result in the termination of this contract or other such remedy, as VDOT deems appropriate.

All administrative remedies noted in this provision are automatic unless the Design-Builder exercises the right of appeal within the required timeframe(s) specified herein.

Appeal requirements, processes, and procedures shall be in accordance with guidelines stated herein and current at the time of the proceedings. Where applicable, the Department will notify the Design-Builder of any changes to the appeal requirements, processes, and procedures after receiving notification of the Design-Builder's desire to appeal.

All time frames referenced in this provision are expressed in business days unless otherwise indicated. Should the expiration of any deadline fall on a weekend or holiday, such deadline will automatically be extended to the next normal business day.

**B. DBE Certification**

The only DBE firms eligible to perform work on a federal-aid contract for DBE contract goal credit are firms certified as Disadvantaged Business Enterprises by the Virginia Department of Small Business and Supplier Diversity (SBSD) or the Metropolitan Washington Airports Authority (MWAA) in accordance with federal and VDOT guidelines. DBE firms must be certified in the specific work listed for DBE contract goal credit. A directory listing of certified DBE firms can be obtained from the Virginia Department of Small Business and Supplier Diversity's website: <http://www.sbsd.virginia.gov>.

**C. DBE Program-Related Certifications Made by Offerors/Design-Builders**

By submitting a Proposal and by entering into any contract on the basis of that Proposal, the Offeror/Design-Builder certifies to each of the following DBE Program-related conditions and assurances:

1. That the Offeror/Design-Builder agrees to comply with the project construction and administration obligations of the USDOT DBE Program, 49 CFR Part 26 as amended, and the Standard Specifications setting forth the Department's DBE Program requirements.
2. Design-Builder shall comply fully with the DBE Program requirements in the execution and performance of the contract. Design-Builder acknowledges that failure to comply may result in enjoinder from participation in future Department or State procurements and/or other legal sanctions.
3. To ensure that DBE firms have been given full and fair opportunity to participate in the performance of the contract. The Design-Builder certifies that all reasonable steps were, and will be, taken to ensure that DBE firms had, and will have, an opportunity to compete for and perform work on the contract. The Design-Builder further certifies that the Design-Builder shall not discriminate on the basis of race, color, age, national origin, or sex in the performance of the contract or in the award of any subcontract. Any agreement between a Design-Builder and a DBE whereby the DBE promises not to provide quotations for performance of work to other Design-Builders are prohibited.
4. Design-Builder shall make good faith efforts to obtain DBE participation in the proposed contract at or above the goal. The Offeror shall submit a written statement as a part of its Statement of Qualifications and/or Proposal indicating the Offeror's commitment to achieve the minimum requirement related to DBE

goal indicated in Request for Qualification (RFQ) and/or Request for Proposal (RFP) for the entire value of the contract. The Offeror, by signing and submitting its Proposal, certifies the DBE participation information that will be submitted within the required time thereafter is true, correct, and complete, and that the information to be provided includes the names of all DBE firms that will participate in the contract, the specific item(s) that each listed DBE firm will perform, and the creditable dollar amounts of the participation of each listed DBE.

5. Offeror further certifies, by signing its Proposal, it has committed to meet the contract goal for DBE participation. Award of the contract will be conditioned upon meeting these and other listed requirements of 49 CFR Part 26.53 and the contract documents. By signing the Proposal, the Offeror certifies that good faith efforts will be made on work that it proposes to sublet; and that it will seek out and consider DBE firms as potential subcontractors and subconsultants. The Design-Builder shall, as a continuing obligation, contact DBE firms to solicit their interest, capability, and prices in sufficient time to allow them to respond effectively, and shall retain on file proper documentation to substantiate its good faith efforts.
6. Design-Builder shall not unilaterally terminate, substitute for, or replace any DBE firm that was designated in the executed contract in whole or in part with another DBE, any non-DBE firm, or with the Design-Builder's own forces or those of an affiliate of the Design-Builder without the prior written consent of Department as set out within the requirements of this Special Provision.
7. Design-Builder shall designate and make known to the Department a liaison officer who is assigned the responsibility of administering and promoting an active and inclusive DBE program as required by 49 CFR Part 26 for DBE firms. The designation and identity of this officer needs to be submitted only once by the Design-Builder.
8. Design-Builder shall comply fully with all contractual requirements and Legal Requirements of the USDOT DBE Program, and shall cause each DBE firm participating in the contract to fully perform the designated work items with the DBE firm's own forces and equipment under the DBE firm's direct supervision, control, and management. Where a contract exists and where the Design-Builder, DBE firm, or any other firm retained by the Design-Builder has failed to comply with federal or Department DBE Program requirements, Department has the authority and discretion to determine the extent to which the DBE contract regulations have not been met, and will assess against the Design-Builder any remedies available at law or provided in the contract.
9. If a bond surety assumes the completion of work, if for any reason VDOT has terminated the Design-Builder, the surety shall be obligated to meet the same DBE contract terms and requirements as were required of the original Design-Builder in accordance with the requirements of this specification.



## D. DBE Program Compliance Procedures

The following procedures shall apply to the contract for DBE Program compliance purposes:

1. **Prequalification of Subcontractors:** All prospective DBE subcontractors shall prequalify with the Department in accordance with the *Rules Governing Prequalification*.
2. **DBE Goal, Good Faith Efforts Specified:** Design-Builder shall evidence attainment of the DBE commitment equal to or greater than the required DBE Goal through submission, to Department, of completed Form C-111, Minimum DBE Requirements; Form C-112, Certification of Binding Agreement; and Form C-48, Subcontractor/Supplier Solicitation and Utilization, as a part of the good faith efforts documentation set forth below:

**Design Phase:** Thirty (30) days after the Notice to Proceed for Design, the Design-Builder shall submit to Department for review and approval Forms C-111 and C-112 for each DBE firm to be utilized during the design phase to meet the DBE minimum requirement and Form C-48. Failure to submit the required documentation within the specified timeframe shall be cause to deny credit for any work performed by a DBE firm and delay approval of the Design-Builder's monthly payment.

**Construction Phase:** No later than thirty (30) days prior to the DBE firm undertaking any work, Design-Builder shall submit to Department for review and approval Forms C-111, C-112, and C-48. Failure to submit the required documentation within the specified timeframe shall result in disallowed credit of any work performed prior to approval of Forms C-111 and C-112 and delay approval of monthly payment.

The District Civil Rights Office (DCRO) will monitor good faith effort documentation quarterly to determine progress being made toward meeting the DBE minimum requirement established for the contract.

Forms C-48, C-49, C-111, and C-112 can be obtained from the VDOT website at:

<http://vdotforms.vdot.virginia.gov/>

3. **Good Faith Efforts Described:** Department will determine if Design-Builder demonstrated adequate good faith efforts, and if given all relevant circumstances, those efforts were made actively and aggressively to meet the DBE requirements. Efforts to obtain DBE participation are not good faith efforts if they could not reasonably be expected to produce a level of DBE firm participation sufficient to meet the DBE Program requirements and DBE Goal.

Good faith efforts may be determined through use of the following list of the types of actions the Design-Builder may make to obtain DBE participation. This is not intended to be a mandatory checklist, nor is it intended to be

exclusive or exhaustive. Other factors or types of efforts of similar intent may be relevant in appropriate cases:

- (a) Soliciting through reasonable and available means, such as but not limited to, attendance at pre-bid meetings, advertising, and written notices to DBE firms who have the capability to perform the work of the contract. Examples include: advertising in at least one daily/weekly/monthly newspaper of general circulation, as applicable; phone contact with a completely documented telephone log, including the date and time called, contact person, or voice mail status; and internet contacts with supporting documentation, including dates advertised. DBE firms shall have no less than five (5) business days to reasonably respond to the solicitation. Design-Builder shall determine with certainty if the DBE firms are interested by taking reasonable steps to follow up initial solicitations as evidenced by documenting such efforts as requested on Form C-49, DBE Good Faith Efforts Documentation.
- (b) Selecting portions of the work to be performed by DBE firms in order to increase the likelihood that the DBE Goal will be achieved. This includes, where appropriate, breaking out work items into economically feasible units to facilitate DBE firm participation, even when the Design-Builder might otherwise prefer to completely perform all portions of this work in its entirety or use its own forces;
- (c) Providing interested DBE firms with adequate information about the plans, specifications, and requirements of the contract in a timely manner, which will assist the DBE firms in responding to a solicitation;
- (d) Negotiating for participation in good faith with interested DBE firms;
  - 1. Evidence of such negotiation shall include the names, addresses, and telephone numbers of DBE firms that were considered; dates DBE firms were contacted; a description of the information *provided* regarding the plans, specifications, and requirements of the contract for the work selected for subcontracting; and, if insufficient DBE participation seems likely, evidence as to why additional agreements could not be reached for DBE firms to perform the work;
  - 2. Design-Builder should, using good business judgment, consider a number of factors in negotiating with subcontractors/subconsultants, and should take a DBE firm's price, qualifications, and capabilities, as well as contract goals, into consideration. However, the fact that there may be some additional costs involved in finding and using DBE firms is not sufficient reason for a Design-Builder's failure to meet the DBE goal as long as such costs are reasonable and comparable to costs customarily appropriate to the type of work under consideration. Also, the ability or desire of a Design-Builder to perform the work with its own organization does not relieve the Design-

Builder of the responsibility to make diligent good faith efforts. Design-Builders are not, however, required to accept higher quotes from DBE firms if the price difference can be shown by the Design-Builder to be excessive, unreasonable, or greater than would normally be expected by industry standards;

- (e) A Design-Builder cannot reject a DBE firm as being unqualified without sound reasons based on a thorough investigation of the DBE firm's capabilities. The DBE firm's standing within its industry, membership in specific groups, organizations, associations, and political or social affiliations, and union vs. non-union employee status are not legitimate causes for the rejection or non-solicitation of bids in the Design-Builder's efforts to meet the contract goal for DBE participation;
- (f) Making efforts to assist interested DBE firms in obtaining bonding, lines of credit, or insurance as required by Department or by Design-Builder;
- (g) Making efforts to assist interested DBE firms in obtaining necessary equipment, supplies, materials, or related assistance or services subject to the restrictions contained in this Special Provision;
- (h) Effectively using the services of appropriate personnel from VDOT and from SBSD; available minority/women community or minority organizations; contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and utilization of qualified DBEs.

#### **E. Documentation and Administrative Reconsideration of Good Faith Efforts**

Design-Builder must provide Form C-49, DBE Good Faith Efforts Documentation, of its efforts made to meet the DBE goal within the time frames specified in this provision. The means of transmittal and the risk for timely receipt of this information shall be the responsibility of the Design-Builder. Design-Builder shall attach additional pages to the certification, if necessary, in order to fully detail specific good faith efforts made to obtain the DBE firm's participation in the proposed work.

However, Design-Builder shall timely submit its completed and executed forms C-111, C-112, C-48, and C-49, as aforementioned. Failure to submit the required documentation within the specified time frames shall be cause to disallow DBE goal credit and delay approval of the Design-Builder's monthly payment.

**During the Contract:** If a DBE, through no fault of the Design-Builder, is unable or unwilling to fulfill his agreement with the Design-Builder, the Design-Builder shall immediately notify the Department and provide all relevant facts. If a Design-Builder relieves a DBE subcontractor of the responsibility to perform work under their subcontract, the Design-Builder is encouraged to take the appropriate steps to obtain another DBE firm to perform the remaining subcontracted work for the amount that would have been paid to the original DBE firm. In such instances, Design-Builder is expected to seek DBE participation towards meeting the goal during the performance of the contract.

If at any point during the execution and performance of the contract it becomes evident that the remaining dollar value of allowable DBE goal credit for performing the subcontracted work is insufficient to obtain the DBE contract goal, and the Design-Builder has not taken the preceding actions, the Design-Builder and any aforementioned affiliates may be subject to disallowance of DBE credit until such time as sufficient progress toward achievement of the DBE goal is achieved or evidenced.

**Project Completion:** If, at final completion, the Design-Builder fails to meet the DBE goal, and fails to adequately document that it made good faith efforts to achieve sufficient DBE goal, then Design-Builder and any prime contractual affiliates, as in the case of a joint venture, may be enjoined from bidding, responding, or participating on Department projects for a period of ninety (90) days and be removed from Department's prequalification list.

Prior to such enjoinder or removal, Design-Builder may submit documentation to the State Construction Engineer or other designee of Department to substantiate that failure was due solely to quantitative underrun(s), elimination of items subcontracted to DBEs, or to circumstances beyond Design-Builder's control and that all feasible means had been used to achieve the DBE goal. The State Construction Engineer, or such other designee, upon verification of such documentation shall determine whether Design-Builder has met the requirements of the contract.

If it is determined that the aforementioned documentation is insufficient or the failure to meet required participation is due to other reasons, the Design-Builder may request an appearance before the Department's Administrative Reconsideration Panel to establish that all feasible means were used to meet such participation requirements. The Administrative Reconsideration Panel will be made up of Department Division Administrators or their designees, none of who took part in the initial determination that the Design-Builder failed to make the DBE goal or make adequate good faith efforts to do so. After reconsideration, Department shall notify the Design-Builder in writing of its decision and explain the basis for finding that the Design-Builder did or did not meet the DBE goal or make adequate good faith efforts to do so. The decision of the Administrative Reconsideration Panel shall be administratively final. If the decision is made to enjoin the Design-Builder from bidding or participating on other Department work as described herein, the enjoinder period will begin upon Design-Builder's failure to request a hearing within the designated time frame or upon the Administrative Reconsideration Panel's decision to enjoin, as applicable.

#### **F. DBE Participation for Contract Goal Credit**

DBE participation on the contract will count toward meeting the DBE contract goal in accordance with the following criteria:

1. The applicable percentage of the total dollar value of the contract or subcontract awarded to the DBE firm will be counted toward meeting the DBE goal in accordance with the **DBE Program-Related Certifications Made by Offerors/Design-Builder's** section of this Special Provision for the value of the work, goods, or services that are actually performed or provided by the DBE firm itself or subcontracted by the DBE to other DBE firms.

2. When a DBE performs work as a participant in a joint venture with a non-DBE firm, the Design-Builder may count toward the DBE goal only that portion of the total dollar value of the subcontract equal to the distinctly defined portion of the work that the DBE firm has performed with the DBE firm's own forces or in accordance with the provisions of this Section. The Department shall be contacted in advance regarding any joint venture involving both a DBE firm and a non-DBE firm to coordinate Department review and approval of the joint venture's organizational structure and proposed operation where the Design-Builder seeks to claim the goal credit.
3. When a DBE firm subcontracts part of the work to another firm, the value of that subcontracted work may be counted toward the DBE contract goal only if the DBE firm's subcontractor is a DBE firm. Work that a DBE firm subcontracts to a non-DBE firm, or to a firm that may be eligible to be a DBE firm, but has not yet been certified as a DBE firm, will not count toward the DBE. The cost of supplies and equipment a DBE subcontractor purchases or leases from the Design-Builder or prime contractual affiliates, as in the case of a joint venture, will not count toward the DBE goal.
4. The Design-Builder may count expenditures to a DBE subcontractor toward the DBE goal only if the DBE performs a Commercially Useful Function (CUF) on that subcontract, as such term is defined in subparagraph H below.
5. A Design-Builder may not count the participation of a DBE subcontractor toward the DBE goal until the amount being counted has actually been paid to the DBE firm. Design-Builder may count sixty (60) percent of its expenditures actually paid for materials and supplies obtained from a DBE certified as a regular dealer, and one hundred (100) percent of such expenditures actually paid for materials and supplies obtained from a regular dealer of the goods or a manufacturer DBE firm.
  - (a) For the purposes of this Special Provision, a "regular dealer" is defined as a firm or person that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment required and used under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the DBE firm or person shall be an established business that regularly engages, as its principal business and under its own name, in the purchase and sale or lease of the products or equipment in question. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions will not be considered regular dealers.
  - (b) A DBE firm or person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business where it keeps such items in stock if the DBE firm both owns and operates distribution equipment for the products it sells and provides for the work, *provided* further that the DBE firm or person has been certified with an appropriate North American Industry Classification System (NAICS) code for supply of such bulk items. Any supplementation of a regular

dealer's own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis to be eligible for credit to meet the DBE goal credit.

- (c) If a DBE regular dealer is used for DBE goal credit, no additional credit will be given for hauling or delivery to the project site goods or materials sold by that DBE regular dealer. Those delivery costs shall be deemed included in the price charged for the goods or materials by the DBE regular dealer, which shall be responsible for distribution of the goods or materials.
- (d) For the purposes of this Special Provision, a manufacturer will be defined as a firm that operates or maintains a factory or establishment that produces on the premises the materials, supplies, articles, or equipment required under the contract and of the general character described by the project specifications. A manufacturer shall include firms that produce finished goods or products from raw or unfinished material, or purchase and substantially alter goods and materials to make them suitable for construction use before reselling them.
- (e) A Design-Builder may count toward the DBE goal the following expenditures to DBE firms that are not regular dealers or manufacturers for DBE program purposes:
  - 1. The entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the performance of the federal-aid contract, if the fee is reasonable and not excessive or greater than would normally be expected by industry standards for the same or similar services.
  - 2. The entire amount of that portion of the contract that is performed by the DBE firm's own forces and equipment under the DBE firm's supervision. This includes the cost of supplies and materials ordered and paid for by the DBE firm for work, including supplies purchased or equipment leased by the DBE firm, except Design-Builder supplies and equipment a DBE subcontractor purchases or leases from the Design-Builder or its affiliates.
- (f) Design-Builder may count toward the DBE goal one hundred (100) percent of the fees paid to a DBE trucker or hauler for the delivery of material and supplies required on the project job site, but not for the cost of those materials or supplies themselves, provided that the trucking or hauling fee is determined by Department to be reasonable, as compared with fees customarily charged by non-DBE firms for similar services. Design-Builder shall not count costs for the removal or relocation of excess material from or on the job site when the DBE trucking company is the manufacturer of or a regular dealer in those materials and supplies. The DBE trucking firm shall also perform a CUF on the project and not

operate merely as a pass through for the purposes of gaining DBE goal credit. Prior to entering into a trucking subcontract, Design-Builder shall determine, or contact the Department Civil Rights Division or its district offices for assistance in determining, whether a DBE trucking firm will meet the criteria for performing a CUF on the project. See section on **Miscellaneous DBE Program Requirements; Factors used to Determine if a DBE Trucking Firm is Performing a CUF.**

- (g) Design-Builder will receive DBE goal credit for the fees or commissions charged by and paid to a DBE broker who arranges or expedites sales, leases, or other work arrangements provided that those fees are determined by Department to be reasonable and not excessive as compared with fees customarily charged by non-DBE firms for similar services. For the purposes of this Special Provision, a broker is defined as a person or firm that regularly engages in arranging for delivery of material, supplies, and equipment, or regularly arranges for the providing of project services as a course of routine business, but does not own or operate the delivery equipment necessary to transport materials, supplies or equipment to or from a job site.

#### **G. Performing a Commercially Useful Function (CUF)**

No credit toward the DBE goal will be allowed for payments or reimbursement of expenditures to a DBE firm if that DBE firm does not perform a CUF on that contract. A DBE firm performs a CUF when the DBE is solely responsible for execution of a distinct element of the work and the DBE firm actually performs, manages, and supervises such work with the DBE firm's own forces or in accordance with the provisions of the **DBE Participation for Contract Goal Credit** section of this Special Provision. To perform a CUF the DBE firm alone shall be responsible and bear the risk for the material and supplies used on the contract, selecting a supplier or dealer from those available, negotiating price, determining quality and quantity, ordering the material and supplies, installing those materials with the DBE firm's own forces and equipment, and paying for those materials and supplies. The amount the DBE firm is to be paid under the subcontract shall be commensurate with the work the DBE actually performs and the DBE goal credit claimed for the DBE firm's performance.

**Monitoring CUF Performance:** It shall be the Design-Builder's responsibility to confirm that all DBE firms selected for subcontract work on the contract, for which he seeks to claim credit toward the DBE goal, perform a CUF. Further, the Design-Builder is responsible for and shall confirm that each DBE firm fully performs the DBE firm's designated tasks in accordance with the provisions of the **DBE Participation for Contract Goal Credit** section of this Special Provision. For the purposes of this Special Provision the DBE firm's equipment will mean either equipment directly owned by the DBE as evidenced by title, bill of sale or other such documentation, or leased by the DBE firm, and over which the DBE has control as evidenced by the leasing agreement from a firm not owned in whole or part by the Design-Builder or an affiliate of the Design-Builder.

Department will monitor Design-Builder's DBE involvement during the performance of the contract. However, Department is under no obligation to warn the Design-Builder that a DBE firm's participation will not count toward the goal.

**DBE Firms Must Perform a Useful and Necessary Role in Contract Completion:**

A DBE firm does not perform a CUF if the DBE firm's role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE firm participation.

**DBE Firms Must Perform The Contract Work With Their Own Workforces:**

If a DBE firm does not perform and exercise responsibility for at least thirty (30) percent of the total cost of the DBE firm's contract with the DBE firm's own work force, or the DBE firm subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involve, Department will presume that the DBE firm is not performing a CUF and such participation will not be counted toward the DBE goal.

**Department Makes Final Determination On Whether a CUF Is Performed:**

Department has the final authority to determine, in its sole discretion, whether a DBE firm has performed a CUF on the contract. To determine whether a DBE is performing or has performed a CUF, Department will evaluate the amount of work subcontracted by that DBE firm or performed by other firms and the extent of the involvement of other firms' forces and equipment. Any DBE work performed by the Design-Builder or by employees or equipment of the Design-Builder shall be subject to disallowance under the DBE Program, unless the independent validity and need for such an arrangement and work is demonstrated. When a DBE firm is presumed not to be performing a commercially useful function the DBE may present evidence to rebut the Department's finding. Department has the final authority to determine, in its sole discretion, whether a DBE firm has performed a CUF on the contract.

**H. Verification of DBE Participation and Imposed Damages**

Within fourteen (14) days after subcontract execution between Design-Builder and DBE subcontractors (or subcontract execution between DBE subcontractors and DBE subcontractors), Design-Builder shall submit to the DCRO, a copy of the fully executed subcontract agreement for each DBE firm used to claim credit in accordance with the requirements stated on Form C-111. The subcontract shall be executed by both parties stating the work to be performed, the details or specifics concerning such work, and the price which will be paid to the DBE subcontractor. Because of the commercial damage that the Design-Builder and its DBE subcontractor could suffer if their subcontract pricing, terms, and conditions were known to competitors, the Department staff will treat subcontract agreements as proprietary Design-Builder trade secrets with regard to Freedom of Information Act requests. In lieu of subcontracts, purchase orders may be submitted for haulers, suppliers, and manufacturers. These too, will be treated confidentially and protected. Such purchase orders must contain, as a minimum, the following information: authorized signatures of both parties; description of the scope of work to include contract item numbers, quantities, and prices; and required federal contract provisions.

The Design-Builder shall also furnish, and shall require each subcontractor to furnish, information relative to all DBE involvement on the project for each quarter during the life of the contract in which participation occurs and verification is available. The information shall be indicated on Form C-63, DBE and SWAM Payment Compliance Report. The Department reserves the right to request proof of payment via copies of cancelled checks with appropriate identifying notations. Failure to provide Form C-63



to the DCRO within five (5) business days after the reporting period may result in delay of approval of the Design-Builder's monthly payment. The names and certification numbers of DBE firms provided by the Design-Builder on the various forms indicated in this Special Provision shall be exactly as shown on SBSD's latest list of certified DBEs. Signatures on all forms indicated herein shall be those of authorized representatives of the Design-Builder as shown on the Prequalification Application, Form C-32 or the Prequalification/Certification Renewal Application, Form C-32A, or authorized by letter from the Design-Builder. If DBE firms are used which have not been previously documented with the Design-Builder's minimum DBE requirements documentation and for which the Design-Builder now desires to claim credit toward the contract goal, the Design-Builder shall be responsible for submitting necessary documentation in accordance with the procedures stipulated in this Special Provision to cover such work prior to the DBE firm beginning work. Form C-63 can be obtained from the VDOT website at: <http://vdotforms.vdot.virginia.gov/>

Design-Builder shall submit to the Department's Project Manager with a copy to the DCRO, a narrative with each project schedule submission, as required in the Special Provision for Design-Build Project Schedule (Part 3, Exhibit 11.1). The project schedule narrative shall include a log of applicable DBE participation activities in the Design-Builder's project schedule for which the Design-Builder intends to claim credit for attaining the DBE goal required in the contract. The log shall include the proposed start/finish dates, durations, and dollar values of the DBE participation activities.

Narratives or other agreeable format of schedule information requirements and subsequent progress determination shall be based on the commitment information shown on the latest Form C-111 as compared with the appropriate Form C-63.

Prior to beginning any major component of the work to be performed by a DBE firm not previously submitted, Design-Builder shall furnish a revised Form C-111 showing the name(s) and certification number(s) of any such DBEs for which Design-Builder seeks DBE goal credit. Design-Builder shall obtain the prior approval of the Department for any assistance it may provide to the DBE firm beyond its existing resources in executing its commitment to perform the work in accordance with the requirements listed in the **Good Faith Efforts Described** section of this Special Provision. If Design-Builder is aware of any assistance beyond a DBE firm's existing resources that Design-Builder, or another subcontractor, may be contemplating or may deem necessary and that have not been previously approved, Design-Builder shall submit a new or revised narrative statement for Department's approval prior to assistance being rendered.

If the Design-Builder fails to correctly complete and any of the required documentation requested by this Special Provision within the specified time frames, the Department will withhold payment until such time as the required submissions are received by Department. Where such failures to provide required submittals or documentation are repeated, Department will move to enjoin the Design-Builder and any prime contractual affiliates, as in the case of a joint venture, from bidding, responding or participating Department projects until such submissions are received.

**I. Documentation Required for Semi-final Payment**

Design-Builder must submit Form C-63 to the DCRO sixty (60) days prior to date of final completion, set forth on the Baseline Schedule (as updated from time to time in accordance with the contract). The form must include each DBE firm used on the contract and the work performed by each DBE firm. The form shall include the actual dollar amount paid to each DBE firm for the accepted creditable work. The form shall be certified under penalty of perjury, or other applicable legal requirements, to be accurate and complete. Department will use this certification and other information available to determine applicable DBE credit allowed to date by Department and the extent to which the DBE firms were fully paid for that work. The Design-Builder acknowledges by the act of filing the form that the information is supplied to obtain payment regarding the contract as a federal participation contract. A letter of certification, signed by both the Design-Builder and appropriate DBE firms, will accompany the form, indicating the amount, including any retainage, if present, that remains to be paid to the DBE firm(s).

**J. Documentation Required for Final Payment**

In anticipation of final payment, Design-Builder shall submit a final Form C-63 marked "Final" to the DCRO, within thirty (30) days of the anticipated date of final completion, as set forth on the Baseline Schedule (as updated from time to time in accordance with the contract). The form must include each DBE firm used on the contract and the work performed by each DBE firm. The form shall include the actual dollar amount paid to each DBE firm for the creditable work. Department will use this form and other information available to determine if Design-Builder and DBE firms have satisfied the DBE goal and the extent to which credit was allowed. Design-Builder acknowledges by the act of signing and filing the form that the information is supplied to obtain payment regarding the contract as a federal participation contract.

**K. Prompt Payment Requirements**

Design-Builder shall make prompt and full payment to the subcontractor(s) (including DBE subcontractors) of any retainage held by Design-Builder after the subcontractor's work is satisfactorily completed.

For purposes of this Special Provision, a subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished, documented, and accepted as required by the contract documents by Department. If Department has made partial acceptance of a portion of the contract, then Department will consider the work of any subcontractor covered by that partial acceptance to be satisfactorily completed. Payment will be made in accordance with the requirements of Section 107.01, Section 109.08, and Section 109.09 of the Division I Amendments to the Standard Specifications (Part 5).

Upon Department's payment of the subcontractor's portion of the work as shown on the application for payment and the receipt of payment by Design-Builder for such work, the Design-Builder shall make compensation in full to the subcontractor for that portion of the work satisfactorily completed and accepted by the Department. For the purposes of this Special Provision, payment of the subcontractor's portion of the work shall mean the Design-Builder has issued payment in full, less agreed upon retainage,

if any, to the subcontractor for that portion of the subcontractor's work that Department paid to Design-Builder pursuant to the applicable application for payment.

Design-Builder shall make payment of the subcontractor's portion of the work within seven (7) days of the receipt of payment from Department in accordance with the requirements of Section 107.01, Section 109.08, and Section 109.09 of the Division I Amendments to the Standard Specifications (Part 5).

If Design-Builder fails to make payment for the subcontractor's portion of the work within the time frame specified herein, the subcontractor shall notify the Department and the Design-Builder's bonding company in writing. Upon written notice from the subcontractor, the Design-Builder's bonding company and Department will investigate the cause for non-payment. Barring mitigating circumstances that would make the subcontractor ineligible for payment, the Design-Builder's bonding company shall be responsible for insuring payment to the subcontractor in accordance with the applicable requirements of Section 107.01, Section 109.08, and Section 109.09 of the Division I Amendments to the Standard Specifications (Part 5).

By accepting and executing this contract, the Design-Builder agrees to assume these obligations, and to bind the Design-Builder's subcontractors contractually to these obligations.

Nothing contained herein shall preclude Design-Builder from withholding payment to the subcontractor in accordance with the terms of the subcontract in order to protect the Design-Builder from loss or cost of damage due to a breach of the subcontract by the subcontractor.

#### **L. Miscellaneous DBE Program Requirements**

**Loss of DBE Eligibility:** When a DBE firm has been removed from eligibility as a certified DBE firm, the following actions will be taken:

1. When a Design-Builder has made a commitment to use a DBE firm that is not currently certified, thereby making the Design-Builder ineligible to receive DBE goal credit for work performed, the ineligible DBE firm's work does not count toward the DBE goal. Design-Builder shall meet the DBE goal with a DBE firm that is eligible to receive DBE credit for work performed, or must demonstrate to the DCRO that it has made good faith efforts to do so.
2. When a Design-Builder has executed a subcontract with a DBE firm prior to official notification of the DBE firm's loss of eligibility, Design-Builder may continue to use the firm on the contract and shall continue to receive DBE credit toward DBE goal for the subcontractor's work.
3. When Department has executed a prime contract with a DBE firm that is certified at the time of contract execution but that is later ruled ineligible, the portion of the ineligible firm's performance on the contract before VDOT has issued the notice of its ineligibility shall count toward the contract goal.

**Termination of DBE:** If a DBE subcontractor is terminated, or fails, refuses, or is unable to complete the work on the contract for any reason, Design-Builder

must promptly request approval to substitute or replace that DBE firm in accordance with this section of this Special Provision.

Design-Builder, shall notify DCRO in writing before terminating and/or replacing the DBE firm that is being used or represented to fulfill DBE-related contract obligations during the term of the contract. Written consent from the DCRO for terminating the performance of any DBE firm shall be granted only when the Design-Builder can demonstrate that the DBE firm is unable, unwilling, or ineligible to perform its obligations for which the Design-Builder sought credit toward the DBE goal. Such written consent by the Department to terminate any DBE shall concurrently constitute written consent to substitute or replace the terminated DBE with another DBE. Consent to terminate a DBE firm shall not be based on the Design-Builder's ability to negotiate a more advantageous contract with another subcontractor whether that subcontractor is, or is not, a DBE firm.

4. All Design-Builder requests to terminate, substitute, or replace a DBE firm shall be in writing, and shall include the following information:
  - (a) The date the Design-Builder determined the DBE to be unwilling, unable, or ineligible to perform.
  - (b) The projected date that the Design-Builder shall require a substitution or replacement DBE to commence work if consent is granted to the request.
  - (c) A brief statement of facts describing and citing specific actions or inaction by the DBE firm giving rise to Design-Builder's assertion that the DBE firm is unwilling, unable, or ineligible to perform;
  - (d) A brief statement of the DBE firm's capacity and ability to perform the work as determined by the Design-Builder;
  - (e) A brief statement of facts regarding actions taken by the Design-Builder, that Design-Builder believes constitute good faith efforts toward enabling the DBE firm to perform;
  - (f) The current percentage of work completed by the DBE firm;
  - (g) The total dollar amount currently paid for work performed by the DBE firm;
  - (h) The total dollar amount remaining to be paid to the DBE firm for work completed, but for which the DBE firm has not received payment, and with which the Design-Builder has no dispute;
  - (i) The total dollar amount remaining to be paid to the DBE firm for work completed, but for which the DBE firm has not received payment, and over which the Design-Builder and/or the DBE firm have a dispute.
5. Design-Builder's Written Notice to DBE of Pending Request to Terminate and Substitute with another DBE.

Design-Builder shall send a copy of the “request to terminate and substitute” letter to the affected DBE firm and make best efforts to ensure its receipt by the DBE firm, in conjunction with submitting the request to the DCRO. The DBE firm may submit a response letter to the DCRO and Department within two (2) business days of receiving the notice to terminate from the Design-Builder. If the DBE firm submits a response letter, then Design-Builder shall, as part of its subcontract, obligate the DBE firm to explain its position concerning performance on the committed work. The Department will consider both the Design-Builder’s request and the DBE firm’s response and explanation before approving the Design-Builder’s termination and substitution request.

If, after making its best efforts to deliver a copy of the “request to terminate and substitute” letter, the Design-Builder is unsuccessful in notifying the affected DBE firm, the Department will verify that the DBE firm is unable or unwilling to continue performing its subcontract let with respect to the contract. Department will timely approve the Design-Builder’s request for a substitution.

6. Proposed Substitution of Another Certified DBE

Upon termination of a DBE firm, Design-Builder shall use reasonable good faith efforts to replace the terminated DBE firm. The termination of such DBE firm shall not relieve Design-Builder of its obligations under this Special Provision, and the unpaid portion of the terminated DBE firm’s subcontract will not be counted toward the DBE goal.

When a DBE substitution is necessary, the Design-Builder shall submit an amended Form C-111 to the DCRO for approval with the name of another DBE firm, the proposed work to be performed by that DBE firm, and the dollar amount of the work to replace the unfulfilled portion of the work of the original DBE firm.

Should Design-Builder be unable to commit the remaining required dollar value to the substitute DBE firm, the Design-Builder shall provide written evidence of good faith efforts made to obtain the substitute value requirement. Department will review the quality, thoroughness, and intensity of those efforts. Efforts that are viewed by Department as merely superficial or pro-forma will not be considered good faith efforts to meet the DBE goal. Design-Builder must document the steps taken that demonstrated its good faith efforts to obtain participation as set forth in **the Good Faith Efforts Described** section of this Special Provision.

**Factors Used to determine if a DBE Trucking Firm is performing a CUF:**

The following factors will be used to determine whether a DBE trucking company is performing a CUF:

1. To perform a CUF, the DBE trucking firm shall be completely responsible for the management and supervision of the entire trucking operation for which the DBE trucking firm is responsible by subcontract under the contract. There shall not be a contrived arrangement, including, but not limited to, any arrangement that would not

customarily and legally exist under customary construction project subcontracting practices for the purpose of meeting the DBE goal;

2. The DBE firm must own and operate at least one fully licensed, insured, and operational truck used in the performance of the contract work. This does not include a supervisor's pickup truck or a similar vehicle that is not suitable for and customarily used in hauling the subject materials or supplies;
3. Design-Builder is eligible to receive full credit toward the DBE goal for the total reasonable amount the DBE firm is paid for the transportation services provided on the subcontract under the contract using acceptable trucks the DBE firm owns, insures, and operates using drivers that the DBE employs and manages;
4. The DBE trucking firm may lease trucks from another DBE firm, including from an owner-operator who is a DBE firm. Design-Builder is eligible to receive credit for the total fair market value actually paid for transportation services the lessee DBE firm provides to the DBE firm that leases trucks from such lessee DBE firm on the contract;
5. The DBE firm may also lease trucks from a non-DBE firm, including an owner-operator. Design-Builder may be eligible to receive DBE goal credit for the services of a DBE firm who leases trucks from a non-DBE firm up to the total value of the transportation services provided by non-DBE lessees, not to exceed the value of transportation services provided by DBE-owned trucks on the contract. For additional participation by non-DBE lessees, the DBE will only receive credit for the fee or commission it receives as a result of the lease arrangement.

### **Truck Counting**

Design-Builders may count for credit against the DBE goal the dollar volume attributable to no more than twice the number of trucks owned by a DBE firm or leased from another DBE firm.

As an example, DBE credit would be awarded for the total transportation services provided by DBE Firm X and DBE Firm Y, and may also be awarded for the total value of transportation services by four (4) of the six (6) trucks provided by non-DBE Firm Z (not to exceed the value of transportation services provided by DBE-owned trucks).

#### **Value of Transportation Services (For Illustrative Purposes Only)**

##### **Firm X**

Truck 1	Owned by DBE	\$100 per day
Truck 2	Owned by DBE	\$100 per day

**Value of Transportation Services**  
(For Illustrative Purposes Only)

**Firm Y**

Truck 3	Leased from DBE	\$110 per day
Truck 4	Leased from DBE	\$110 per day

**Firm Z**

Truck 1	Leased from Non-DBE	\$125 per day
Truck 2	Leased from Non-DBE	\$125 per day
Truck 3	Leased from Non-DBE	\$125 per day
Truck 4	Leased from Non-DBE	\$125 per day
Truck 5	Leased from Non-DBE*	\$125 per day
Truck 6	Leased from Non-DBE*	\$125 per day

DBE credit would be awarded for the total transportation services provided by DBE firm X and DBE Firm Y, and may also be awarded for the total value of transportation services by four (4) of the six (6) trucks provided by non-DBE Firm Z (not to exceed the value of transportation services provided by DBE-owned trucks).

**Credit = 8 Trucks**

**Total Value of Transportation Services = \$820.00**

In all, full DBE credit would be allowed for the participation of eight (8) trucks (twice the number of DBE trucks owned and leased) and the dollar value attributable to the Value of Transportation Services provided by the eight (8) trucks.

\* With respect to the other two trucks provided by non-DBE Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks that DBE Firm X receives as a result of the lease with non-DBE Firm Z.

1. For purposes of this section, the lease must indicate that the DBE firm leasing the truck has exclusive use of and control over the truck. This will not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, provided the lease gives the DBE absolute priority for and control over the use of the leased truck. Leased trucks must display the name

and identification number of the DBE firm that has leased the truck at all times during the life of the lease.

**M. Suspect Evidence of Criminal Behavior**

Failure of Design-Builder or any subcontractor to comply with the Standard Specifications, this Special Provision, or any other contract document wherein there appears to be evidence of criminal conduct shall be referred to the Attorney General for the Commonwealth of Virginia and/or the FHWA Inspector General for criminal investigation and, if warranted prosecution.

**Suspected DBE Fraud**

In appropriate cases, Department will bring to the attention of the United States Department of Transportation any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g., referral to the Department of Justice for criminal prosecution, referral to the USDOT Inspector General, action under suspension and debarment or “Program Fraud and Civil Penalties” rules provided in 49 CFR Part 31.



## ATTACHMENT 2

### VIRGINIA DEPARTMENT OF TRANSPORTATION SPECIAL PROVISION FOR SECTION 107.15 USE OF SMALL, WOMEN-OWNED, AND MINORITY-OWNED BUSINESSES (SWaM) FOR DESIGN-BUILD PROJECTS

January 4, 2017

It is the policy of the Department that Small, Women-Owned, and Minority-Owned Businesses (SWaMs) shall have the maximum opportunity to participate in the performance of the Contract. The Contractor is encouraged to take necessary and reasonable steps to ensure that SWaMs have the maximum opportunity to compete for and perform work on the Contract, including participation in any subsequent subcontracts.

A SWaM firm shall mean a small business concern (as defined pursuant to the Code of Virginia, Title 2.2-1401 for the purpose of reporting small, women-owned, and minority-owned business participation in state contracts and purchases pursuant to §§ 2.2-1404 and 2.2-1405. To that end the following terms shall apply:

**Small business** means an independently owned and operated business which, together with affiliates, has 250 or fewer employees, or average annual gross receipts of \$10 million or less.

**Women-owned business** means a business concern that is at least 51% owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest is owned by one or more women who are citizens of the United States or non-citizens who are in full compliance with the United States immigration law, and both the management and daily business operations are controlled by one or more women who are U.S. citizens or legal resident aliens.

**Minority-owned business** means a business concern that is at least 51% owned by one or more minority individuals or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals and both the management and daily business operations are controlled by one or more minority individuals.

**Minority individual** means an individual who is a citizen of the United States or a non-citizen who is in full compliance with United States immigration law and who satisfies one or more of the following definitions:

1. African American means a person having origins in any of the original peoples of Africa and who is regarded as such by the community of which this person claims to be a part.
2. Asian American means a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands, including but not limited to Japan, China, Vietnam, Samoa, Laos, Cambodia, Taiwan, Northern Mariana, the Philippines, a U.S. territory of the Pacific, India,

Pakistan, Bangladesh, or Sri Lanka and who is regarded as such by the community of which this person claims to be a part.

3. Hispanic American means a person having origins in any of the Spanish-speaking peoples of Mexico, South or Central America, or the Caribbean Islands or other Spanish or Portuguese cultures and who is regarded as such by the community of which this person claims to be a part.
4. Native American means a person having origins in any of the original peoples of North America and who is regarded as such by the community of which this person claims to be a part or who is recognized by a tribal organization.
5. A member of another group, or other individual, found to be economically and socially disadvantaged by the Small Business Administration under 8(a) of the Small Business Act as amended (15 U.S.C. 637(a)).

**State agency** means any authority, board, department, instrumentality, institution, agency, or other unit of state government. "State agency" shall not include any county, city, or town.

A list of Virginia Department of Small Business and Supplier Diversity (SBSD) certified SWaM firms is maintained on the SBSBD web site (<http://www.sbsd.virginia.gov>) under the **SWaM Vendor Directory** link.

SWaM certification entitles firms to participate in VDOT's SWaM program; however, this certification does not guarantee that the firm will obtain work nor does it attest to the firm's abilities to perform any particular work.

The Contractor shall designate and make known to the Department a liaison officer who is assigned the responsibility of actively and effectively administering, encouraging and promoting a responsive program for the use of SWaMs.

The performance of the Contract for the purpose of this specification shall be interpreted to include, but not necessarily be limited to, subcontracting; furnishing materials, supplies, and services; and, leasing equipment or where applicable, any combination thereof.

If the Contractor intends to sublet a portion of the work on the project in accordance with the provisions of Section 105.06 of the Specifications, the Contractor is encouraged to seek out and consider SWaMs as potential subcontractors. The Contractor is encouraged to contact SWaMs to solicit their interest, capability, and prices and shall retain on file the proper documentation to substantiate such contacts.

If the Department has determined that specific opportunities for participation by SWaMs are available on a particular Contract and the bidder chooses to claim credit for SWaM participation, the extent of such participation will be shown as a percentage of the Contract amount and will be indicated on Form C-111, *SWaM Participation*.

**Design Phase:** Thirty (30) days after the Notice to Proceed for Design, the Design-Builder shall submit to the Department for review and approval Forms C-111 and C-112 for each SWaM firm to be utilized during the design phase to meet the SWaM contract goal requirement. Failure to submit the required documentation within the specified timeframe shall be cause to

deny credit for any work performed by a SWaM firm and delay approval of the Design-Builder's monthly payment.

**Construction Phase:** No later than thirty (30) days prior to the SWaM firm undertaking any work, the Design-Builder shall submit to the Department for review and approval Forms C-111, and C-112. Failure to submit the required documentation within the specified timeframe shall result in disallowed cred of any work performed prior to approval of Forms C-111 and C-112 and delay approval of monthly payment.

The following are examples of efforts the Department encourages bidders and Contractors to make in soliciting SWaM participation. Other factors or types of efforts may be relevant in appropriate cases. The Contractor is encouraged to:

- (a) attend any pre-solicitation or pre-bid meetings at which SWaMs could be present and/or informed of contracting and subcontracting opportunities;
- (b) advertise in general circulation, trade association and minority-focus media concerning the subcontracting opportunities;
- (c) provide written notice to a reasonable number of specific SWaMs that their interest in the Contract is being solicited in sufficient time to allow the SWaMs to participate effectively;
- (d) follow-up initial solicitations of interest by contacting SWaMs to determine with certainty whether the SWaMs are interested;
- (e) select portions of the work to be performed by SWaMs in order to increase the likelihood of obtaining SWaM participation (including, where appropriate, breaking down proposed contract work into economically feasible units to facilitate SWaM participation);
- (f) provide interested SWaMs with adequate information about the plans, Specifications, and requirements of the Contract
- (g) negotiate in good faith with interested SWaMs, not rejecting SWaMs as unqualified without sound reasons based on a thorough investigation of their capabilities;
- (h) make efforts to assist interested SWaMs in obtaining bonding, lines of credit, or insurance required by the Department or Contractor;
- (i) make efforts to assist interested SWaMs in obtaining necessary equipment, supplies, materials, or other necessary or related assistance or services; and,
- (j) effectively use the services of available minority, woman and small business community organizations; minority, woman and small business contractors' groups; local, state and federal minority, woman and small business assistance offices; and other organizations that provide assistance in the recruitment and placement of SWaMs.

Any agreement between the Design-Builder and a SWaM firm whereby the SWaM firm agrees not to provide quotations for performance of work to other contractors/consultants is prohibited.

The Design-Builder shall furnish, and require each subcontractor to furnish, on a quarterly basis, information relative to all SWaM involvement on the project. The information shall be indicated on Form C-63, DBE and SWAM Payment Compliance Report or by copies of canceled checks with appropriate identifying notations. If participation achievement is to be fulfilled with a SWaM whose name has not been previously furnished to the Department for the Contract in question, an initial or revised Form C-111, whichever is appropriate, shall be submitted prior to such SWaM beginning the work. Failure to provide the Department the forms by the fifth of the month following each quarterly reporting period may result in delay of the Design-Builders estimate for payment.

If a SWaM, through no fault of the Contractor, is unable or unwilling to fulfill his agreement with the Contractor, the Contractor shall immediately notify the Department and provide all relevant facts. If any subcontractor is relieved of the responsibility to perform work under their subcontract, the Contractor is encouraged to take the appropriate steps to obtain a SWaM to perform an equal or greater dollar value of the remaining subcontracted work. The substitute SWaM's name, description of the work, and dollar value of the work shall be submitted to the Department on Form C-111 prior to such SWaM beginning the work, if such work is to be counted for participation achievement.

**EXHIBIT W**

**Form of Opitz Boulevard Ramp Service Commencement Certificate**

**OPITZ BOULEVARD RAMP  
SERVICE COMMENCEMENT CERTIFICATE**

DATE: \_\_\_\_\_, 20\_\_

1. On the above date, Transurban (USA) Inc. (“**Contractor**”) has delivered this certificate of Opitz Boulevard Ramp Service Commencement of the TMS Project (the “**Opitz Boulevard Ramp Service Commencement Certificate**”) to a duly authorized representative of 95 Express Lanes LLC (“**Concessionaire**”). The Opitz Boulevard Ramp Service Commencement Certificate is completed except for the counter-signature by an authorized representative of Concessionaire. Capitalized terms used herein that are not otherwise defined herein have the meanings set forth in that certain Turnkey Lump-Sum Design-Build Contract relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_\_], 2022 (the “**Agreement**”), entered by and between Concessionaire and Contractor.

2. Contractor certifies and represents that the following statements are true as of the date set forth above:

(i) the need for temporary traffic controls or for lane closures at any time which are part of the TMS Project has ceased (except for any then required for routine maintenance, and except for temporary lane closures during hours of low traffic volume in accordance with and as permitted by a Department-approved traffic management plan solely in order to complete Concessionaire’s Punch List items);

(ii) Contractor has completed the required commissioning process described in the Technical Requirements, and the ETTM System is completed, has passed all demonstration and performance testing in accordance with the Technical Requirements, and is formally accepted and approved by the Department as ready for normal operation;

(iii) Contractor has concluded a Performance Test in which the TMS Project demonstrates a level of achievement deemed satisfactory in accordance with the Test Strategy;

(iv) Contractor has delivered either (i) (A) an interim lien waiver, in the form of Exhibit D to the Agreement, of Contractor’s lien Claims to the extent of most recent payment received by Contractor and (B) interim lien waivers, in form of Exhibit E to the Agreement, from each Subcontractor with a Subcontract in excess of \$50,000, to the extent of the most recent payment received by such Contractor, as are necessary to support Contractor’s certificate (or solely in the case of vendors providing materials or equipment valued at less than \$50,000 in the aggregate, other evidence reasonably satisfactory to Concessionaire demonstrating that such vendor has waived or is not entitled to place any lien on any part of the

Project Right of Way); or (ii) written evidence of posting of a bond by Contractor in the amount equal to the aggregate of amounts of all liens on any part of the Opitz Boulevard Ramp Project or the Project Right of Way that remain outstanding as of the date of Opitz Boulevard Ramp Project Service Commencement (or, if earlier, the date of the most recent payment to Contractor); and

(v) Contractor has otherwise completed the TMS Work in accordance with the Agreement, including the Technical Requirements, the Comprehensive Agreement (including completion of any tasks within the Scope of Work necessary to satisfy the conditions set forth in Section 9.02(g) of the Comprehensive Agreement), such that the TMS Project is in a physical condition that it can be used for normal and safe vehicular travel in all lanes and at all points of entry and exit, except for any remaining items listed in Concessionaire’s Punch List.

3. The person signing below is duly authorized to submit this Opitz Boulevard Ramp Project Service Commencement Certificate to Concessionaire for and on behalf of Contractor.

CONTRACTOR:

TRANSURBAN (USA) INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Concessionaire to circle one (1) of the following statements, as applicable:

A. Concessionaire agrees that Opitz Boulevard Ramp Project Service Commencement of the TMS Project has been achieved as set forth herein.

B. Concessionaire does not agree that Opitz Boulevard Ramp Project Service Commencement of the TMS Project has been achieved for the reasons set forth below:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

CONCESSIONAIRE:

95 EXPRESS LANES LLC

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**EXHIBIT X**

**Form of Opitz Boulevard Ramp Final Completion Certificate**

OPITZ BOULEVARD RAMP FINAL COMPLETION CERTIFICATE

DATE: \_\_\_\_\_, 20\_\_\_\_

1. On the above date, Transurban (USA), Inc. (“**Contractor**”) has delivered this certificate of Opitz Boulevard Ramp Final Completion of the TMS Project (the “**Opitz Boulevard Ramp Final Completion Certificate**”) to a duly authorized representative of 95 Express Lanes LLC (“**Company**”). The Opitz Boulevard Ramp Final Completion Certificate is completed except for the counter-signature by an authorized representative of Concessionaire. Capitalized terms used herein that are not otherwise defined herein have the meanings set forth in that certain Turnkey Lump-Sum Design-Build Contract relating to the Opitz Boulevard Ramp of the I-95/395 HOV/HOT Lanes Tolling and Traffic Management System, dated as of [\_\_\_\_\_], 2022 (the “**Agreement**”), entered by and between Concessionaire and Contractor.

2. Contractor certifies and represents that the following statements are true as of the date set forth above:

(i) the TMS Project is free and clear of all liens, Claims, security interests or encumbrances arising out of or in connection with the performance of the TMS Work by Contractor or any Subcontractor during the TMS Work Period;

(ii) all items on Concessionaire’s Punch List have been completed by Contractor in accordance with the Comprehensive Agreement and the Agreement;

(iii) all Construction Documentation, including Final As-Built Drawings and Documentation as required by Section 17.2 of the Agreement, to be submitted on or before Opitz Boulevard Ramp Final Completion have been submitted and approved by Concessionaire and the, as applicable;

(iv) Contractor has paid for all TMS Work required to achieve Opitz Boulevard Ramp Final Completion which was performed by third parties that Contractor is obligated to pay (other than disputed amounts and amounts that are not yet due and payable);

(v) Contractor has delivered all certifications, if any, required under Section 2.1.2 of the Agreement;

(vi) Contractor has made all deliveries of Work Product to Concessionaire that are required to be made pursuant to the Agreement;

(vii) Contractor has otherwise performed all of the TMS Work required by the Comprehensive Agreement and the Agreement; and

(viii) Opitz Boulevard Ramp Service Commencement has occurred in accordance with Article 6 of the Agreement.

3. The person signing below is duly authorized to submit this Opitz Boulevard Ramp Final Completion Certificate to Concessionaire for and on behalf of Contractor.

CONTRACTOR:

TRANSURBAN (USA) INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Company to circle one (1) of the following statements, as applicable:

A. Concessionaire agrees that Opitz Boulevard Ramp Final Completion of the TMS Project has been achieved as set forth herein.

B. Concessionaire does not agree that Opitz Boulevard Ramp Final Completion of the TMS Project has been achieved for the reasons set forth below:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

CONCESSIONAIRE:

95 EXPRESS LANES LLC

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_



## EXHIBIT Y

### INSURANCE REQUIREMENTS

- (a) **Workers' Compensation and Employer's Liability Insurance** with statutory workers' compensation (Coverage A) limits and employer's liability (Coverage B) limits of \$1,000,000 bodily injury each accident, \$1,000,000 bodily injury by disease policy limit and \$1,000,000 bodily injury by disease each employee. Coverage will be extended, if needed, to cover any claims under the United States Longshore and Harbor Workers' Compensation Act (33 U.S.C. §§ 901-950) and the Jones Act (46 U.S.C. § 30104).
- (b) **Automobile Liability Insurance** with a limit of at least \$1,000,000 combined single limit for bodily injury and property damage covering all owned (if any), non-owned, hired, or borrowed vehicles on site or off. The Concessionaire is to be named as an additional insured on a primary, non-contributory basis.
- (c) **Commercial General Liability Insurance** including coverage for premises and operations, independent contractors, personal injury, product and completed operations, explosion, collapse and underground, and broad form contractual liability of limits of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate applicable on a per project basis. The Concessionaire is to be named as an additional insured on a primary, non-contributory basis.
- (d) **Umbrella/Excess Liability Insurance** in excess of the underlying limits noted above for employer's liability, commercial general liability and automobile liability in the amount of \$2,000,000 per occurrence and in the aggregate for contracts of \$500,000 or more.
- (e) **Professional Liability Insurance** (applicable only to Contractors rendering professional services, including, but not limited to, architects, engineers, traffic consultants, accountants, attorneys, etc.) with limits of at least \$5,000,000 per claim and in the aggregate. Such insurance will remain in full force and effect during the performance of such professional services and with an extended reporting period for two years after completion of such professional services.
- (f) **Technology Errors & Omissions Insurance** with limits of at least \$2,000,000 per claim and in the aggregate. Such insurance shall include coverage for claims arising from errors and omissions of any applicable Contractor and shall include in addition to technology errors & omissions coverage the following: network security cyber liability, privacy liability, cyber business income interruption, and related coverages. Such policy shall remain in full force and effect during the performance of such technology-related services and with an extended reporting period for two years after completion of such professional services.

**EXHIBIT Z**

**TECHINICAL REQUIREMENTS**

**(same as Comprehensive Agreement Exhibit C-6)**

# **I-95 Express Lanes – Opitz Boulevard Ramp ("Opitz") Project**

## **Exhibit C-6**

### **Technical Requirements**

Includes:

Section 1: Project Management

Section 2: Public Information and Communications

Section 3: Design and Construction Requirements

*EXECUTION VERSION*

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**Attachments**

- 1.0 Opitz Project Scope of Work
- 1.3 Project Development Plans
- 1.5a Standards and Specifications
- 1.5b Design Criteria
- 1.10 Security Requirements for Concessionaire Operated Critical Infrastructure  
Facilities and Structures
- 3.4a Opitz Project Geotechnical Report
- 3.4b Opitz Project Geotechnical Data Report for Signs and ITS Structures

*EXECUTION VERSION*

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*EXECUTION VERSION*

**TECHNICAL REQUIREMENTS**

**PURPOSE**

The purpose of these Technical Requirements is to identify the minimum scope and technical requirements to develop the I-95 Express Lanes – Opitz Boulevard Ramp Project (“Opitz Project” or “Opitz”). The Work required by the Technical Requirements will be undertaken by or on behalf of the Concessionaire. Throughout these Technical Requirements where the terms “Opitz Construction Contract” or “Opitz Construction Contractor” are used, the use of such terms is solely to provide a reference to additional clarifying information. The Concessionaire shall be governed by the Agreement, including these Technical Requirements, in the performance of the Work and remains responsible to the Department for its completion. Neither the Opitz Construction Contract nor the Opitz Construction Contractor shall impose any direct obligations on the Department not required by the Agreement or these Technical Requirements.

Refer to Attachment 1.0 for a general summary of the scope of the Opitz Project and the Work.

**ACRONYMS**

<b>Acronym</b>	<b>Definition</b>
AACE	American Association of Cost Engineers
AFC	Approved for Construction
AMRL	AASHTO Material Reference Laboratory
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
BMS	Building Management System
BPPS	Bridge Pier Protection System
CADD	Computer Aided Drafting and Design
CRM	Customer Relations Management
CTA	Cement Treated Aggregate
DBE	Disadvantaged Business Enterprise
DE	Design Exception
DMS	Dynamic Message Sign
DW	Design Waiver
EDMS	Electronic Document Management System
EPA	Environmental Protection Agency
ETTM	Electronic Tolling and Traffic Management
FDC	Field Design Change
FHWA	Federal Highway Administration
F.O.B.	Free on Board
GCS	Gate Control System
GP	General Purpose
HOT-OC	HOT (Express Lanes) Operations Center
HPC	High Performance Concrete
HPS	High Performance Steel
HSE	Health, Safety and Environment

*EXECUTION VERSION*

<b>Acronym</b>	<b>Definition</b>
ICD	Interface Control Document
ID	Asset Identification
IDMS	Incident Detection and Monitoring System
IIM	VDOT Instructional and Informational Memorandum
IPPM	Internal Policy/Procedure Memorandum
IRI	International Roughness Index
ITS	Intelligent Transportation Systems
JOMP	Joint Operating and Maintenance Protocols
KPI	Key Performance Indicators
LCAMS	Lane Closure Advisory Management System
LDR	Load-related Distress Rating
LPN	License Plate Number
LRFD	Load and Resistance Factor Design
MATOC	Metropolitan Area Transportation Operations Coordination
MLHCC	Modified Latex Hydraulic Cement Concrete
MOMS	Maintenance Online Management System
MOT	Maintenance of Traffic
MPSTOC	McConnell Public Safety and Transportation Operations Center
MRP	Maintenance Rating Program
MSE	Mechanically Stabilized Earth
MUA	Master Utility Agreement
NADR	Noise Abatement Design Report
NATR	Noise Analysis Technical Report
NBIS	National Bridge Inspection Standards
NCR	Non-Conformance Report
NDC	Notice of Design Change
NDR	Non Load-related Distress Rating
NRO	Northern Regional Operations
NTCIP	National Transportation Communications for ITS Protocol
O&M	Operations and Maintenance
OCR	Optical Character Recognition
ORT	Open Road Tolling
OSPS	Operating Speed Performance Standard
PDM	Precedence Diagram Method
PDP	Project Development Plan
PE	Professional Engineer
PIP	Public Information Plan
PS&E	Plans, Specifications, and Estimate
PVC	Polyvinyl Chloride
RWIS	Road Weather Information System
SPI	Schedule Performance Index
SWaM	Small, Women- and Minority-owned Business Enterprise
T&DI	Toll and Driver Information
TAMS	Turnkey Asset Maintenance Services

*EXECUTION VERSION*

<b>Acronym</b>	<b>Definition</b>
TCRO	Traffic Control Room Officers
TMP	Transportation Management Plan
TMS	Traffic Management System
TOC	Traffic Operations Center
TS&L	Type, Size, and Location
TTC	Temporary Traffic Control
TTMS	Tolling and Traffic Management System
UIT	Ultrasonic Impact Testing
VDEM	Virginia Department of Emergency Management
VECTOR	Virginia Evacuation Coordination Team for Operational Response
VES	Vehicle Enforcement System
VOS	Volume, Occupancy & Speed
VSLS	Variable Speed Limit Signs
WBS	Work Breakdown Structure

## DEFINITIONS

**Capitalized terms used but not otherwise defined have the respective meanings set forth in Exhibit A to the Agreement. In addition, the following terms have the meanings specified below:**

**Best Efforts** means exerting every available resource and allowing sufficient time (a minimum of 30 days) to settle claims with landowners amicably.

**Design Exception** is defined as a document required where it is either impractical or not economical to obtain the AASHTO minimum design criteria as shown in the Geometric Design Tables. In such a case, an exception shall be secured from the State Location and Design Engineer and FHWA (if applicable).

**Design Waiver** is defined as a document required when deviations from Department's design criteria occur. When design criteria meet or exceed AASHTO minimal design but fall short of Department's minimal design, a Design Waiver shall be required. Design Waivers will be applicable to all projects regardless of functional classification and funding and shall be documented and approved in accordance with the Design Waiver Request form LD-448.

**Disaster Recovery Plan** is as defined in Section 3.16.24 of the Technical Requirements.

**Opitz Construction Contract** means the contract between the Concessionaire and Opitz Construction Contractor for the design and construction of the Project, in the form attached to the Agreement as Exhibit LL-1, as it may be amended or supplemented.

**Opitz Construction Contractor** means [TBD]

**Opitz Design Plans** means the VDOT approved Pre-Advertisement Conference / Advertisement Plans ("PAC Plans") corresponding to the VDOT LD-436 Quality Control Checklist.

**Opitz TMS Contract** means the contract between the Concessionaire and TMS Contractor for the design and construction of the tolling and traffic management systems for the Project, in the form attached to the Agreement as Exhibit LL-2, as it may be amended or supplemented.

**Opitz TMS Contractor** means TRANSURBAN (USA) INC, a Delaware corporation.

**Free Flow** means conditions where vehicular traffic can maintain generally consistent speeds without experiencing undue delay or breakdown in flow.

**In-service Availability** means a percentage of time equivalent to (hours available) / (hours in service) x 100%; in service time excludes scheduled down time and loss of power outside Concessionaire control.

**International Roughness Index (IRI)** is the standard measure of ride quality used by the Department.

**Load-related Distress Rating (LDR)** is a deduct-based index having a value of 100 when the pavement being evaluated has no discernible load-related distress.

**Mainline** is the primary roadway in which the traffic sensors for speed and other traffic data operate excluding auxiliary lanes, collector-distributor roads or ramps.

**Monthly Progress Report** is as defined in Section 1.4.4 of the Technical Requirements.

**Noon** is 12:00 p.m. Eastern.

**Non Load-related Distress Rating (NDR)** is a deduct-based index similar to the Load Rated Distress Rating (LDR) except that the distresses assigned to the index are non-load rated.

## EXECUTION VERSION

**Notification Center** is as defined in Section §56-265.15. of the Code of Virginia.

**Peak Period** is the period from 5:30 a.m. – 9:00 a.m. and/or 4:00 p.m. – 7:00 p.m., Monday through Friday, excluding holidays.

**Permit to Work** – means authorization or approval from the Concessionaire and/or its operating entities to perform specific activities within the limits of the 95 Express Lanes.

**Potomac Formation (silts/clays)** are silts/clays defined as such in the Geologic Map of Virginia published by the Virginia Division of Mineral Resources.

**Project (or Opitz Project)** solely for the purposes of this Exhibit C-6, is used interchangeably with and has the same meaning as “Opitz Project” as defined in Exhibit A to the Third Amended and Restated Comprehensive Agreement as more fully described in Attachment 1.0. For the avoidance of doubt, within this Exhibit C-6, “Project” does not have the definition provided in Exhibit A to the Second Amended and Restated Comprehensive Agreement.

**Project Recovery Schedule** is the schedule submitted by the Concessionaire to the Department whenever the Monthly Progress Report shows the Opitz Final Completion Date has 30 days of negative float; Project Recovery Schedule submittals shall include a list of all activities changed, added or deleted along with all logic changes, and an accompanying narrative explaining the nature of the changes.

**Quality Assurance Manager (QAM)** means the person reporting to the Construction Contractor’s Project Manager responsible for the independent process of determining conformance of work by examining the quality control data.

**Residual Life** means the calculated duration that any Asset of the Opitz Project, subject to the type of routine maintenance of the Asset which is normally included as an annually recurring cost in highway maintenance and repair budgets, will continue to comply with any applicable Performance Requirement or standard after the end of the Term, before Major Maintenance is required, determined through the application of Residual Life methodology and residual life inspections.

**Security Plan** is as defined in Section 3.16.23 of the Technical Requirements.

**Standard Documents** means the standards, specifications, standard drawings, and special provisions listed in Attachment 1.5a to the Technical Requirements – Standards and Specifications..

**Standard of Care** means using logical, rational, and common sensible calculation and precaution in determining whether there is reason to believe that property to be acquired for rights of way may contain concealed or hidden wastes or other materials or hazards requiring remedial action or treatment.

**Station** is one or more traffic monitoring sensors at a single location used to collect traffic volume, lane occupancy, and speed data on the HOT Lanes.

**Substandard Station** is a Station whose weighted average speed over the a.m. or p.m. Peak Period falls below the minimum average operating speed defined for each degradation standard.

**Substructure** means the part of a structure that is below the bearings of simple and continuous spans, skewbacks of arches, and tops of footings of rigid frames, together with the back walls, wingwalls, and wing protection railings.

**Superstructure** means the portion of a structure that is not defined as substructure.



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**Transponder Transaction Performance** means the percentage of vehicles with transponders that are correctly identified by the Tolling System.

# **1 Project Management**

## **1.1 Overview**

- A. The Concessionaire acknowledges that Concessionaire review, concurrence, approvals, inspections, variations, and acceptance of the Work is subject to Department review, concurrence, approvals, inspections, variations, and acceptance of the Work. The Concessionaire also acknowledges that Concessionaire review, concurrence, approvals, inspections, variations, and acceptance of the Work may be subject to third-party review, concurrence, approvals, inspections, variations, and acceptance. Third-parties may include, but not be limited to FHWA and other appropriate governmental agencies.
- B. The Concessionaire shall establish and maintain an organization that effectively manages all elements of the Opitz Project Work. The Opitz Project management effort will be defined and guided by the Opitz Project Development Plans (PDPs), as described in Section 1.3.
- C. Opitz Project management activities shall include, but not be limited to, scope, schedule, cost, and document management, and will be consistent with the Work Breakdown Structure (WBS) developed by the Concessionaire.

## **1.2 Project Administration**

### **1.2.1 General Requirements**

- A. The Concessionaire's management approach shall provide all components of an effective and efficient management system, including: communication and reporting; documentation of Work; supervision of Work personnel and activities; all tools, facilities, and materials; environmental protection and mitigation; safety of Work personnel; and any other management elements needed to produce and document a quality, safe, efficient, and operable Opitz Project.
- B. All prospective contractors, subcontractors, lower tier subcontractors, and prime contractors of joint ventures shall prequalify with the Department and shall have received a certification of qualification prior to undertaking Work on the Opitz Project. This restriction does not apply to consultants, manufacturers, suppliers, or haulers.
- C. Subcontracting or otherwise delegating any portion of the Work shall not relieve the Concessionaire of any responsibility for the fulfilment of the Agreement. Further, delegation or subcontracting of the Concessionaire's responsibilities shall not diminish the Concessionaire's obligation to report directly to the Department, unless the Department expressly agrees to accept reports or communications from third parties.

**1.2.2 Department Staffing and Points of Contact**

- A. The Department will provide an Opitz Project specific management structure with a combination of dedicated and shared resources to manage and oversee the Department's rights or interest in the Opitz Project.
- B. Authority of the Department Representative:
  - 1. Inspection by the Department Representative shall not relieve the Concessionaire of any obligation to furnish acceptable materials or complete construction in accordance with the Agreement.
  - 2. The Department Representative is authorized to conduct independent inspection and oversight of all Work performed and materials furnished, in accordance with the Agreement. As noted in the Agreement, the Department has the right at all times during the Term to carry out Oversight Services with respect to all aspects of the development, construction, and operations of the Opitz Project.

**1.2.3 Workers**

- A. Each party shall notify the other party, in writing, if they believe any person employed by the Department, the Concessionaire, the Opitz Construction Contractor, TMS Contractor, or any subcontractor:
  - 1. Is not performing his or her work in a proper or skillful manner;
  - 2. Is intemperate or disorderly; or
  - 3. Is acting in an unsafe manner.
- B. The party receiving the notice will immediately investigate the specifics of the notification and provide a response to the party initiating the notification, within 5 days, detailing a plan of action to resolve the written concerns. If the employees' actions create an unsafe environment for the Concessionaire's workers, the Department personnel or travelling public, the notified party will immediately stop the operations to resolve safety issues in accordance with the Agreement.

**1.2.4 Not Used**

**1.2.5 Submittals**

- A. The Concessionaire shall or shall cause to be coordinated, delivered, and processed, all submittals to the Department as required by the Agreement.
- B. The Concessionaire shall cause all draft, revised, and final submittals to be accurate, complete, and in a form and at a level of detail to enable the Department to satisfactorily discharge its review and approval obligations.

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- C. All submittals shall be prepared in US Customary Units in accordance with the applicable Standards and Specification in Attachment 1.5a.
- D. The Concessionaire shall provide all Design Documentation and Construction Documentation as electronic files formatted as per VDOT Computer Aided Drafting and Design (CADD) Manual and, if required, sealed by a Professional Engineer licensed in the Commonwealth of Virginia. These documents will include, but are not limited to, the following items:
  - 1. Design calculations and analysis;
  - 2. Mix designs;
  - 3. Reports, studies, and investigations;
  - 4. Opitz Project Schedule;
  - 5. Design Public Hearing and/or Public Meeting Documentation;
  - 6. Design Documentation, including documentation of key design decisions, permitting, right of way submittals, right of way and/or construction revisions;
  - 7. Construction Documentation, including detailed design submittals and Approved for Construction (AFC) Documents, construction sketches, shop drawings, working drawings, and diagrams;
  - 8. Temporary Traffic Control (TTC) plans and documentation;
  - 9. Soil boring logs, laboratory test results, quality control records and audits, and all other testing and inspection documentation, etc.;
  - 10. Material communications relating to Design Documentation and Construction Documentation;
  - 11. Responses to reviewed comments;
  - 12. Change (Work) Orders (including all related communications and disputes resolution proceedings);
  - 13. Governmental Approvals; and
  - 14. Third party approvals.
- E. The Concessionaire shall deliver all electronic submittals using the Opitz Project Electronic Document Management System (EDMS), unless otherwise directed. E-mail may be used to notify the Department of the availability of submittals.

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- F. All design submittals shall be submitted electronically in \*.pdf format. AFC Documents shall include the designs in \*.pdf format, CADD files in \*.dgn format, and hard copies. The Department may request the Concessionaire provide CADD \*.dgn files of any design submittal to facilitate its review. The Concessionaire shall provide hard copies of any Design Documentation or Construction Documentation submittals upon request by the Department.
- G. Electronic versions of the AFC Documents shall be submitted within seven (7) business days of receiving final design approval. AFC Documents shall not incorporate any changes to the approved Final for Approval documents unless otherwise approved. Upon receipt of the electronic AFC Documents, the Department will provide any comments to the Concessionaire within three (3) business days. If comments are provided, the Concessionaire shall address and resubmit within three (3) business days. If no comments are provided or the AFC Documents submittal is deemed acceptable by the Department, the Concessionaire shall provide five (5) hard copies of all AFC Documents within three (3) additional business days.
- H. Hard copies of the AFC Documents shall be 11” x 17.” The Concessionaire is required to provide two (2) hard copies of AFC Documents for the Department’s records and two (2) hard copies of for the Federal Highway Administration’s (FHWA) records.
- I. Submittals will be deemed “received” by the Department (thereby triggering the applicable timeframe for review) upon receipt of the complete package of electronic files, inclusive of all required information necessary to perform a complete review. Packages received after 3:00pm will be deemed received the following business day. The Department will notify the Concessionaire within three (3) business days if the package is incomplete and will include the basis for the submittal being deemed incomplete.
- J. Whenever the Concessionaire is obligated to make a Construction Documentation submittal pursuant to the Agreement, the Concessionaire shall include with such submittal the signed cover sheets described below.
  - 1. A cover sheet, signed by the Opitz Construction Contractor’s Representative, that includes the following certification:
    - i. The Opitz Construction Contractor certifies or has caused to be certified that [description of submittal] was prepared by professionals having the requisite qualifications, certifications, credentials, skills, and experiences needed to prepare the submittal in accordance with the requirements of the Opitz Construction Contract.
    - ii. The Opitz Construction Contractor certifies or has caused to be certified that it has reviewed the submittal for completeness; the submittal accurately depicts the Work to be undertaken or

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performed; and the submittal was prepared in accordance to, and otherwise complies with:

- the Opitz Construction Contract
- the Technical Requirements;
- the approved QMSP;
- applicable Law; and
- Governmental Approvals.

2. A cover sheet, signed by the subcontractor, supplier or consultant who prepared or is otherwise in responsible charge of the submittal, that includes the following certification:

- i. [The name of subcontractor, supplier or consultant], which is under contract with the Opitz Construction Contractor to perform services related to the Opitz Construction Contract, certifies that it prepared or is otherwise in responsible charge of the [description of submittal].
- ii. The [description of submittal] was prepared by professionals having the requisite qualifications, certifications, credentials, skills, and experiences needed to prepare the submittal in accordance the requirements of the applicable contract documents.
- iii. The [description of submittal] is complete and accurately depicts the Work to be undertaken or performed; and the submittal was prepared in accordance with, and otherwise complies with:
  - the applicable contract documents;
  - the Technical Requirements;
  - the approved QMSP;
  - applicable Law; and
  - Governmental Approvals.

K. The Department's review of the Concessionaire's submittals will relate only to conformance to and compliance with the requirements of the Agreement. Any deviation from the requirements of the Agreement must be specifically described and accompanied by explicit supporting justification. The

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Department's review shall not relieve the Concessionaire of responsibility for errors and/or omissions in the submittals.

- L. If the Concessionaire's approved Design Documentation needs to be revised after approval of the AFC Documents, then the Concessionaire shall use either a Notice of Design Change (NDC) or a Field Design Change (FDC) or to document the change. Any required NDC or FDC shall be submitted for review prior to implementation of construction associated with the NDC or FDC. NDC and FDC review and approval shall be completed within ten (10) days of receipt of a complete and accurate submittal by the Concessionaire. Any basis for disapproval will be provided to the Concessionaire in writing. Unless otherwise mutually agreed by all parties, weekly meetings shall be conducted to review open and forthcoming NDC and FDC submittals.
  
- M. The Department may request interim submittals at any time for any of the above noted items for complex or unusual elements of the Work, or for elements where no applicable standards exist, if the Department can reasonably demonstrate that additional information is necessary to complete review of any such Work. Such interim submittals shall be developed to address the specific requests for information and shall be submitted within fourteen (14) days from the request, or other such timeframe as may be mutually agreed.
  
- N. Subject to applicable confidentiality requirements as required by Law, the Concessionaire shall provide to the Department through its Electronic Document Management System (EDMS) or other type of approved electronic storage and retrieval system, hard copies and electronic copies of all correspondence, meeting minutes, and other external documents (including emails) constituting any and all material Opitz Project communications with:
  - 1. Governmental Authorities;
  - 2. Business and Opitz Project stakeholders;
  - 3. Landowners;
  - 4. News media;
  - 5. Utilities;
  - 6. Railroads or transit entities; and
  - 7. Community stakeholders.

**1.2.6 Plans and Drawings**

- A. The Concessionaire shall furnish all plans and drawings showing such details as are necessary to give a comprehensive understanding of the Work specified. Except as otherwise shown on the plans, dimensions shown on the plans are

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measured in the respective horizontal or vertical planes. Dimensions that are affected by gradients or vertical curvatures shall be adjusted as necessary to accommodate actual field conditions and shall be specifically denoted on the working drawings.

- B. The Concessionaire shall furnish working drawings to the Department as required or requested.
- C. Plans and drawings that will be prepared by the Concessionaire include: a) Design and Construction Plans covering individual work packages (if applicable), b) Permitting Plans, c) Design Public Hearing Documentation, d) Right-of-Way Plans, e) Shop Drawings and Working Drawings, f) Temporary Traffic Control Plans, g) As-Built Plans, and all approved changes to these plans, including Notice of Design Changes (NDCs), Field Design Changes (FDCs), and Non-Conformance Reports (NCRs).
- D. Plans and drawings shall not incorporate any deviations from the Technical Requirements unless the changes are specifically denoted, together with justification, and are approved in writing by the Department in accordance with the Agreement.
- E. The Concessionaire shall identify working drawings and submittals by the complete State project and job designation numbers. Items or component materials shall be identified by the specific item number and specification reference in the Agreement.
- F. A Professional Engineer licensed in the Commonwealth shall certify working drawings for but not limited to falsework supporting a bridge superstructure; concrete structures and pre-stressed concrete members; lighting, signal, and pedestrian poles; electrical and communication systems infrastructure; sign structures; breakaway support systems; anchor bolts; retaining walls and foundations.
- G. If a railroad, municipality, or other entity as specified in the Agreement or on the plans is required to review the working drawings, the Concessionaire shall submit to the Department a plan of operations showing the design and method of proposed operations and shall provide the Department evidence of approval by railroad, municipality, or other entity providing approval before performing any work. The plans shall be clear and legible, and details shall be drawn to scale.
- H. Prior to manufacture of non-standard items, the Concessionaire shall furnish to the Department a certification of the acceptability of the design of such non-standard item, as determined from a review which shall be made on behalf of the Concessionaire by a Professional Engineer licensed in the Commonwealth. Such certification shall cover all design data, supporting calculations and materials. Non-standard designs previously certified or approved by the Department will not require recertification.



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- I. The Department's review of the Concessionaire's plans and drawings will relate only to conformance to and compliance with the requirements of the Agreement. Any proposed deviation from the requirements of the Agreement must be specifically described and accompanied by explicit supporting justification. The Department's review shall not relieve the Concessionaire of responsibility for errors and/or omissions in the plans and drawings.
- J. The plans and working drawings shall be appropriately signed and sealed by a professional licensed in the Commonwealth, as applicable.

**1.2.7 Location of Offices and Accommodations for Department's Staff during the Project**

- A. The Department encourages co-location of its key staff with the Concessionaire during the design and construction period. The Department desires to cooperate with the Concessionaire during the design development and review period in order to create efficiencies for the benefit of the Project.
- B. The Concessionaire shall establish one primary field office or dedicated Class C or better office space, the location of which is to be determined and mutually agreed to by the Concessionaire and the Department, but which is expected to be within the Project corridor. This work shall consist of locating, procuring, furnishing, erecting, equipping, maintaining, cleaning (weekdays), and removing and restoring property upon completion of use of the field office. The Concessionaire has the option to provide either modular trailers or to rent office accommodations to satisfy the Project office requirements. The Opitz Project field office shall be located in Prince William County within reasonable proximity of the Opitz Project.
- C. Concessionaire shall provide, maintain and manage fully outfitted, furnished and networked office space for Concessionaire and Department use, including at a minimum insurance, lease agreements, Utility connections, Utility service, internet service, maintenance, janitorial, security and other services necessary to provide the required office facilities.
- D. Concessionaire shall provide parking facilities sufficient for the number of Concessionaire and Department personnel assigned to the location plus visitor parking.
- E. Concessionaire shall be responsible for loss to Department and visitor property as a result of fire, theft, malicious acts, and other human activity or related causes
- F. The field office shall include the following:

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Space	Quantity	Minimum Size (SF)
Office (Department)	2	100
Workstation Cubicle (Department & Concessionaire)	10	64
Conference Room (Shared)	2	250
File Room (Shared)	1	100
Storage Room (Shared)	1	100
Kitchen (Shared)	1	---
Washroom (Shared)	1	---

Work spaces provided for Concessionaire and Department personnel shall be available for their exclusive use at any time during the design and construction of the Opitz Project.

- G. Concessionaire shall provide Department continuous access and maintain, at a minimum, the following systems and equipment at the field office location:
  - 1. High-speed internet connection with minimum 100 Mbps download/100Mbps upload with static IP address;
  - 2. Network connected color printer/scanner/copier/fax, minimum 600 dpi and 30 pages per minute, staple, duplex and paper handling up to 11"x17";
  - 3. Computer network wiring for each office, desk and conference room to support Department-provided file server (for Department's dedicated use) and all other networked devices.
- H. Concessionaire shall provide field office site and floor plans for review and comment no less than 30 calendar days prior to occupancy.
- I. The field office shall be available and operational from 30 days after the latter of Financial Close or Construction Notice to Proceed to 30 days after Final Completion. Furnishings and equipment specified shall be in sound and functional condition throughout the duration of the project.
- J. The field office and equipment as required herein shall remain the property of the Concessionaire
- K. The Concessionaire shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees, as well as the employees or agents of the Department, as may be needed to comply with the requirements of applicable Law.
- L. The field office shall be weatherproof, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground

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and anchored against movement. The floor-to-floor ceiling height shall be at least 7 feet 6 inches. The inside walls and ceilings shall be constructed of, Masonite, gypsum board, or other similarly suitable materials as permitted by fire and building codes. The exterior walls, ceiling and floor shall be insulated.

- M. Lighting, Heating, and Air Conditioning: The field office shall have satisfactory functional lighting, electrical outlets, heating equipment, an exhaust fan, and air conditioner connected to an operational power source. At least one of the light fixtures shall be a fluorescent light situated over the plan and drafting table. There shall also be at least one 100 watt exterior light fixture at each exterior doorway. Electrical power and fuel for heating equipment shall be furnished by the Concessionaire.

### 1.2.8 Document Management System

- A. The Concessionaire shall establish and maintain an Electronic Document Management System (EDMS) to store and record all material documents generated on the Opitz Project, including those records required under Law.
- B. In the provision of an EDMS, the Concessionaire will:
1. use data systems, standards, and procedures with consistent naming and searching protocols;
  2. ensure document retention for any minimum statutory period(s);
  3. provide a secure EDMS, such that only authorized users have access and that it is protected from theft, damage, unauthorized or malicious use;
  4. provide a mechanism for the electronic transfer of metadata along with the associated document in standard business file format; and
  5. provide the Department with written procedures and training of staff who will be required to access all relevant documents generated under the Agreement. All electronic information submitted to the Department shall be searchable and legible, to the extent practical.
- C. In the relevant Project Development Plan, the Concessionaire shall:
1. reference the specific EDMS tool to be used by the Concessionaire and the access methods available to the Department and others that may need access to the system;
  2. describe methods by which all documents issued and received by the Concessionaire shall be uniquely coded and retrievable in a user-friendly format; and

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3. describe upon completion of the Opitz Project, the transfer of EDMS data and files, such that the Department has a complete set of material project documentation in electronic format and written documentation on the contents of the data.

**1.2.9 Project Meetings**

- A. Authorized Representatives and other pertinent representatives of the parties shall meet within 10 days after any Notice to Proceed issued in accordance with the Agreement to discuss issues affecting the administration of the Work and to implement the necessary procedures, including those relating to submittals and approvals, to facilitate the ability of the parties to perform their obligations under the Agreement.
- B. Within 14 days (or other period of time as mutually agreed by the parties) after the satisfaction of the conditions precedent to begin construction as set forth in the Agreement and prior to the start of construction, the parties and their respective representatives shall conduct a pre-construction meeting to discuss the Concessionaire's planned construction operations. At the pre-construction meeting, the parties shall discuss, among other things, safety, the sequence of the Work, scheduling, constructability issues, coordination with Separate Contractors, Governmental Authorities and Utilities, and work zone impacts to traffic.
- C. The Concessionaire shall hold monthly joint progress meetings with the Department. During such meetings, progress during the prior month, Work to be undertaken during the next month, and encountered or anticipated issues shall be reviewed, and the Concessionaire shall collect information from any Contractors responsible for Work completed during the specified duration and Work scheduled during the upcoming reporting duration. These meetings shall be attended by the Concessionaire Representative and other personnel as requested by the Department, including relevant Contractors. Meetings will occur monthly beginning the month after the initial Notice to Proceed is issued. The Concessionaire shall be responsible for preparing, maintaining and distributing minutes of the meetings to all attendees for review. The meeting minutes shall be provided to the Department within three days after the monthly progress meeting or such other timeframe as mutually agreed. The parties may cancel a monthly progress meeting from time to time if they mutually agree that such meeting is not necessary.
- D. As part of, and in conjunction with, the monthly progress meetings required by the Agreement, the Concessionaire shall provide the Department with any proposed updates of the Baseline Schedule for the Department's review, and, if required by the Technical Requirements, approval, and a progress narrative in accordance with Section 1.4.3.
- E. The Concessionaire and the Department shall agree to other meetings as appropriate and mutually agreed.

**1.2.10 Not Used**

**1.2.11 Not Used**

### **1.3 Project Development Plans**

#### **1.3.1 General**

- A. The Concessionaire shall provide Project Development Plans (PDPs) for the Opitz Project as defined in this section and detailed in Attachment 1.3 to these Technical Requirements. Such PDPs shall address the activities of the Concessionaire and shall not obligate the Department to perform any activity unless agreed to in writing by the Department.

#### **1.3.2 Project Development Plans**

- A. The Concessionaire shall develop and maintain a quality control and quality assurance system for the PDPs as part of its overall Quality Management System Plan (QMSP).
- B. The Department may audit and monitor the activities described in the PDPs to assess the Concessionaire's compliance. Any audit findings shall be adequately addressed within 30 days of the Department's audit report.

#### **1.3.3 Project Development Plan Updates**

- A. The Concessionaire shall annually, if requested by the Department, update the PDPs and have mechanisms in place to monitor progress and identify opportunities for improvement.
- B. A PDP or procedure shall be updated pursuant to Attachment 1.3, if such PDP or procedure:
  - 1. does not adequately address the matters it is intended to address;
  - 2. does not conform or is otherwise necessary to comply with the Agreement;
  - 3. has to be changed because of an audit;
  - 4. no longer represents current or appropriate practice; or
  - 5. is required by the Agreement to be updated.

#### **1.3.4 Not Used**

### **1.4 Schedules**

Any Notices to Proceed shall be in accordance with the Agreement.

### 1.4.1 Opitz Project Schedules

#### A. Schedule Purpose, Format, and Content:

1. The purpose of the Opitz Project Schedule is to ensure that adequate planning, scheduling, and resource allocations occur to provide a reasonable and executable work plan, cash flow projections, and continuous monitoring and reporting for Work performed or remaining. The Baseline Schedule and the monthly updates to the Project Schedule shall be used for coordinating the Work, monitoring the progress of Work performed, identifying Work to be performed, evaluating changes, and a tool for measuring progress.
2. The Opitz Project Schedule shall consist of the Initial Opitz Baseline Schedule, the Baseline Schedule, updates to the Opitz Project Schedule, any revised Baseline Schedules or the As-Built Schedule as applicable.
3. Opitz Project Schedules will be reviewed in accordance with the Department Post-Award Scheduling Guide and the American Association for the Advancement of Cost Engineering (AACE) International Recommended Practice No. 53-06 as appropriate. Acceptance by the Department of the Opitz Project Schedule will not relieve the Concessionaire from its responsibility to complete all Work within the Opitz Project Schedule. In addition, the Department's acceptance of any Opitz Project Schedule creates neither a warranty, expressed or implied, nor an acknowledgment of the reasonableness of the activities, logic, durations, or cost loading of the Concessionaire's Opitz Project Schedule. Furthermore, acceptance of the Opitz Project Schedule will not relieve the Concessionaire from complying with all the requirements of the Agreement.
4. Terms not defined herein, in the Agreement shall have the same meanings ascribed to them in the AACE International Recommended Practice No. 10S-90 ("Cost Engineering Terminology").

#### B. General Requirements:

In the Opitz Project Schedule, the Concessionaire shall:

1. ensure that the actual number of activities in the schedule is sufficient to assure adequate planning of the Work and to permit monitoring and evaluation of progress and perform the analysis of alleged time impacts;
2. ensure that design activities identify AFC Documents;

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3. apply the Critical Path Method (CPM) of network calculation to generate the Opitz Project Schedule (the critical path shall be based on the longest network path through the Opitz Project) and prepare the Opitz Project Schedule using the Precedence Diagram Method (PDM) to establish relationships and interdependencies between the individual activities required to complete the Opitz Project;
4. ensure that activity identification numbers, textual descriptions, and codes are consistently applied in the Opitz Project Schedule and are unique for each specific activity;
5. divide all Work prior to Opitz Final Completion Date into activities with appropriate logic ties to show the Concessionaire's overall approach to sequencing, include logical relationships between activities reflecting the Concessionaire's actual intended sequence of Work; and logically tie all activities to avoid open ends;
6. show the Opitz Project milestones, including the issuance of any Notices to Proceed, any agreed interim milestones, the Opitz Project Service Commencement Date, and the Opitz Project Final Completion Date;
7. show phasing of the Work as detailed in the plans, subcontractor work, procurement, fabrication, delivery, installation, testing of materials and equipment, commissioning of systems, and any long-lead time orders for major or significant materials and equipment;
8. allocate an estimated cost to the appropriate lowest level elements (activities) of the Work Breakdown Structure (WBS) by use of labor, material and equipment resources;
9. reflect the required coordination with other contractors working within or adjacent to the Project Site, utility owners, Governmental Agencies, transit entities and railroads, engineers, architects, contractors, and suppliers;
10. identify regulatory approvals required and the dates by which such approvals are necessary;
11. be fully compliant with the Agreement;
12. conform to the Work Restrictions (Section 1.8) and Maintenance of Traffic (Section 1.9) requirements;
13. reflect the ROW Acquisition Plan;
14. reflect the utility relocation activities; and

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15. reflect the requirements of the TMS Interface Plan prepared by the Concessionaire for completing all work necessary to commence systems (TMS and ETTM) operations prior to set testing periods (stand alone, central, and in-service burn).
- C. The scheduling software employed by the Concessionaire shall be compatible with the Department's scheduling software. The Concessionaire's scheduling software must have the capability to import and export data in the Primavera proprietary exchange format (\*.xer). As of the date of the Agreement, the Department's scheduling software is the latest version of Primavera's Project Management software (P6).
- D. Float available in the Opitz Project Schedule, at any time, shall not be considered for the exclusive use of either the Department or the Concessionaire. During the course of the Work, any Float generated is not for the sole use of the party generating the Float; rather it is a shared commodity to be reasonably used by either party. A schedule showing work completing in advance of the Opitz Final Completion Date, and accepted by the Department, will be considered to have Opitz Project Float. Opitz Project Float will be a resource available to both the Department and Concessionaire. No time extensions will be granted unless a Delay Event occurs which impacts the Opitz Project's critical path, consumes all available float or contingency time, and extends the work beyond the Opitz Final Completion Date as defined by the Agreement.
- E. Use of Float suppression techniques, such as; preferential sequencing, lag logic restraints, zero total or free float constraints, extending activity times, or imposing constraint dates other than as required by the contract, shall be cause for rejection of any Project schedule or its updates.
- F. If the parties cannot agree to a Opitz Project Schedule, either party may refer the disagreement to the dispute resolution procedures set forth in the Agreement.
- G. The Concessionaire shall maintain at all times, at its office, a minimum of one complete set of all schedule reports shown above. All schedule reports shall be available to the Department for inspection and audit. Additional reports may be required as future needs dictate, and the reports listed above may be deleted (by mutual consent of the parties).
- H. The Concessionaire shall exercise resequencing logic to minimize any Delay Event before requesting any extension of time.

### **1.4.2 Initial Opitz Baseline Schedule**

- A. The Initial Opitz Baseline Schedule is the Concessionaire's conceptual plan for the design and construction of the Opitz Project. This schedule shall be



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used to monitor performance of the Work until the Baseline Schedule is approved by the Department.

- B. The schedule submitted with the Concessionaire's Proposal shall be the Initial Opitz Baseline Schedule.
- C. The Initial Opitz Baseline Schedule, which shall outline the Concessionaire's proposed plan to accomplish the Work, shall be a Gantt Chart showing the sequencing of major operations and shall include a detailed narrative.

### 1.4.3 Baseline Schedule

- A. Within 15 days of the Notice to Proceed Date, the Concessionaire shall submit to the Department for its review and approval a proposed Baseline Schedule, which shall include the Concessionaire's detailed plan for construction of the Opitz Project. The Concessionaire shall develop its proposed Baseline Schedule from the Initial Opitz Baseline Schedule. The Concessionaire shall submit to the Department an electronic version of the proposed Baseline Schedule created in the Primavera proprietary exchange format (\*.xer). Hard copies shall be provided upon request.
- B. Within 21 days of the Department's receipt of the proposed Baseline Schedule, the Department shall notify the Concessionaire in writing of its approval or disapproval of the proposed Baseline Schedule, and of any comments it has or amendments it wishes the Concessionaire to make. The Concessionaire shall give due consideration to the Department's suggested amendments or comments and, to the extent it deems appropriate, revise the proposed Baseline Schedule and re-submit the same within 21 days to the Department for its review in accordance with this clause B for the Department's approval. Within fourteen days of the Department's receipt of the re-submitted proposed Baseline Schedule, the Department shall notify the Concessionaire in writing of its approval or disapproval. Upon approval by the Department, the proposed Baseline Schedule will become the Baseline Schedule. If the parties cannot agree to a mutually acceptable Baseline Schedule, either party may refer the disagreement to the dispute resolution procedures set forth in the Agreement. Until such time as the dispute is resolved, the Initial Opitz Baseline Schedule will be used for the design and construction of the Opitz Project. The Baseline Schedule shall include a well-organized WBS, the development of which is based on a deliverable-oriented methodology that captures all the Opitz Project activities. The WBS shall allow schedule summarization at a minimum of four hierarchical WBS Levels, such as: Opitz Project areas (Level 1), WBS elements (Level 2), work packages and deliverables (Level 3) and the detail control level (Level 4) to which the individual schedule activities are assigned their WBS code.
- C. Activities in the Baseline Schedule shall be assigned Opitz Project-specific activity codes.

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- D. The Baseline Schedule shall include all major activities of the Work in sufficient detail to enable the Department to monitor and evaluate design and construction progress from the Notice to Proceed Date until Final Completion.
- E. The Baseline Schedule shall include separate activities for major submittals proposed by the Concessionaire, together with appropriate activities for the Department's review or approval, provided that such review and/or approval times by the Department shall be no less than the time provided for such reviews in the Agreement.
- F. The Baseline Schedule shall be broken down into work packages and deliverables generally completed in not less than one but no more than 30 days, or as mutually agreed (unless such deliverable is a procurement or other non-construction activity), and with dollar value (price) of each appropriate lowest level element of the WBS identified. The total cost loaded into the Baseline Schedule shall be equal to the total cost of the Opitz Contract.
- G. The Work shall be broken down in sufficient details to identify the phase, stage, feature, type of Work, deliverable, and specific location in which the Work occurs, including as applicable:
  - 1. Opitz Project milestones, including the anticipated issuance of any Notices to Proceed, the commencement of construction activities, the Opitz Project Service Commencement Date, and the Opitz Project Final Completion Date;
  - 2. Administrative activities such as key submittals, notifications, and review by the Department;
  - 3. Design activities showing all Work required to complete each stage of design and deliverable;
  - 4. Public involvement activities;
  - 5. Environmental and permitting activities;
  - 6. ROW acquisition activities showing all parcels;
  - 7. Utility relocations and adjustments, including all specific types and locations;
  - 8. Procurement, fabrication, and delivery activities of materials;
  - 9. Construction start-up activities such as mobilization, staging areas, surveying, clearing and grubbing, and construction access;
  - 10. Maintenance of Traffic (MOT) / traffic control activities;

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11. Construction activities broken down by phase stage, feature, type of work, and specific location, as applicable;
  12. ETTM System and Traffic Management System (TMS) infrastructure construction, procurement of equipment, device installation, systems commissioning, integrations, testing and in-service equipment burn period prior to Final Completion;
  13. Other necessary miscellaneous activities that consume time, for example, installation and removal of temporary systems or structures such as shoring, load tests, curing, demolition, testing and acceptance periods including all activities necessary for the complete testing and inspection of all Work as necessary to achieve proper activation and use of the Work, punch list, clean-up, and demobilization.
- H. Activity calendars shall be assigned using project-level calendars. Use of global calendars is not allowed and shall be cause for rejecting the Opitz Project Schedule. Activity codes shall be defined and assigned to the individual activities to allow for filtering, grouping, and sorting of activities by project phase, responsibility, area, phase, stage, feature, work type, Change Orders, Disadvantage Business Enterprise, and other major work category, as applicable. Activity codes shall be assigned using project-level activity codes. Use of global activity codes is not allowed and shall be cause for rejecting the Opitz Project Schedule.
- I. Constraints shall be used sparingly and on a case-by-case basis, as necessary. Constraints such as “Mandatory Start” or “Mandatory Finish” that violate network logic are not allowed and shall be cause for rejecting the Opitz Project Schedule. If the Opitz Contract includes a specified “start-no-earlier than” milestone, then the Opitz Contract milestone activity shall be constrained with a “Start On or After” constraint, with a date equal to the date specified in the Opitz Contract. If the Opitz Contract includes a specified Intermediate Milestone or Final Completion milestone, then the Opitz Contract intermediate completion milestone activity or Final Completion milestone activity shall be constrained with a “Finish On or Before” constraint, with a date equal to the date specified in the Opitz Contract.
- J. The Opitz Project Schedule software settings shall be defined according to the following Primavera (P6) settings:
1. Duration type for all activities shall be specified as “Fixed Duration & Units.”
  2. Percent Complete type for all activities shall be specified as “Physical % Complete”.
  3. The “Drive activity dates by default” checkbox in the Opitz Project Details Resources tab shall be marked.

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4. The “Link Budget and At Completion Cost for not started activities” checkbox in the Project Details Calculation tab shall be marked.
  5. The “Reset Remaining Cost and Units to Original” in the Project Details Calculation tab shall be specified.
  6. The “Subtract Actual from At Completion” under “When updating actual units or costs” in the Project Details Calculation tab shall be specified.
  7. The “Update units when costs changes on resource assignments” checkbox in the Project Details Calculation tab shall be marked.
  8. The “Link Actual and Actual This Period Units and Cost” checkbox in the Project Details Calculation tab shall be marked.
  9. Specify “Retained Logic” in the Scheduling Options dialog box for scheduling progressed activities.
  10. Specify “Longest Path” in the Scheduling Options dialog box for defining critical activities.
  11. Specify “Finish Float = Late Finish – Early Finish” in the Scheduling Options dialog box as the schedule calculation option to compute total float.
- K. The Opitz Project Schedule shall use “Stored Period Performance” with Financial Periods to commence on the first day of a month and end on the last day of a month.
- L. The Opitz Project Schedule shall be calculated using the precedence diagram network logic method and the CPM. The use of resource-leveling to determine sequence, order, or timing of the activities is not allowed and shall be cause for rejecting the Opitz Project Schedule.

### **1.4.4 Monthly Progress Reports and Project Schedule Updates**

- A. The Opitz Project Schedule will be current, reflecting actual progress at the time of submittal to the Department and will be kept current and submitted as a component of the Monthly Progress Report (further described below).
- B. The Concessionaire’s Monthly Progress Report shall include the following:
1. Document control certification sheet (verification that all field documentation is being maintained);
  2. Specific construction activities and deliverables occurring during the previous month (reporting period);

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3. Specific construction activities and deliverables planned for the next two reporting periods;
4. Progress narrative that describes, at a minimum, the overall progress for the preceding month, a critical path analysis, a discussion of problems encountered and proposed solutions thereof, any pending delay analysis or TIAs, and float. With each submission of the Opitz Project Schedule, the Concessionaire also shall include:
  - i. An electronic working copy of the Opitz Project Schedule (in XER file format). Each submission shall have a unique file name to indicate the type and order of submission. Each compact disk shall be labeled to indicate the type of submission, file name, and schedule data date;
  - ii. A narrative progress report of the Opitz Project Schedule that describes, at a minimum, the Concessionaire's plan of operation for meeting the interim milestones and the Opitz Final Completion Date, an evaluation of the critical path, a discussion of Opitz Project-specific issues encountered since the last submission as such issues relate to the schedule, proposed solutions thereof, work calendars, constraints, delays experienced, and the status of any submitted or pending Time Impact Analyses, float consumption, if any, and the reasons for such consumption; documentation of any logic changes, duration changes, resource changes or other relevant changes; The monthly progress narrative shall also include the following:
    - a. details of any aspects of the Work which may jeopardize the completion in accordance with the Agreement; and
    - b. measures being (or to be) adopted to overcome such aspects and a list of approvals needed to adopt such measures.
    - c. Time-scaled logic diagram indicating the critical path, early start and early finish dates, total float, sorted and grouped by the WBS;
    - d. Tabular schedule reports grouped by WBS and sorted by Start indicating for each WBS, activity, the activity number, description, original duration, remaining duration, physical percentage completion, cost percentage complete, original budgeted cost, cost this period, cost to date, and cost to complete;
5. A comparison of actual and planned progress including (1) illustrating schedule variance graphically by plotting and budgeted cost of work performed (BCWP) and the budgeted cost of work

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- scheduled (BCWS), and (2) reporting the scheduled performance index (SPI), defined as the ratio of BCWP divided by BCWS;
6. Identification of activities requiring Department and FHWA input or assistance, to the extent reasonably known;
  7. Action items/outstanding issues;
  8. A work breakdown structure Level 3, 4 or greater design and construction schedule;
  9. Opitz Project cost summary;
  10. Quality management reporting, as defined within the Concessionaire's QMSP, including quality inspection reports and daily inspection reports;
  11. A statement by the Concessionaire that the Baseline Schedule is the schedule being executed to perform the Work;
  12. Non-Conformance Reports and resolution reports;
  13. Right of way acquisition activities;
  14. Environmental permitting and compliance activities;
  15. Utility relocation activities;
  16. Disadvantage Business Enterprise (DBE), Small, Women-owned, and Minority-owned Business (SWaM), on the job (OJT) training quarterly usage;
  17. Safety activities;
  18. Digital photographs of the progress of the Opitz Project; and
  19. A summary of any outstanding potential issues, any Delay Events or Compensation Events and the measures adopted (or to be adopted) to overcome such issues.
- C. The Monthly Progress Report shall describe the work performed since the previous update as well as the Concessionaire's plan for accomplishing the remaining Work. It shall describe the current status of the Opitz Project and any deviations from scheduled performance as well as the causes and effects of the deviations. It shall also describe any progress deficiencies or schedule slippages as well as any actions taken or proposed to avoid or mitigate the progress deficiencies or schedule slippages.

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- D. Monthly Progress Reports shall have a reporting period ending on the last day of each calendar month and shall be submitted on or before the 25th of the month following the reporting period.
- E. The Department will notify the Concessionaire of any comments within five days of receipt of an acceptable submission of a Monthly Progress Report. If the Department requests that the Monthly Progress Report needs a specific revision, the Concessionaire shall make the requested changes within five (5) days after receiving the Department's request or such other time frame as mutually agreed between the parties. If the Concessionaire objects to the Department's request for revisions, the Concessionaire may refer the matter to dispute resolution pursuant to the Agreement.
- F. Opitz Project Schedule Updates:
  - 1. The Concessionaire shall update the Opitz Project Schedule no less than monthly to reflect actual progress to date and to forecast progress going forward (the "Opitz Project Schedule Updates"). The Opitz Project Schedule Update shall be submitted as an attachment to the Monthly Progress Report or as required by the Agreement. The Data Date used to calculate the schedule shall be the first day following the last day of the reporting period. Opitz Project Schedule Updates shall comply in all respects with the schedule requirements set forth in this section.
  - 2. The Approved Initial Opitz Baseline Schedule will be the basis for Opitz Project Schedule Updates until such time as the Baseline Schedule is approved by the Department. Thereafter the Baseline Schedule shall be the basis for Opitz Project Schedule Updates.
  - 3. Opitz Project Schedule Updates shall depict activities that have started, are on-going, or completed as of the new data date; show actual start dates for activities that have started; and actual finish dates for completed activities.
  - 4. Opitz Project Schedule Updates shall depict percent complete for on-going activities. Activity percent complete for work-in-place shall be based on the amount of work completed relative to the total amount of work planned for the activity.
  - 5. Opitz Project Schedule Updates shall depict remaining duration for on-going activities. Remaining duration for unfinished activities shall be based on the amount of time required to complete the remaining work as of the new data date.
  - 6. Activity relationships for the remaining activities shall be modified as necessary to correct out-of-sequence progress for on-going

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activities or to reflect the Concessionaire's current plan for completing the remaining Work.

7. All changes to the Opitz Project Schedule shall be documented in detail in the Monthly Progress Report. Such changes include but are not limited to: additional, revised or deleted activities, durations, calendar assignments, or logic ties.
8. The Opitz Project Schedule Update submitted with the last Monthly Progress Report will be identified by the Concessionaire as the As-Built Schedule.

### **1.4.5 Weekly Reporting**

During the performance of the Work, the Concessionaire shall provide a weekly report, which shall include the following:

- A. Specific design and construction schedule activities, including locations for the week concluding and the upcoming week;
- B. Rolling 3-week forward-looking inspection notice, which shall include the fabrication schedule and planned construction activities; and
- C. MOT weekly update regarding any scheduled lane closures and identification of work areas for the ensuing two weeks.

### **1.4.6 Revisions To Baseline Schedule**

- A. If the Department believes in its reasonable discretion that the Baseline Schedule needs a specific revision either in logic, activity duration, WBS, manpower, or cost, the Department will request the Concessionaire in writing to make such revisions. The Concessionaire shall give due consideration to the Department's suggested revision and, upon consultation with the Department, if determined appropriate, make such revisions within ten days after receiving the Department's request or such other timeframe as mutually agreed between the parties. Once approved, this update shall then become the Baseline Schedule. At no time shall the Concessionaire continue to reflect an item of non-concurrence from the Department in the updates to the Baseline Schedule; provided that if an item of non-concurrence has been referred to dispute resolution, then the Concessionaire shall continue to perform its Work in accordance with the then current Baseline Schedule in effect, until such time as the dispute is resolved and an updated Baseline Schedule is agreed to. If the Concessionaire objects to the Department's request for revisions, the Concessionaire may refer the matter to dispute resolution pursuant to the Agreement.
- B. In the event of a Delay Event for which the Department grants relief from the Opitz Final Completion Date to the Concessionaire in accordance with the



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terms of the Agreement, the Baseline Schedule will be revised to reflect the relief granted and submitted to the Department for approval in accordance with the Agreement.

### **1.4.7 Project Recovery Schedule**

- A. Pursuant to the Agreement, whenever the Monthly Progress Report shows either of the Service Commencement Date or the Opitz Final Completion Date has 30 days of negative float, the Concessionaire shall submit a Opitz Project Recovery Schedule to the Department for approval. Opitz Project Recovery Schedule submittals shall include a list of all activities changed, added or deleted along with all logic changes, and an accompanying narrative explaining the nature of the changes.
- B. Once a Opitz Project Recovery Schedule is reviewed and approved by the Department, it shall become the Baseline Schedule and be used as the basis for subsequent Monthly Progress Reports. The Concessionaire shall archive all approved Opitz Project Schedules.
- C. Submission of a Project Recovery Schedule does not waive any rights under the Agreement.

### **1.4.8 Time Impact Analysis (TIA)**

- A. Time Impact Analysis (TIA) for Proposed Extensions of Time (Prospective) (Also referred to as Schedule Impact Analysis or SIA).

In conjunction with the submission of a proposed change, the Concessionaire shall submit any proposed schedule impact as a result of impacts it claims to the Critical Path, if any, that the proposed change will create, in the TIA format, as prescribed in AACE Recommended Practice 52R-06 and submitted as outlined herein.

The following shall apply if a TIA is required by the Agreement:

1. The TIA shall be based on the date on which the alleged Delay Event is claimed to have occurred, or, in the event of a proposed change, the date on which the implementation of such change is proposed to be commenced.
2. The TIA shall show the current status of the Work using the current Baseline Schedule. The time computation of all affected activities shall be detailed in the TIA along with a demonstration of steps used to mitigate impacts. Cost of mitigation measures shall be fully documented within the TIA, if applicable.
3. Each TIA shall include a Fragmentary Network (“fragnet”) demonstrating how the Concessionaire proposes to incorporate the impact into the Baseline Schedule. A fragnet is defined as the sequence of new activities

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and/or activity revisions, logic relationships, and resource changes that are proposed to be added to the existing schedule to demonstrate the influence of impacts to the schedule. The Concessionaire understands it has a duty to mitigate any and all alleged delay events, whether prospective or retrospective, and such analysis will take advantage of the factual events leading to the alleged delay impacts; take into consideration all possible mitigation methods, techniques, and available resources, including but not limited to logic changes, resource allocations, activity durations, and consideration of calendar changes. The fragnet shall identify the predecessors to the new activities and demonstrate the impacts to successor activities. The Concessionaire shall insert the fragnet into the Baseline Schedule, run the schedule calculations, and submit the impacted schedule in accordance with this section. The Concessionaire shall include a narrative report describing the effects of new activities and relationships to milestones and the Opitz Final Completion Date with each TIA.

4. Except as provided in the Agreement, the Concessionaire shall not be entitled to any extension of the Term automatically as the result of an activity delay. The Concessionaire recognizes that certain events will not affect the existing critical activities or cause non-critical activities to become critical, thereby not causing any effect on the Opitz Final Completion Date.
5. Two copies of each TIA report together with an electronic file (in XER file format) of the Opitz Project Schedule impact analysis shall be submitted to the Department in accordance with the Agreement.
6. Upon approval, a copy of the TIA signed by the Department will be returned to the Concessionaire and incorporated into the next update to the Baseline Schedule. The TIA will be reviewed by the Department in accordance with ACE International Recommended Practice No. 52R-06 "Time Impact Analysis As Applied in Construction".
7. A TIA will be approved or disapproved by the Department in its reasonable discretion within 21 days following receipt thereof, unless subsequent meetings or negotiations are necessary. The approved TIA related to a Change shall be incorporated into, and attached to the applicable Change Order. A disapproved TIA will be returned to the Concessionaire with appropriate comments for revisions or the Department's basis for denying the alleged Delay Event. If no agreement is reached, either party may refer the matter to dispute resolution pursuant to the Agreement.

### **1.4.9 Delay Event Claim Analysis (Non-Prospective)**

In the event of a claimed delay event that the Concessionaire alleges has impacted the Critical Path of the Opitz Project, the claim analysis shall use a retrospective observational analysis format as prescribed by the ACE 29R-

03 Recommended Practice for Forensic Schedule Analysis. Such analysis will take advantage of the factual events leading to the alleged delay impacts; take into consideration all possible mitigation methods, techniques, and available resources; and minimize any prospective analysis or conclusions. The Department in its reasonable discretion will approve or reject such claim within 21 days following receipt thereof, unless subsequent meetings or negotiations are necessary. A rejected claim will be returned to the Concessionaire with appropriate comments for revisions or the Department's basis for denying the alleged Delay Event. If no agreement is reached, either party may refer the matter to dispute resolution pursuant to the Agreement.

## **1.5 Standards and Specifications**

### **1.5.1 General Requirements**

- A. The Work shall conform to the Standards and Specifications set forth in Attachment 1.5a. Where the Concessionaire's design requires design methods or construction procedures not covered by the attached list of Standards and Specifications, the Concessionaire shall obtain the Department's approval before using such methods or procedures, not to be unreasonably withheld or delayed.
- B. All Work shall comply with the Agreement and these Technical Requirements, including all applicable Attachments. The Concessionaire may submit a written request for the use of non-Department standards only if specific Department standards do not exist. The Concessionaire is responsible for demonstrating that any non-Department standard that is proposed conforms to applicable AASHTO Standards.
- C. When a provision of "Division I – General Provisions" of the Road and Bridge Specifications is applicable, the VDOT "Division I Amendments to the Standard Specifications" shall apply.

### **1.5.2 Design Criteria**

- A. The Concessionaire shall derive the functional classifications, design speeds, special load requirements, design criteria, and other applicable design issues using the Technical Requirements and the Standards and Specifications set forth in Attachment 1.5a.
- B. The Design Criteria established for the Opitz Project are provided in Attachment 1.5b. The Concessionaire shall comply with the functional classifications, design speeds, and other design criteria specified in Attachment 1.5b.
- C. The Concessionaire is responsible for obtaining any Design Exceptions and/or Design Waivers required to construct and operate the Project.

### **1.5.3 Interpretation of Standards and Specifications**

- A. Standards for the Work and order of precedence are as set forth below. The Road and Bridge Standards, the Road and Bridge Specifications including Supplemental Specifications, Special Provisions, Special Provision Copied Notes, and supplementary reference documents listed in Attachment 1.5a are all part of these Technical Requirements. A requirement occurring in one shall be as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete and compliant Opitz Project. In case of a discrepancy, the following order of priority will apply, with the highest governing item appearing first and the least governing item appearing last:
1. These Technical Requirements and Attachments
  2. Special Provision Copied Notes in Attachment 1.5a, Section B
  3. Special Provisions in Attachment 1.5a, Section B
  4. Supplemental Specifications in Attachment 1.5a, Section B
  5. Standards and Specifications listed in Attachment 1.5a, Section A
  6. Reference Documents listed in Attachment 1.5a, Section C
  7. Standard Drawings (calculated dimensions, unless obviously incorrect, will govern over scaled dimensions) in Attachment 1.5a, Section A
- B. Each party shall promptly notify the other party if it discovers an obvious and plain error or omission in the text of the Technical Requirements attributable to a word processing, administrative or similar oversight. The parties will then coordinate to make such corrections as are necessary to restore the intent of the language.
- C. The standards and specifications, special provisions, and reference guides, including all supplements, errata, revisions, and interims, applicable for the Construction Period shall be the version of those documents as listed in Attachment 1.5a or those in effect as of the final issuance date of the RFP for the Opitz Construction Contract, including all RFP revisions and addenda. It is the responsibility of the Concessionaire to ensure that all relevant standards and specifications have been applied.

## **1.6 Right of Way**

- A. Right-of-way costs will be handled in accordance with the Agreement.
- B. The Concessionaire shall provide right-of-way (ROW) acquisition services for the Opitz Project, as required by the Agreement. ROW acquisition services

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shall include the preparation of ROW plans or plats in accordance with VDOT Location and Design policies and procedures, title examinations, appraisal, appraisal review, negotiations, relocation assistance and advisory services, closings, and legal services. The Concessionaire will coordinate and determine required right-of-way for Utility Relocations and coordinate preparation of all required easement agreements, right-of-way plans and documentation for acquisition and vacation of existing property rights. All appraisers and acquisition firms shall be selected from the Department's pre-approved lists. The Department will retain authority for approving just compensation, relocation benefits, and settlements. The Department must issue a Notice to Commence Right of Way Acquisition to the Concessionaire, before any offers are made to acquire property. The Department must also issue a Notice to Commence Construction to the Concessionaire once the property has been acquired prior to commencing construction on the property. The required right-of-way plans and documentation will be reviewed and approved by the Department and, if necessary, FHWA.

- C. The Concessionaire shall adhere to the requirements set forth in the Right of Way Manual of Instructions, 3rd Edition, FHWA Update January 1, 2016, Chapter 10 (as revised through October 13, 2017) .
- D. The Concessionaire shall be responsible for the Commonwealth Transportation Board (CTB) approval of any change to Limited Access, including but not limited to, the development of supporting documentation and schedule impacts. The Department will be responsible for making the request to the CTB. The Concessionaire shall also be responsible for replacement of Limited Access fence impacted by the Project and where necessary installing new fence for new Limited Access lines.
- E. The Concessionaire shall carry out its responsibilities in accordance with the following requirements:
  - 1. The Concessionaire shall acquire property in accordance with all applicable federal and state laws and regulations, including but not limited to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (the "Uniform Act), and titles 25.1 and 33.2 of the 1950 Code of Virginia, as amended. The acquisition of property shall follow the guidelines as established by the Department and other state and federal guidelines that are required and VDOT's Right of Way Manual of Instructions.
  - 2. The Concessionaire shall submit a project-specific ROW Acquisition Plan, as described in Attachment 1.3, for the Department's review and approval. In the event the Department fails to respond in 21 days, such failure by the Department shall not be deemed approval of the ROW Acquisition Plan.

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3. The Concessionaire shall submit, as part of the ROW Acquisition Plan, procedures for handling ROW acquisitions and relocations to the Department for review and approval before beginning ROW activities. These procedures must show the Concessionaire's methods, including the appropriate steps and workflow required for title examinations, appraisals, and review of appraisals, negotiations, acquisition, and relocation. The Department shall have a period of twenty-one (21) days to review and either approve or refuse said documents, submittals including its review and approval of just compensation, relocation benefits, and administrative settlements.
4. The Concessionaire shall have access to, and use the Department's ROW and Utilities Management System (RUMS) to manage and track the acquisition process, including easements. All entries made into RUMS shall be made in a timely manner to accurately reflect current project status. The Department's standard forms and documents, as found in RUMS, will be used to the extent possible. Any changes to the forms and documents must be approved by the Department. The Department will provide training and technical assistance to the Concessionaire in the use of RUMS.
5. The Concessionaire shall provide a current title examination (no older than 60 days) for each parcel at the time of the initial offer to the landowner. Each title examination report shall be prepared by a Department-approved title company, in accordance with VDOT's Right of Way Manual of Instructions, and shall include title insurance commitment. Should the Concessionaire select a law firm to certify title examinations, the certifying attorney shall provide evidence of professional liability insurance. The Department reserves the right to determine if the professional liability insurance coverage is sufficient. If any title examination report has an effective date that is older than 60 days, an update is required before making an initial offer to the landowner.
6. The Concessionaire shall prepare appraisals in accordance with VDOT's Right of Way Manual of Instructions.
7. The Concessionaire shall provide appraisal reviews complying with technical review guidelines of the Department's appraisal guidelines. The reviewer shall be on the Department's approved fee appraiser list. The Department will review the Concessionaire's appraisal waiver, appraisal, and appraisal review for each parcel, and shall have the decision of final approval of each appraisal and just compensation offer.
8. The Department shall make direct payments to property owners for negotiated settlements and relocation benefits and make deposits with the appropriate court for condemnation cases. Payment

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documentation is to be prepared and submitted with the Acquisition Report (Form RW-24). The Department will process vouchers and issue State Warrants or checks for all payments and send to the Concessionaire who will be responsible for disbursement to the property owner and providing indefeasible title to the Department. The Concessionaire shall be responsible for ensuring that sufficient funds to cover all direct payments are provided to the Department in advance of in advance of submitting the payment documentation and Acquisition Report for each property acquisition.

9. The Concessionaire shall prepare, obtain execution of, and record documents conveying title to such properties to the Commonwealth of Virginia and deliver all executed and recorded general warranty deeds to the Department. For all property purchased in conjunction with the Opitz Project, title will be acquired in fee simple, except that, with the Department's prior written approval, permanent easements may be acquired in lieu of fee simple interest for the construction, maintenance, and use of items such as noise barriers, retaining walls, storm drainage structures, and earthen slopes. All property shall be conveyed to "Commonwealth of Virginia, Grantee" by a Department-approved general warranty deed, free and clear of all liens and encumbrances except encumbrances expressly permitted in writing by the Department in advance. All easements, except for private utility company easements, shall be acquired in the name of "Commonwealth of Virginia, Grantee." Private utility company easements will be acquired in the name of each utility company unless they are acquired by eminent domain in which case they will be acquired in the name of the Commonwealth of Virginia.
10. The Concessionaire shall use its best efforts to settle claims with landowners amicably. The Department shall make the ultimate determination in each case as to whether settlement is appropriate or whether the filing of a condemnation action is necessary. The Concessionaire shall not request the filing of a certificate until the landowner has been given a minimum of 30 days to consider the offer or terminate the negotiations. If, despite the Concessionaire's best efforts, it is unable to reach a settlement with any landowners, as a last resort the Department will handle any necessary condemnation proceedings subject to the following. Prior to the Department filing a condemnation proceeding, the Concessionaire shall prepare or cause to be prepared all necessary paperwork and supporting documentation required for the proceeding and it shall deliver that documentation to the Department, including the notice of filing certificate. The Department will review the submitted documentation for compliance with the Department's rules and regulations, and when approved, will then file the condemnation proceeding(s) and

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handle such proceeding(s) in accordance with VDOT's Right of Way Manual of Instructions.

11. The Office of Attorney General, Commonwealth of Virginia, shall act as the Department's legal counsel and will assign cases to fee counsel and review and approve their billing. Support and testimony for condemnations will be provided by the Concessionaire for a period of 12 months after the final condemnation certificate of take/deposit is recorded.
  12. The Concessionaire shall be responsible for all contacts with landowners for ROW or construction items, prior to initiation of condemnation proceedings by the Department. The Concessionaire will provide documentation of all contact with property owners (including participants and organizations), a summary of discussions, agreed upon items, follow-up activities, and copies of items distributed, including but not limited to appropriate and timely documentation in the RUMS.
  13. The Concessionaire shall use reasonable care in determining whether there is reason to believe that property to be acquired for rights of way may contain concealed or hidden wastes or other materials or hazards requiring remedial action or treatment. When there is reason to believe that such materials may be present, the Concessionaire shall notify the Department within three (3) days. The Concessionaire shall not proceed with acquiring such property until they receive written notification from the Department.
  14. During the acquisition process and for a period of three years after the later of Final Completion or the Commonwealth has indefeasible title to the property, all Opitz Project documents and records not previously delivered to the Department, including design and engineering costs, construction costs, costs of acquisition of ROW, and all documents and records necessary to determine compliance with the laws relating to ROW Acquisition and the costs of relocation of Utilities shall be maintained and made available by Concessionaire to the Department and FHWA for inspection or audit.
- F. The Concessionaire shall be responsible, at its sole expense, for demolishing and disposing of all existing buildings from the ROW and permanent and temporary easements. All such work shall comply with the Standard of Care and these Technical Requirements.
- G. The Concessionaire will exercise the Standard of Care to minimize impacts and damages to property, businesses, and residences, including noise, vibrations, temporary traffic patterns, and clearing of tree buffers. The Concessionaire will address public, business, and government comments in coordination with the Department within 21 days of receipt; however, the



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responsibility to coordinate and address the comments will be the Concessionaire's. Where requested, the Concessionaire will provide stakeout and marking of existing property lines and impacts.

### 1.7 Utilities

#### 1.7.1 General Requirements

- A. All efforts and costs necessary for all Utility (including the Concessionaire and Department's communications and power cables and conduits) designations, Utility locates (test holes), conflict evaluations, cost responsibility determination, Utility Relocation designs, Utility Relocations and adjustments, Utility reimbursements, determination of existing Utility easements and the inclusion of such easements on plans, replacement land rights acquisition and Utility coordination shall be included in the Concessionaire's cost. Costs for any Utility (including the Concessionaire and Department's communications and power cables and conduits) betterment(s) shall not be included in the Concessionaire's cost but shall be reimbursed directly to the Concessionaire from the Utility Owner through agreement with the requesting Utility Owner.
- B. This is a Department sanctioned project and the Concessionaire shall enjoy all of the benefits and responsibilities of the Department as it pertains to prior rights, statutory rights, or any other right relating to Utility Relocations, subject to the Department's ability to assign those rights.
- C. The Concessionaire is responsible for identifying the owner, type, size, height and number of overhead cables, number of underground cable/conduits, pipes, services, and horizontal and vertical (depth) location of underground utilities to include service connections and laterals with the utility owners.
- D. Prior to Construction Notice to Proceed, the Concessionaire shall coordinate with the Department, its approach to utility coordination for the Opitz Project, including the schedule and proposed activities of the Concessionaire, the anticipated Utility Owners that may be impacted, and the Department and Concessionaire (as owners of other utilities located within the Opitz Project limits) to the level of detail and extent to which such information is known at the time. Such information will be updated from time to time as additional information becomes available during later stages of design, and includes, but is not limited to, assertions of the following:
  - 1. Durations and schedules for planned Utility Relocations have been coordinated with the Utility Owners.
  - 2. Durations for the Utility Relocations by Utility Owners are adequate for the type and scope of services being provided.
  - 3. The use of Float for Utility Relocation activities is in accordance with the Technical Requirements.

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- E. The Concessionaire shall be responsible for all Utility (including the Concessionaire and Department's communications and power cables and conduits) designations, Utility locates (test holes), conflict evaluations, cost responsibility determinations, Utility Relocation designs, Utility Relocations and adjustments, Utility reimbursement, replacement land rights acquisition, Utility coordination, determination of existing Utility easements and the inclusion of such easements on plans, replacement land rights acquisition, and coordination of Utility betterments required for the Opitz Project. The Concessionaire shall be responsible for causing all necessary Utility (including the Concessionaire and Department's communications and power cables and conduits) Relocations, adjustments, and betterments to occur in accordance with the accepted Baseline Schedule.
- F. The Concessionaire shall be responsible for new Utility service connections, including full coordination with the Utility Owners, acquisition of easements and payment of connection fees. The Concessionaire shall also be responsible for paying the monthly Utility bills associated with new service panels, up to and including the Opitz Final Completion Date. Service shall be transferred to either Department or Concessionaire, as applicable, upon the Opitz Final Completion Date.
- G. The Concessionaire shall be responsible for coordinating the Opitz Project construction with all utilities that may be affected (including the Department's communications and power cables and conduits). The Concessionaire shall be responsible for coordinating the work of its Contractors and the various utilities. The resolution of any conflicts between utilities and the construction of the Opitz Project shall be the responsibility of the Concessionaire. No additional compensation or time will be granted for any delays, inconveniences, or damage sustained by the Concessionaire or its subcontractors due to interference from utilities or the operation of relocating utilities or betterments.
- H. If the Concessionaire desires the temporary or permanent adjustment of utilities (including the Department's communications and power cables and conduits) for its own benefit, it shall conduct all negotiations with the Utility Owners and pay all costs in connection with the adjustment.
- I. The Concessionaire shall initiate early coordination with all Utilities (including the Concessionaire and Department's communications and power cables and conduits) located within the Opitz Project limits. The Concessionaire shall identify and acquire any replacement utility easements or required right of way needs of all utilities necessary for relocation due to conflicts with the Opitz Project. The Concessionaire shall coordinate with the Utility Owners to obtain temporary construction easements or agreements.
- J. The Concessionaire shall provide all Utility Owners with roadway/bridge design plans as soon as the plans have reached a level of completeness adequate to allow them to fully understand the Opitz Project impacts. The

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Utility Owners will use the Concessionaire's design plan for preparing relocation plans and estimates. If a party other than the Utility Owner prepares relocation plans, there shall be a concurrence box on the plans where the Utility signs and accepts the relocation plans as shown. The Concessionaire shall be responsible for design and construction for the relocation of any/all communications and power cables and conduits, lightings, ITS devices, generators and service panels owned by the Department as required for the Opitz Project.

- K. The Concessionaire shall coordinate and conduct a preliminary Utility review meeting with all affected Utility Owners to assess and explain the impact of the Opitz Project. The Department's Project Manager and Regional Utilities Manager (or designee) shall be included in this meeting.
- L. The Concessionaire shall schedule and conduct a Utility field inspection for each Opitz Project segment in accordance with the procedures set forth in the VDOT Utility Manual. The Concessionaire will provide meeting minutes for each Utility field inspection.
- M. The Concessionaire shall verify the prior rights of each Utility Owner's facilities if claimed by a Utility Owner. If there is a dispute over prior rights with a Utility, the Concessionaire shall be responsible for resolving the dispute. The Concessionaire should prepare and submit to the Department a preliminary Utility Status Report that includes a listing of all known Utilities located within the Opitz Project limits and a conflict evaluation and cost responsibility determination for each Utility. This report shall include copies of easements, plans, or other supporting documentation that substantiates any compensable rights of the Utility Owner. In addition, a written Utility status update shall be provided monthly to the Department to document the status of coordination.
- N. The Concessionaire shall obtain the following from each Utility that is located within the Opitz Project limits:
  - 1. relocation plans including letter of "no cost" where the Utility does not have a compensable right;
  - 2. utility agreements including cost estimate and relocation plans where the Utility has a compensable right;
  - 3. utility easement forms to be executed by the landowner, if necessary;
  - 4. letters of "no conflict" where the utility's facilities will not be impacted by the Opitz Project; and
  - 5. prepare bridge attachment agreements between the Department and the Utility Owner, if necessary.

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- O. The Concessionaire will use a two-party agreement, similar to the Master Utility Agreement (MUA) utilized by the Department (provided for in the Department's Utility Manual) to establish the general framework for addressing the Utility issues within the Opitz Project affecting a Utility Owner. The two-party agreement between the Concessionaire and the Utility company will set forth the terms and conditions under which the Utility work will be performed, and will adhere to the Department's Utility Manual. Included in the two party agreement, similar to the MUA utilized by the Department (provided for in the Department's Utility Manual), will be the statement (with reference to the Agreement) that this work is being performed as a Department project. Preparing all agreements relative to the Utility Relocation is to be between the Concessionaire and the Utility. This includes the agreements for authorization to relocate facilities as well as any reimbursement terms/agreements.
- P. The Concessionaire shall review all relocation plans to ensure that relocations comply with VDOT Utilities Manual of Instruction, the Utility Relocation Policies and Procedures and VDOT's Land Use Permit Regulations. The Concessionaire shall also ensure that there are no conflicts with the proposed roadway improvements, and ensure that there are no conflicts between each of the Utility Owner's relocation plans. The Concessionaire shall prepare and submit to the Department all relocation plans. The Concessionaire is expected to assemble the information included in the relocation plans in a final and complete format and in such a manner that the Department may approve the submittals with minimal review. The Concessionaire shall meet with the Department's Regional Utilities Manager to gain a full understanding of what is required with each submittal. The Concessionaire shall receive written approvals from the Department prior to authorizing Utilities to commence relocation construction. The Utility Owners shall not begin their relocation work until authorized by the Concessionaire. Each relocation plan submitted must be accompanied by a certification from the Concessionaire stating that the proposed relocation will not conflict with the proposed roadway improvement and will not conflict with another Utility Owner's relocation plan.
- Q. The Department will provide reasonable assistance in negotiations with Utility Owners and will provide available Department documents concerning prior rights in a timely manner as requested by the Concessionaire, but the Department shall incur no liability in providing such reasonable assistance and shall not be required to initiate or participate in any legal action other than as a witness or to produce documents.
- R. The Concessionaire shall make all reasonable efforts to design the Opitz Project to avoid conflicts with Utilities, and minimize impacts where conflicts cannot be avoided. The Concessionaire shall be responsible for ensuring that Utility service interruptions are minimized.

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- S. The Concessionaire shall ensure the Utility Owners submits as-built drawings and Land Use Permit applications upon completion of its relocation and (or) adjustments. The Department will issue an as-built permit to the Utility Owners within 21 days of receipt of as-built drawings and Land Use Permit applications.
- T. The Concessionaire shall be responsible for ensuring the appropriate abandonment or removal of all abandoned Utilities (including the Concessionaire and Department's communications and power cables and conduits) within the Opitz Project ROW.
- U. At the time that the Concessionaire notifies the Department that the Concessionaire deems the Opitz Project to have reached Final Completion, the Concessionaire shall certify to the Department that all Utilities have been identified and conflicts have been resolved and that those Utilities with compensable rights or other claims related to relocation or coordination with the Opitz Project have been relocated and their claims and compensable rights satisfied or will be satisfied by the Concessionaire.
- V. The Concessionaire shall accurately show the final location of all Utilities (including the Concessionaire and Department's communications and power cables and conduits) on the As-Built Plans in accordance with Section 3.18 of these Technical Requirements.
- W. The Concessionaire shall be responsible for ensuring that each utility owner that is subject to the requirements of Section 313 of Title 23 United States Code, MAP-21 S.1518 Buy America provides written certification to the Concessionaire that they are in compliance with this requirement. If the Concessionaire or its subcontractors are installing the utility relocations then the Concessionaire shall provide the certification pre-installation, along with any other Contractor installed items for the Project; if the utility owner/company is installing the utility relocation then the certification shall be provided post-installation. Compliance documentation must be furnished for the Concessionaire to be reimbursed for the Work. For any utility betterments where Project funds are being applied, the Work must meet the Buy America requirements.

### **1.7.2 Concessionaire's Responsibility for Utility Property and Services**

- A. At points where the Concessionaire's operations are on or adjacent to the properties of any Utility, including railroads, (including the Department's communications and power cables and conduits), and damage to which might result in expense, loss, or inconvenience, Work shall not commence until arrangements necessary for the protection thereof have been completed. The Concessionaire shall cooperate with owners of Utilities so that:
  - 1. removal and adjustment operations may progress in a timely, responsible, and reasonable manner,

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2. duplication of adjustment work may be reduced to a minimum, and services rendered by those parties will not be unnecessarily interrupted.
- B. If any Utility (including the Concessionaire's and the Department's communications and power cables and conduits) service is interrupted as a result of accidental breakage or of being exposed or unsupported, the Concessionaire shall promptly notify the proper authority and shall cooperate fully with the authority in the restoration of service. If Utility service is interrupted, repair work shall be continuous until service is restored.
  - C. The Department's TMS fiber optic communication lines and associated electrical distribution lines are located throughout the Opitz Project limits in conjunction with other public utilities. These TMS utilities will not be marked by Miss Utility. The Concessionaire shall exercise care to prevent damage or disruption to the TMS. However, in the event the Concessionaire and/or its contractor(s) damage the TMS due to his operations, the Concessionaire shall immediately notify the McConnell Public Safety and Transportation Operations Center (PSTOC) as well as the Department Project Manager and cease all construction operations until repairs are completed and the system is fully operational. Except as set forth in the Agreement, the Concessionaire will be responsible for all cost necessary for repair and any time impact to the Opitz Project.
  - D. The Concessionaire shall comply with all requirements of the Virginia Underground Utility Damage Prevention Act (the Miss Utility law).
  - E. The Department's facilities including roadway lighting cable and conduit, traffic management systems cable and conduit as well as Department owned fiber optic lines are not marked by the Miss Utility. Therefore, the Concessionaire may either elect to use, at its own discretion and cost, the Department on-call consultant or alternatively use a different, competent contractor/consultant familiar with Department owned utilities. It is the Concessionaire's sole responsibility to have these utilities marked, maintain the markings throughout the life of the Opitz Project as well as assume physical and financial arrangements to have these utilities marked/re-marked. The Concessionaire will be responsible for all cost necessary for these utility markings.
  - F. The Concessionaire shall determine whether other Utilities are present in addition to those identified by the VDOT Notification Center Report and shall afford those additional Utilities an equivalent notification protocol.

**1.7.3 Restoration of Work Performed by Others**

- A. The Department may construct or reconstruct any Utilities within the limits of the Opitz Project or grant a permit for the same at any time.

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- B. Subject to any relief to which the Concessionaire may be entitled to in the Agreement, when authorized by the Department, the Concessionaire shall allow any person, firm, or corporation to make an opening in the highway within the limits of the Opitz Project upon presentation of a duly executed permit from the Department or any municipality for sections within its corporate limits.

### **1.8 Work Restrictions**

#### **1.8.1 General Requirements**

- A. The Concessionaire shall be responsible for a Transportation Management Plan (TMP) for the Opitz Project (the “Opitz Project TMP”) in accordance with Section 1.9.3 of these Technical Requirements.
- B. The Concessionaire’s traffic control for the Work shall be consistent with the Agreement, including these Technical Requirements.
- C. The Concessionaire is responsible for the safety of the work zone. The Concessionaire shall appoint a single point of contact to address traffic control requirements for the work zone in accordance with Section 1.9.1.
- D. The Concessionaire shall conduct all work necessary to provide safe and efficient traffic operations during construction, including provisions for the movement of people, goods, and services through and around the Opitz Project while minimizing impacts to pedestrians, bicyclists, local residents, businesses, and commuters. In no event shall sidewalks or shared use paths be closed unless first approved by the Department, considering planned and designed alternative facilities by the Concessionaire.
- E. The Concessionaire shall coordinate construction and traffic control activities that impact transit services with the impacted transit agencies.

#### **1.8.2 Work Hours**

- A. The Concessionaire is advised that its general operations may proceed seven days a week, 24 hours a day, except as may be modified herein.
- B. This is contingent upon the Concessionaire obtaining a variance or waiver of all applicable noise restrictions, as stated in the Agreement.

#### **1.8.3 Temporary Roadway Closures**

- A. Anticipated and proposed temporary lane and/or shoulder closures shall be reviewed and approved by the Concessionaire (for the Express Lanes) or the Department (for the General Purpose lanes and other state roadways). The Concessionaire shall restore all lanes of traffic per the times specified in this section. Restoration of traffic shall mean the completion of all construction

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work, the removal of all temporary traffic control devices, signs, workers, materials, and equipment from the roadway. To facilitate construction and minimize inconvenience to the public, the Concessionaire is advised of the closure limitations listed in the Technical Requirements. The Department reserves the right to modify the closure limitations in the Technical Requirements, and any modification shall be handled under Section 1.8.6 – Allowance for Additional Lane Closure Restriction by the Department and/or Concessionaire Request for Additional Lane Closures.

B. Allowable Lane Closure Hours

INTERSTATE 395 & INTERSTATE 95					
WEEKDAY		Northbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	14 <sup>th</sup> St. Bridge to Springfield Interchange	10:00AM to 3:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 2	Springfield Interchange to Rt.123	9:30AM to 3:30PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 3	Rt.123 to Prince William / Stafford County line	9:30AM to 3:30PM	10:00PM to 4:30AM	11:00PM to 4:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 4	Prince William / Stafford County line to Rt.3 Exit 130	9:30AM to 3:30PM	10:00PM to 4:30AM	n/a	12:00AM to 4:00AM
		9:00PM to 4:30AM			
Segment 5	Rt.3 Exit 130 to Caroline / Hanover County line	9:00AM to 3:30PM	10:00PM to 4:30AM	n/a	12:00AM to 4:00AM
		9:00PM to 5:30AM			
All lanes open at 12:00 noon on Friday					
WEEKDAY		Southbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	14 <sup>th</sup> St. Bridge to Springfield Interchange	10:00AM to 2:30PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 5:00AM			
Segment 2	Springfield Interchange to Rt.123	9:00AM to 2:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 5:00AM			
Segment 3	Rt.123 to Prince William / Stafford County line	9:00AM to 2:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 6:00AM			
Segment 4	Prince William / Stafford County line to Rt.3 Exit 130	9:00AM to 2:00PM	10:00PM to 5:30AM	n/a	12:00AM to 4:00AM
		9:30PM to 6:00AM			
Segment 5	Rt.3 Exit 130 to Caroline / Hanover County line	9:00AM to 3:00PM	10:00PM to 5:30AM	n/a	12:00AM to 4:00AM
		9:30PM to 6:00AM			
All lanes open at 11:00am on Friday					



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<b>INTERSTATE 395 &amp; INTERSTATE 95</b>			
<b>WEEKEND</b>	<b>Northbound/Southbound*</b>		
	<b>Single-Lane Closures or Shoulder</b>	<b>Multiple-Lane Closures</b>	<b>Complete Road Closure</b>
Friday to Saturday	10:00PM to 7:00AM	11:00PM to 6:00AM	12:00AM to 5:00AM
Saturday to Sunday	10:00PM to 7:00AM	11:00PM to 6:00AM	12:00AM to 5:00AM
Sunday to Monday	10:00PM to 5:00AM	11:00PM to 4:00AM	12:00AM to 4:00AM

\* For special operations, depending on time of year, additional hours may be allowed with proper ADA/ROD approval.

<b>REVERSIBLE LANES (HOV &amp; EXPRESS LANES)*</b>		
	<b>Single-Lane Closures or Shoulder</b>	<b>Complete Road Closure**</b>
<b>WEEKDAY</b>	9:30PM (Sunday to Thursday) to 4:00AM (Monday to Friday)	11:00PM to 4:00AM
<b>WEEKEND</b>	11:00PM (Friday to Saturday) to 9:00AM (Saturday to Sunday)	11:00PM to 4:00AM

\* Direction of traffic control for all lane closures in reversible lanes will need to be adjusted as necessary to face direction of traffic.  
 \*\* Complete Road Closure on Express Lanes limited to 30 minutes or less.

<b>Single-Lane Closures* or Shoulder</b>					
<b>ARTERIAL</b>	<b>WEEKDAY</b>		<b>WEEKEND</b>		
	Monday to Thursday	Friday	Friday to Saturday	Saturday to Sunday	Sunday to Monday
<b>Major Arterials**</b>	9:30AM to 3:00PM	9:30AM to 2:00 PM	10:00PM to 9:00AM	10:00PM to 8:00AM	10:00PM to 5:00AM
	10:00PM to 5:00AM				
<b>All Other Roadways</b>	9:00AM to 3:30PM	9:00AM to 2:00 PM	10:00PM to 9:00AM	9:00PM to 9:00AM	10:00PM to 5:00AM
	9:00PM to 5:00AM				

<b>Multiple-Lane Closures</b>					
<b>ARTERIAL</b>	<b>WEEKDAY</b>		<b>WEEKEND</b>		
	Monday to Thursday	Friday	Friday to Saturday	Saturday to Sunday	Sunday to Monday
<b>Major Arterials**</b>	10:00PM to 5:00AM	Not allowed until 11:00PM	11:00PM to 5:00AM	11:00PM to 6:00AM	11:00PM to 5:00AM
<b>All Other Roadways</b>	9:00PM to 5:00AM	Not allowed until 10:00PM	10:00PM to 6:00AM	10:00PM to 6:00AM	10:00PM to 5:00AM

\*Single-lane closures only permitted for multiple-lane roadways.

\*\*Major Arterials defined as Primary Roads, high volume Secondary Roads, and all other routes that connect directly to Interstates.

- C. These allowable hours shall be applicable to both stationary and mobile lane closures, as well as shoulder closures.
- D. Both left and right shoulders on I-95 GP lanes shall not be closed at the same time.
- E. Lane Closure Request Procedure
  - 1. Multi-lane closures of I-95 for any Work will require coordination with appropriate Governmental Authorities, stakeholders and public notice. The Concessionaire shall provide a minimum of three (3) weeks advance notice to the Department. This advance notice will allow the Department and Concessionaire to coordinate on a public outreach campaign and/or advertising to reach affected motorists and target audiences. Alternate dates can be advertised in the event of inclement weather.

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2. Total closures of I-95 for any surface, overhead, or underground work will require coordination with appropriate Governmental Authorities, stakeholders and public notice. Total roadway closures shall be limited to no more than 30 minutes maximum. Closures beyond 30 minutes shall require approval by the Department, subject to review of any required TTC plans and/or detour plans. The Concessionaire shall provide a minimum of six (6) weeks advance notice to the Department. This advance notice will allow the Department and Concessionaire to coordinate on a public outreach campaign and/or advertising to reach affected motorists and target audiences. Alternate dates can be advertised in the event of inclement weather.
  3. The Concessionaire shall be responsible for submitting all lane and/or shoulder closures into LCAMS at least ten (10) days in advance of the proposed lane and/or shoulder closure(s) and no later than close of business Wednesday the week prior to the closure stating the location, purpose, specific lane(s) to be closed, time and duration of closure. Any conflicts generated from LCAMS shall be resolved no later than close of business Thursday the week prior to the closure to avoid cancellation of the lane closure request. The Concessionaire shall also be responsible for entering lane closure requests in VDOT systems such as VaTraffic, LCAMS, and VA511.
  4. The Concessionaire is responsible for providing advance notification via variable message and required static signing for lane and/or shoulder and complete road closures in accordance with the Virginia Work Area Protection Manual and the *Manual on Uniform Traffic Control Devices* (MUTCD). Once a lane or shoulder closure is in place, Work shall commence immediately and shall progress on a continuous basis to completion or to a designated time.
- F. Refer to the Liquidated Damages as per Section 1.8.13 of these Technical Requirements, for situations where the Concessionaire is unable to remove the lane and/or shoulder closure by the stipulated time.
- G. The Department reserves the right to monitor traffic conditions impacted by the Work and to make necessary restrictions as may be warranted or as Emergency situations dictate. Additional restrictions for other holidays or special local events may also be necessary, however, in these situations the Department will endeavor to inform the Concessionaire of any additional restrictions as early as practicable and in no case less than forty-eight (48) hours prior to the holiday or special local event.
- H. Confirmation shall be made 24 hours before any scheduled lane closure and shall include a written reiteration of the proposed tasks and a listing of materials, labor, and major equipment to be used. Complete road closures require a 72-hour advance confirmation for coordination. The Concessionaire

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is responsible for providing adequate advance notification via variable message and required static signing for lane closures in accordance with the Virginia Work Area Protection Manual (VWAPM) and the Manual on Uniform Traffic Control Devices (MUTCD). Once a closing is in place, Work shall begin immediately and shall progress on a continuous basis to completion or to a designated time. The closure may be delayed if excessive traffic backup or queuing is already present at the scheduled start of Work and will be adjusted in accordance with these Technical Requirements.

- I. Traffic backups must dissipate before successive closings can be implemented.
- J. The minimum clear distance between two separate lane closings, that is, from the last traffic cone of the first closing to the first traffic cone of the second closing in the same roadway, shall be two miles.

### **1.8.4 Reversible Facilities**

#### **A. Hours of Operations**

The existing reversible facility hours of operations shall remain in place during of the Construction Period, unless otherwise specified by the Department with adequate advance notice to the Concessionaire. During the Construction Period, the Concessionaire shall be responsible for the operation of the existing reversible facility, including gate operations and reversal of the flow of traffic. The Concessionaire shall be responsible for scheduling all Work to accommodate the reversal schedule. This shall include adjustment of all temporary traffic controls as necessary to be consistent with the direction of traffic.

### **1.8.5 Lane Closure Types**

- A. All lane closures shall be identified as one of the following types:
  - 1. Type 1 – A lane closure resulting in a significant impact on traffic, such as stopping traffic completely, closing two or more lanes, any lane closures in the existing reversible facility, closing an exit or entrance ramp at freeway interchanges or changing traffic patterns. This type of closure would require extensive media and stakeholder notification and coordination among various local and state agencies.
  - 2. Type 2 – A lane closure resulting in minor or no impact on the flow of traffic, such as closing one lane on a four-lane roadway during off-peak traffic hours.
  - 3. Type 3 – A lane closure that would close a shoulder (right or left) on a roadway or ramp.

**1.8.6 Allowance for Additional Lane Closure Restriction by the Department and/or Concessionaire Request for Additional Lane Closures**

- A. At the Department's reasonable discretion and approval, the Concessionaire may submit a request to Work outside the stated lane closure hours by providing adequate justification (including traffic analysis) demonstrating the viability of the request.
- B. Closures of longer durations than those specified in these Technical Requirements will require a review of plans, implementation of detours, and public outreach.
- C. The Department reserves the right to monitor traffic conditions affected by the Work and to make additional restrictions as may be necessary, such as terminating a lane closure early or adjusting the Opitz Project's allowable lane closure hours.
- D. General Requirements:
  - 1. The Department will track any additional lane closure time granted outside of time allowed in the Agreement.
  - 2. Any additional time granted must comply with all the requirements set forth in the Agreement.
  - 3. The Concessionaire acknowledges that there will be instances where the Concessionaire may not be allowed to implement an approved lane closure during events that are beyond the Department's control.
  - 4. The Department will track all instances where the Concessionaire is directed by the Department not to implement any lane closures for special events such as, but not limited to, the following list:
    - i. Presidential motorcades traveling through project limits
    - ii. Special events with regional impacts
    - iii. Special sport events with regional impacts
    - iv. Major accidents/Incidents with regional impacts
    - v. Seasonal traffic patterns
- E. Calculating Hours:
  - 1. Additional time (lane closures) – Any additional time requested by the Concessionaire and granted by the Department beyond the approved hours within the Agreement will be added for every instance and every location at 15 minute intervals.

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2. Additional Time (complete closures) – If a full closure of roadway not specified in the Agreement is implemented in lieu of 30 minute total temporary closure, hours will be calculated in the same manner as the hours that were requested/approved for the specific closure.
3. Time Deducted – When the Concessionaire is not allowed to implement a lane closure by the Department during the approved hours within the Agreement, the hours during which such lane closure is not allowed will be deducted from the total hours accumulated.

### F. Documentation:

1. Within the first 60 days, the Department and Concessionaire will develop and agree on a format of documenting this information. The form should at least contain date, hours allowed, hours disallowed, impacted time and other agreed upon elements.
2. By the 10th of each month, the Department and Concessionaire will reconsolidate and agree on the resultant amount of hours allowed/disallowed.

### G. Allowance:

1. At the end of the Opitz Project, the Department and the Concessionaire will reconcile the resultant impacted time or additional granted time by subtracting the additional time granted by the Department from the time Concessionaire was disallowed per the Technical Requirements in accordance with the Agreement to implement the lane closures. The Department and Concessionaire will endeavor to maintain a neutral balance of resultant impacted and additional granted time throughout the duration of the Opitz Project.
2. Any lane closures affected by inclement weather, snow and snow removal process, Emergency Department maintenance repairs safety shutdowns and from major accidents are not subject to above allowance and are excluded from the calculations and compensations.

### H. General

Notwithstanding anything to the contrary, it is agreed that:

1. The Department will provide the Concessionaire with as much notice as is possible with respect to any lane closure request by the Concessionaire which is not approved by the Department.
2. The Concessionaire will provide the Department with as much notice as is possible with respect to any inability of the Concessionaire to

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implement lane closures which are otherwise allowed within the Agreement.

3. At the end of the Opitz Project, the Department and the Concessionaire will reconsolidate the impacted time by subtracting the additional time granted by the Department from the time the Concessionaire was disallowed per the technical requirements to implement the lane closures. If the Department disapproves requests for lane closures from Concessionaire, or otherwise prevents Concessionaire from implementing lane closures which are otherwise permitted by the Agreement, and the impact of such actions by the Department is more than 120 cumulative hours, such actions shall constitute a Department Change Order.

### **1.8.7 Night Work**

- A. In areas where Work is to be performed during the hours of dusk or darkness, the Concessionaire shall furnish, place, and maintain lighting facilities capable of providing light of sufficient intensity to facilitate good workmanship and proper inspection at all times. The lights shall be arranged so as not to interfere with or impede traffic approaching the work site(s) from either direction or produce undue glare to property owners.
- B. Lighting of work site(s) may be accomplished using any combination of portable floodlights, standard equipment lights, existing street lights, and temporary street lights that will provide the proper illumination.
- C. The Concessionaire shall furnish and place warning signs to alert approaching motorists of lighted construction area(s). These warning signs shall be four feet (1200 mm) x four feet (1200 mm). The Concessionaire's vehicles used on the Opitz Project shall be provided with amber flashing lights that shall be in operation while in the work area. The Concessionaire's equipment shall be provided with a minimum of three square feet of reflective sheeting that is visible to approaching motorists. The Concessionaire shall provide his personnel with proper Personal Protective Equipment (PPE), which shall be worn at all times while the workers are within the work area. The Concessionaire shall provide a light meter to demonstrate that the minimum light intensity is being maintained.
- D. The Concessionaire shall provide sufficient fuel, spare lamps, generators, and other necessary equipment to maintain the lighting of the work site. The Concessionaire shall utilize padding or shielding or locate mechanical and electrical equipment to minimize noise generated by lighting operations as directed by the Department. Noise generated by portable generators shall comply with all Law.
- E. For nighttime work zones involving I-95 travel lanes and ramps (including 95 Express Lanes and ramps), the Concessionaire shall provide a Virginia State

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Police officer with a law enforcement vehicle equipped with a blue flashing light within the work zone in accordance with the VWAPM. For all other roadways and daytime applications, the use of law enforcement shall comply with minimum VWAPM requirements. In the event the Virginia State Police have been given reasonable advance notice of such request but are unable to provide coverage, the Concessionaire may utilize other law enforcement agencies

### **1.8.8 Law Enforcement Utilization**

- A. The Concessionaire shall be responsible for all costs and for coordinating directly with the Virginia State Police service during temporary traffic control operations involving lane closures and/or rolling lane closures, and any other operation as covered in Appendix C of the Virginia Work Area Protection Manual.

### **1.8.9 Size and Weight Limitations**

- A. Hauling or Moving Material and Equipment on Public Roads Open to Traffic: The Concessionaire shall comply with legal size and weight limitations in the hauling or moving of material and equipment on public roads open to traffic unless the hauling or moving is covered by a hauling permit.
- B. Hauling or Moving Material and Equipment on Public Roads Not Open to Traffic: The Concessionaire shall comply with the legal weight limitations in the hauling or moving of material and equipment on public roads that are not open to traffic unless the hauling or moving is permitted elsewhere herein or is otherwise covered by a hauling permit. The Concessionaire shall be liable for damage that results from the hauling or moving of materials and equipment.
- C. The hauling or moving of material and equipment on the final road surface or across any structure during various stages of construction shall be subject to engineering analysis and approved by the Department.
- D. Furnishing Items in Component Parts of Sections: If the size or weight of fabricated or manufactured items together with that of the hauling or moving vehicle exceeds the limitations covered by hauling permit policies and other means of transportation are not available, permission will be given to furnish the items in component parts of sections with adequately designed splices or connections at appropriate points. Permission for such adjustments shall be requested in writing, and approval in writing shall be secured from the Department prior to fabrication or manufacture of the items. The request shall state the reasons for adjustment and shall be accompanied by supporting data, including working drawings where necessary.

**1.8.10 Use of Explosives**

- A. Explosives shall be stored and used in a secure manner. Prior to prosecuting the Work, the Concessionaire shall conduct an on-site review of the Work involved and develop a plan of operations for performing excavating work. Where feasible, the Concessionaire shall explore other means of loosening and or reducing the size of the excavation without blasting. When blasting becomes necessary, the Concessionaire's plan of operations shall include a blasting plan detailing the blasting techniques to be used during excavation operations requiring the use of explosives. Both plans shall be submitted to the Department for review prior to commencing blasting operations.
- B. Explosives shall be purchased, transported, stored, used, and disposed of by a Virginia Certified Blaster in possession of a current criminal history record check and commercial driver's license with hazardous materials endorsement and a valid medical examiner's certificate.
- C. The Concessionaire shall be responsible for damage resulting from the use of explosives. The Concessionaire shall notify each property and Utility Owner having a building, structure, or other installation above or below ground in proximity to the site of the Work of its intention to use explosives. Notice shall be given sufficiently in advance of the start of blasting operations to enable owners to take steps to protect their property. The review of the Concessionaire's plan of operations, blasting plan, and notification of property owners shall in no way relieve the Concessionaire of its responsibility for damage resulting from its blasting operations.

**1.8.11 Not Used**

**1.8.12 Holidays**

- A. Moving/mobile, short duration, short-term stationary, or intermediate-term stationary temporary traffic control zone lane closures on mainline lanes, shoulders, or ramps shall not be performed during the following Holiday time periods without the written permission of the Department. Additionally, a long-term stationary temporary traffic control zone shall not be initially put in place, adjusted, or removed during the following Holiday time periods without the written permission of the Department:
  - **January 1:** From noon on the preceding day until noon on the following day, except as indicated in Section 1.8.12.B below.
  - **Inauguration Day:** From noon on the preceding day until noon on the following day.
  - **Martin Luther King, Jr. Day:** From noon on the preceding Friday to noon on the following Tuesday.



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- **Presidents Day:** From noon on the preceding Friday to noon on the following Tuesday.
  - **Easter:** From noon on the preceding Friday to noon on the following Monday.
  - **Memorial Day:** From noon on the preceding Friday to noon on the following Tuesday.
  - **Juneteenth:** From noon on the preceding day until noon on the following day, except as indicated in Section 1.8.12.B below.
  - **July 4:** From noon on the preceding day until noon on the following day, except as indicated in Section 1.8.12.B below.
  - **Labor Day:** From noon on the preceding Friday to noon on the following Tuesday
  - **September 11:** No daytime closures.
  - **Indigenous Peoples' Day:** From noon on the preceding Friday to noon on the following Tuesday.
  - **Election Day** (the Tuesday following the first Monday in November): No daytime closures.
  - **Veterans Day:** From noon on the preceding day until noon on the following day, except as indicated in Section 1.8.12.B below.
  - **Thanksgiving Day:** From noon on the Wednesday preceding Thanksgiving Day until noon on the following Monday.
  - **Christmas Day:** From noon on the preceding day until noon on the following day, except as indicated in Section 1.8.12.B below.
- B. If the Holiday occurs on a Friday or Saturday, closures shall not be performed from noon on the preceding Thursday to noon on the following Monday. If the Holiday occurs on a Sunday or Monday, closures shall not be performed from noon on the preceding Friday to noon on the following Tuesday.

### 1.8.13 Damage Recovery for Lane Closures

- A. Damage recovery/user costs will be assessed against the Concessionaire if all lanes are not open to traffic during the times required in the approved request for temporary lane closure. Costs will be assessed as follows and continue until all lanes are opened as determined by the Department. This assessment will be in accordance with the following table:

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Liquidated Damages for Lane Closures			
Liquidated Damage (\$ per minute)			
Elapsed Time (min)	<u>I-95, and all ramps which includes General Purpose Lanes, HOV, and HOT Lanes</u>	<u>Major Arterials</u>	<u>All other roads</u>
1-5, or any portion thereof	\$0	\$0	\$0
Every additional minute or any portion thereof after initial 5 minutes stated above	\$1,000 for the sixth minute plus \$1,000 per each additional minute	\$1,000 for the sixth minute plus \$500 per each additional minute	\$500 for the sixth minute plus \$500 per each additional minute

The liquidated damage charges are set forth in the above table. If a Non-Permitted Closure occurs, the Department will notify the Concessionaire thereof and of the amount of associated Lane Closure Damages in writing within 48 hours of the Non-Permitted Closure. If there are no additional Non-Permitted Closures occurring within 90 days, the Department shall refrain charging of the Lane Closure Damages for the prior Non-Permitted Closures. Otherwise, the Concessionaire shall pay all Lane Closure Damages to the Department within 30 days of the date on which last written notice of Lane Closure Damages is given to the Concessionaire for violating having two (2) or more Non-Permitted Closure occurrences within 90 days. Once there is a clean period of 90 days without a Non-Permitted Closure occurrence, the new 90 days period will start for future Lane Closure Damages. All liquidated damage charges will be capped at \$100,000 per violated Non-Permitted Closure. For avoidance of doubt, the Concessionaire shall pay all Lane Closure Damages to the Department for Non-Permitted Closures that occur on all roadways except for the Non-Permitted Closures occurring within the 95 Express Lanes. If there are Non-Permitted Closures that occur on the 95 Express Lanes and another adjoining roadway, the Concessionaire shall be responsible for 50% of the resulting Lane Closure Damages.

Non-Permitted Closure: Any lane closure outside the Technical Requirements unless approved by the Department.

- B. In addition to the assessed damage recovery/user fees for failure to restore traffic lanes, the Concessionaire will not be allowed further lane closures until the reason for the failure are evaluated and the Concessionaire can provide assurance that the causes have been corrected. A formal submission as to the reasons for the failure to restore traffic lanes within the contract lane closure restrictions and the proposed corrective measures is to be provided to the Department within two (2) days of the occurrence. The Department will respond to the adequacy of the submission within two (2) working days of receipt. No modification of the Contract Price or Contract time(s) will be granted or considered for these days.
  
- C. The Department may, at its sole discretion, choose not to assess damage recovery/user fees for failure to open traffic if such cause is not related to or caused by the Concessionaire’s operations. The Concessionaire shall catalog user cost assessments on a daily basis and submit a tabulation along with certification from the QAM that such tabulation is correct to the Department for concurrence. The Department will make a deduction in the assessed amount from funds otherwise due to the Concessionaire under the Agreement.

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- D. The Department reserves the right to monitor traffic conditions affected by the Work and to make additional restrictions as may be necessary, such as terminating a lane closure early. These adjustments shall be handled under Section 1.8.6 – Allowance for Additional Lane Closure Restriction by the Department and/or Concessionaire Request for Additional Lane Closures.

**1.8.14 Not Used**

**1.8.15 Not Used**

## **1.9 Maintenance of Traffic (Traffic Control)**

### **1.9.1 General Requirements**

- A. Temporary traffic control (TTC) plans development shall be consistent with the Agreement, including these Technical Requirements.
- B. Work zone information shall be shared with the Department's Northern Region Operations Advanced Traffic Management System (ATMS) and any other regional ATMS and shall be approved by the Department.
- C. The Concessionaire shall provide an MOT Manager to perform the following:
  - 1. Coordinate implementation of the Opitz Project TMP as developed by the Concessionaire;
  - 2. Oversee the implementation of the TTC plans;
  - 3. Coordinate temporary traffic control activities with the public/community outreach staff and the Department;
  - 4. Implement traffic management strategies; and
  - 5. Be continuously available during construction until Final Completion of the Opitz Project and elimination of all temporary traffic controls.
- D. The MOT Manager shall be Advanced Work Zone Safety certified and have completed the necessary training on the proper practices and methods for the installation, maintenance and removal of temporary traffic controls; and shall demonstrate traffic control implementation experience of similar project scope and complexity.
- E. The Concessionaire shall prepare traffic analyses and modeling for all temporary traffic phases and stages, exclusive of short-term closures identified in the Agreement, in order to identify traffic impacts. The Concessionaire shall use analytical/deterministic (Highway Capacity Manual-based) or traffic simulation/optimization tools for the analyses. Traffic analyses and modeling

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shall also be required for all construction activities requiring a detour, requiring closure of multiple lanes, or deviating in any way from what is set forth in the Agreement.

- F. Traffic analyses will vary depending on the magnitude of the closure, detour or other change. The scope of the traffic analyses and the assumptions to be used will be determined in a meeting held with the Department.
- G. All TTC plans and documents shall have a valid digital professional engineering stamp held by the TTC plans design engineer whom shall be licensed as a Professional Engineer in the Commonwealth of Virginia and shall demonstrate TTC plans design experience of similar project scope and complexity.

**1.9.2 Maintenance of Traffic during Construction**

- A. The MOT Manager shall be continuously available for traffic control related activities during construction until Final Completion and elimination of all temporary traffic controls.
- B. The construction activities will be completed in accordance with the Opitz Project TMP, as defined in Section 1.9.3, and with the requirements of the Agreement. VDOT's Instructional and Information Memorandum IIM-LD-241 (Work Zone Safety and Mobility) and Traffic Engineering Memorandum TE 350.1 (Work Zone Speed Analysis) will apply for work zones on the Opitz Project.
- C. The Concessionaire shall conduct daily and weekly MOT/traffic control inspections to ensure all traffic devices and traffic patterns are in compliance with the VWAPM and MUTCD standards. Provide a weekly MOT report to the Department to include the following:
  - 1. Date discrepancy was identified
  - 2. Description of discrepancy
  - 3. Corrective action required
  - 4. Date corrective action should be taken
  - 5. Date corrective action was completed
- D. The Concessionaire shall develop TTC plans for each stage of construction that shows the Concessionaire's proposed construction staging and traffic control devices consistent with the Opitz Project TMP.
- E. The Concessionaire, at its sole cost and expense, will be required to provide a uniformed law enforcement officer with a marked law enforcement vehicle

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equipped with a blue flashing light during set-up and take-down of all daytime intersection closures involving two or more lanes of traffic.

- F. Detour plans shall be developed by the Concessionaire and presented to the Department for approval. The Concessionaire shall coordinate detour plans with local, state and federal agencies (as applicable), and submit the detour plan well in advance of any planned detour activity. The Concessionaire shall be responsible for all planning, consultation and coordination with impacted parties, design, implementation and monitoring, and maintenance of detours-whether within or outside the Opitz Project Right of Way. The provision of detours and marking of alternate routes will not relieve the Concessionaire of the responsibility for ensuring the safety of the public or from complying with any requirements of the Agreement.
- G. The Concessionaire shall be responsible for design and construction of any additional improvements that may be needed on alternate routes based on the traffic analyses and coordination with the Department.
- H. Right of way for temporary highways, diversion channels, sediment and erosion control features or bridges required by the Technical Requirements will be planned, designed and provided by the Concessionaire.
- I. During any suspension of Work, the Concessionaire shall temporarily open to traffic such portions of the Opitz Project and temporary roadways as may be agreed upon by the Department and Concessionaire.
- J. Unless a design exception or design waiver is granted, the geometric design for temporary roadways and temporary traffic control shall be designed, at a minimum, to the existing posted speed limit.
- K. Certified flaggers shall be provided in sufficient number and locations as necessary for control and protection of vehicular and pedestrian traffic in accordance with the requirements of the Virginia Work Area Protection Manual (VWAPM). Flaggers shall be able to communicate to the traveling public in English while performing the job duty as a flagger at the flagger station. Flaggers shall use sign paddles to regulate traffic in accordance with the requirements of the VWAPM. Flagger certification cards shall be carried by flaggers while performing flagging duties. Flaggers found not to be in possession of their certification card shall be removed from the flagging site and operations requiring flagging will be suspended. Further, flaggers performing duties improperly will have their certifications revoked.
- L. Restrictions on lane closures are defined in the Agreement.
- M. Long-term closures of the shoulders adjacent to the general purpose lanes are allowable provided the closure is separated by concrete barrier as approved by the Department.

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- N. Where concrete barriers are used to close the shoulder, the Concessionaire will be required to provide pull off areas in accordance with the Virginia Work Area Protection Manual.
- O. Connections with roads and public and private entrances shall be kept in a reasonably smooth condition at all times. Stabilization or surfacing material shall be applied to connections and entrances.
- P. The Concessionaire shall schedule construction operations so that approved continuous access is provided for all roads and properties. Connections or entrances shall not be disturbed by the Concessionaire until necessary. Once connections or entrances have been disturbed, they shall be maintained and completed as follows:
  - 1. Connections that had an original paved surface shall be brought to a grade that will smoothly and safely accommodate vehicular traffic through the intersection, using pavement. Connections that had an original unpaved surface shall be brought to a grade that will smoothly and safely accommodate vehicular traffic through the intersection, using either the required material or a temporary aggregate stabilization course that shall be placed as soon as practicable after connections are disturbed.
  - 2. Mainline connections shall have all lanes open during construction. If there are delays in prosecution of work for other connections, connections that were originally paved shall have at least two lanes maintained with a temporary paved surface. Those that were not originally paved shall be maintained with a temporary aggregate stabilization course.
  - 3. Mainline access/egress connections shall have all lanes open during construction unless otherwise agreed with the Department. Other entrances shall be graded concurrently with the roadway with which they intersect. Once an entrance has been disturbed, it shall be completed as soon as is practicable, including placing the required base and surface course or stabilization. If the entrance must be constructed in stages, such as when there is a substantial change in the elevation of the roadway with which it intersects, the surface shall be covered with a temporary aggregate stabilization course or other suitable salvaged material until the entrance can be completed and the required base and surface or stabilization course can be placed.
- Q. When the Concessionaire elects to complete the rough grading operations for the entire Opitz Project or exceed the length of one full day's surfacing operations, the rough grade shall be machined to a uniform slope from the top edge of the existing pavement to the ditch line.

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- R. When the surface is to be widened on both sides of the existing pavement, construction operations involving grading or paving shall not be conducted simultaneously directly opposite each other and the surface of pavement shall be kept free from soil and other materials that might be hazardous to traffic. Prior to opening of new pavement to traffic, shoulders shall be roughly dressed for a distance of three feet from the edge of the paved surface.
- S. Where the Concessionaire places obstructions such as suction or discharge pipes, pump hoses, steel plates or any other obstruction that must be crossed by vehicular traffic, they shall be bridged in accordance with plans submitted by the Concessionaire and approved by the Department. Traffic shall be protected by the display of warning devices both day and night. If operations or obstructions placed by the Concessionaire damage an existing traveled roadway, the Concessionaire shall cease operations and repair damages.
- T. Where existing hydraulic cement concrete pavement is to be patched, the operation of breaking and excavating old pavement shall extend for a distance of not more than two miles. Patching shall be coordinated with excavating so that an area of not more than one-half mile in which excavated patches are located shall be left at the end of any day's work. Necessary precautions shall be taken to protect traffic during patching operations.
- U. The Concessionaire shall construct, maintain, and remove temporary structures and approaches necessary for use by traffic. After new structures have been opened to traffic, temporary structures and approaches shall be removed. The proposed design of temporary structures shall be submitted to the Department for its approval together with other associated Design Documentation.
- V. If the Concessionaire fails to remedy unsatisfactory maintenance not complying with these Technical Requirements within a mutually agreed upon time after receipt of a written notice by the Department, the Department may proceed with adequate forces, equipment, and material to maintain the Opitz Project. Any compensation will be in accordance with the Agreement. The Concessionaire shall have the right to dispute the Department's determination that maintenance is unsatisfactory.
- W. All temporary traffic controls shall be shown on Approved For Construction (AFC) Plans.
- X. Only TL-3, Type I Re-Directive Impact Attenuators shall be used on interstates, limited access highways, major arterials, and its associated ramps unless otherwise approved by the Department in its sole discretion. TL-3, Type II Non-Redirective Impact Attenuators may only be used with movable barrier.

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- Y. All stages and phases of construction, including installation and testing of the Electronic Toll and Traffic Management (ETTM) system, shall be covered by a approved TTC plan.
- Z. If any sidewalk or shared use path is requested to be closed, the alternative routes considered shall be covered by a TTC plan and/or detour plan and approved by the Department.

### **1.9.3 Transportation Management Plan**

- A. The Concessionaire shall prepare a Transportation Management Plan (the “Opitz Project TMP”) in accordance with VDOT IIM-LD-241/TE-351 for all proposed Work associated with the Opitz Project. The Opitz Project TMP shall document how traffic shall be managed during the construction of the Opitz Project. The Opitz Project is classified as a Type C, Category V in terms of the TMP requirements of IIM-LD-241/TE-351.
- B. The Concessionaire shall coordinate all Work in accordance with the Opitz Project TMP. The Concessionaire’s sequence of construction shall seek to both expedite construction while lessening the effect of such construction on the traveling public.
- C. The Opitz Project TMP shall:
  - 1. include TTC plans detailing all phases of Work, proposed lane closures, temporary traffic controls through the work area, and all construction accesses for approval by the Department;
  - 2. address safe and efficient operation of adjacent public transportation facilities and State Highways;
  - 3. include coordination with local agencies and other contractors performing work in the vicinity of I-95;
  - 4. reflect the noted Scope of Work and all applicable Technical Requirements; and
  - 5. accommodate safe and efficient snow removal operations and ensure proper drainage during all phases of construction.
- D. All users must be addressed and accommodated, including pedestrians, bicyclists, transit vehicles, and other motorists. Access must be maintained to all businesses, residential communities, Emergency crossovers and private entrances at all times.
- E. If additional traffic counts are required, it will be the responsibility of the Concessionaire to collect such data. The Concessionaire shall note that any proposed detour utilizing local neighborhood streets will require coordination



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with the applicable locality, as appropriate, and are subject to the terms and conditions of the Department's approval.

- F. Construction signs and pavement markings (temporary) shall be installed, maintained, adjusted, and removed by the Concessionaire throughout the duration of the Opitz Project. These items shall be shown on and coordinated with the Sign Sequencing Plan defined in Section 3.9.3 of these Technical Requirements. If the Concessionaire chooses to remove any existing pavement markings from any roadway to install temporary markings to facilitate his work, the Concessionaire shall resurface the roadway in accordance with Section 3.8 of these Technical Requirements.
- G. All entrances, intersections or pedestrian access points/routes that will be affected by the work zone or by the temporary traffic control devices shall be maintained or an acceptable alternate must be provided by the Concessionaire.
- H. Temporary barriers shall be shown in the TTC plans and shall be in accordance with the applicable standards and specifications set forth in Attachment 1.5a. If Traffic Barrier Service Concrete is warranted based on the criteria for determining the application of barrier per the Virginia Work Area Protection Manual and a completed Engineering and Traffic Investigation-Work Zone Channelization/Barrier Analysis, the guidelines provided in the Roadway Design Manual and IIM-LD-93 shall be utilized.

### 1.10 Quality

#### 1.10.1 General Requirements

- A. The Concessionaire shall develop, implement, and maintain a quality management system that includes a Quality Management System Plan (QMSP) that meets the applicable Standards and Specifications set forth in Attachment 1.5a, including the VDOT *Minimum Requirements for Quality Assurance & Quality Control on Design-Build & Public-Private Transportation Act Projects (July 2018)* (VDOT QA/QC Guide) as described in Attachment 1.3. Where appropriate, the QMSP shall also incorporate requirements from VDOT Manual of Instructions for Materials Division, applicable design manuals, Construction Manual, Instructional Informational Memoranda, Maintenance Manual, Survey Manual, Right of Way Manual, Utility Relocation Manual, and Inspection Manual, as well as the Road and Bridge Specifications, Road and Bridge Standards, MUTCD, and Virginia Work Area Protection Manual.
- B. The Concessionaire, the Opitz Construction Contractor, subcontractors, suppliers and consultants shall adhere to the QMSP.
- C. Neither the Opitz Construction Contractor nor any of its subcontractors, suppliers or consultants, shall be delegated quality management responsibility in any manner such that the Concessionaire is relieved of any responsibility or

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liability for the performance of those entities. At all times, contractual and otherwise, and by all means, the Concessionaire shall be contractually responsible for the quality compliance of the Project no matter the provider of services or supplier of material.

- D. The Concessionaire shall review and report its compliance with all PDPs, in accordance with Section 1.3, as part of its quality management system.
- E. The Opitz Construction Contractor and its subcontractors, suppliers, or consultants shall ensure that their quality records are available to enable the Department to monitor and establish whether the Concessionaire's obligations under the Agreement are met.

### **1.10.2 Design Quality Management**

- A. The Concessionaire is responsible for design quality in accordance with the VDOT QA/QC Guide. The Concessionaire shall be responsible for establishing and overseeing a QA/QC program for all pertinent disciplines involved in the design of the Opitz Project, including review of design, working plans, shop drawings, specifications, and constructability of the Opitz Project. The Concessionaire shall be responsible for all of the design, inclusive of QA and QC activities. Members of the Design QA and QC team are responsible for review of all design elements to ensure the development of the plans and specifications are in accordance with the requirements of the Agreement. Design QA should be performed by one or more member(s) of the lead design team that are independent of the Design QC.
- B. The Design Quality Management Plan (DQMP), as described in Attachment 1.3, will provide the Department assurance that the design plans and submittals will meet all requirements of the Agreement. The Concessionaire or its designees shall be responsible for all quality assurance and quality control activities required to manage its own processes as well as those of its contractors, subcontractors, and suppliers of any tier.

### **1.10.3 Construction Quality Management**

- A. The Concessionaire shall develop, execute, and maintain a Construction Quality Management Plan (CQMP) for the full duration of the Agreement in accordance with Attachment 1.3. The Concessionaire shall have the overall responsibility for both the QA and QC activities and shall be responsible for all QA activities and QA sampling and testing for all materials used and Work performed on the Opitz Project. These QA functions shall be performed by an independent firm that has no involvement in the construction and QC program and activities. There shall be a clear separation between QA and construction, including separation between QA inspection and testing operations and construction QC inspection and testing operations, including testing laboratories. Two independent, AASHTO Material Reference Laboratory-

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certified testing laboratories will be required, one for QA testing and one for QC testing.

- B. The QAM shall have the responsibility to enforce the Opitz Construction Contract requirements when deficient materials or unsatisfactory finished products fail to conform to the requirements of the Opitz Construction Contract. The QAM, in accordance with his or her assignment, shall be responsible to observe the construction in progress and to ensure the QA/QC testing and inspection is being performed in accordance with the requirements of the Opitz Construction Contract.
- C. The Concessionaire shall establish and maintain a Quality Assurance Auditing and Non-Conformance Recovery Plan (AR Plan) for uniform reporting, controlling, correction and disposition, and resolution of non-conformance (including disputed non-conforming items) issues that may arise on the Opitz Project. The Concessionaire's AR Plan shall establish a process for review and disposition of non-conforming workmanship, material, equipment, or other construction and design elements of the Work, including the submittal of the design review process for field changes. All deficiencies (hereinafter referred to as a non-conformance), including those pertaining to rules, regulations, and permit requirements, shall be documented by the QAM. A NCR referenced by a unique number shall be forwarded to the Department within seven (7) days of discovery of the non-conformance. Non-conformance procedures are provided in the QA/QC Guide.
- D. The Concessionaire shall also be responsible for providing QA/QC testing for all materials manufactured off-site.
- E. The Concessionaire may use the Department's resources for the following construction quality control activities where the Department routinely provides these services:
  - 1. Off-site programmatic inspection, including supplier plant acceptance inspections;
  - 2. Off-site programmatic testing, including supplier plant acceptance testing; and
  - 3. Items on the VDOT's pre-approved list.
- F. Any inspections by the Department representatives shall not relieve the Concessionaire of any obligation to furnish acceptable materials, provide acceptable designs, and complete construction in accordance with the Agreement.

#### **1.10.4 Materials Supply and Quality Requirements**

- A. Unless otherwise specified in the Technical Requirements or subject to mutual agreement, materials, equipment, and components that are to be incorporated into the finished Work shall be new. As part of the Construction Documentation, the Concessionaire shall submit statements of the known origin, composition, and manufacture of all materials to be used in the Work, including optional or alternate items, using VDOT's Form C-25.
- B. All materials or equipment (excluding the equipment maintained and operated by the Opitz Construction Contractor) physically installed, which will become part of the completed Work, whether it is permanent or temporary, must conform to the requirements of the Agreement, and shall be furnished with valid test data required to document the quality of the material or equipment at least two (2) weeks prior to delivery. The Concessionaire shall change the source of supply and furnish material or equipment from other approved sources, if the requirements are not met, and shall notify the Department of this change, and provide the same identifying information noted in this section, at least two (2) weeks prior to delivery. Materials shall not contain Hazardous Waste or be furnished from a source containing toxic, hazardous or regulated solid wastes.

#### **1.10.5 Inspection of Work**

- A. The Concessionaire is responsible for continuous quality control and quality assurance in accordance with the QMSP. All stages, materials, and details of the Work, including machines and plant equipment used in processing or placing materials, are subject to independent inspection by the Department in accordance with the Agreement.
- B. If materials are used or Work is performed without following the QMSP or relevant procedures, the Concessionaire may be required to remove and replace non-conforming Work or material at no additional cost to the Department. The Concessionaire shall abide by the QMSP in terms of correcting defective, deficient, or non-conforming Work. Any such defective, deficient, or non-conforming Work that is not completely replaced or otherwise remains in place, must be accepted by the Department prior to the addition of any new Work being constructed on or adjacent to the defective, deficient, or non-conforming Work, unless otherwise mutually agreed by all parties. Approval or disapproval of non-conforming Work shall be given by the Department within fourteen (14) days of submittal to the Department, or as otherwise mutually agreed. Any basis for disapproval must be submitted to the Concessionaire in writing by the Department. At the sole discretion of the Department, the Department may allow the Concessionaire to provide the Department with a credit to the Opitz contract value for the Department's acceptance of such non-conforming Work.

- C. If an inspection reveals that Work has not been properly performed, the Concessionaire shall promptly inform the Department of the schedule for correcting such Work and the time when an inspection of the corrected Work can be made.

#### **1.10.6 Removal of Unacceptable or Unauthorized Work**

- A. No Work shall be done until the Concessionaire establishes the applicable right of way, lines and grades. Work that is done beyond the lines shown on the AFC plans, unless otherwise agreed, will be considered unauthorized. Such Work shall be subject to review by the Department and may be ordered removed or replaced.
- B. Any Work that does not conform to the Technical Requirements will be considered unacceptable and must be promptly identified by the responsible party, as identified in the QMSP. Unacceptable work shall be remedied or removed immediately unless otherwise agreed by the Department, and replaced in manner acceptable to the Department.
- C. If the Concessionaire fails to comply promptly with any order of the Department or the QAM made under the provisions of the QMSP, the Department or the QAM will have the authority to cause unacceptable or unauthorized Work to be remedied or removed and replaced. If the Concessionaire fails to exercise the appropriate management of the Work with regards to the remedy of defective, deficient, or non-conforming Work, or the prevention of such defective, deficient, or non-conforming Work from re-occurring, the Department shall have the right to stop or suspend the affected Work until such time the defective, deficient, or non-conforming Work is remedied.

### **1.11 Not Used**

### **1.12 Third Parties and Permitting**

#### **1.12.1 Permitting**

- A. The Concessionaire shall obtain permits, approvals, and coordinate with any relevant Governmental Authorities and other entities necessary to complete the Opitz Project, with assistance from the Department as reasonably requested. All Governmental Approvals applicable to construction Work will be the responsibility of the Concessionaire, with the exception of those Governmental Approvals for which the Department is responsible per the Agreement. The Concessionaire shall provide copies of all permits and permit modifications to the Department upon receipt.
- B. The Concessionaire shall obtain any required waiver or variance from each applicable local government regarding a local noise ordinance, as needed to prosecute the Work. The Department will make reasonable efforts to assist the

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Concessionaire in obtaining any such waiver or variance. The Concessionaire shall adhere to the requirements of the noise waiver in planning and performing any construction. If the local government identifies a violation all costs associated with any delays or corrective action is the responsibility of the Concessionaire.

- C. The Concessionaire will be responsible for all costs associated with compliance with any ordinance and Law or any violations of Law attributed to the activities of the Concessionaire in accordance with the Agreement.

**1.12.2 Third Parties**

- A. If any portion of the Opitz Project is located within the limits of a municipality or locality, military installation, or other federally owned property, the Concessionaire shall cooperate with the appropriate officials and agents in the prosecution of the Work to the same extent as with the Department.
- B. The Concessionaire shall coordinate its activities with municipalities and localities, and other contractors working in the area. As provided in the Agreement, the Concessionaire's work program and schedule shall consider and coordinate with the work of other contractors involved with adjacent work, including maintenance, in the corridor.
- C. If other separate contracts are awarded by the Department or by other Governmental Authorities, including projects under the PPTA, that affect the Concessionaire's work, including work related to abutting roadways and connectors and work associated with a TAMS contract, the Concessionaire will coordinate its work with the work being performed by the other contractors. The Department will contractually require its separate contractors to cooperate with, and coordinate their activities with, the Concessionaire.
- D. The Concessionaire shall be responsible for contacting other contractors regarding their anticipated schedules to complete the associated projects or key milestones of the associated projects they are/will be working on. See Section 1.14 of these Technical Requirements.
- E. The Concessionaire shall not impede the access or progress of such work by other contractors, but shall cooperate and coordinate with other contractors for the timely completion of all construction activities. This shall include attendance at coordination meetings deemed necessary or advantageous by the Department or its contractors.

**1.12.3 Fire Hydrants**

- A. No Work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

- B. When the Concessionaire's Work requires the disconnection of "in service" fire hydrants, the Concessionaire shall notify the locality's fire department or communications center at least 24 hours prior to disconnection. In addition, the Concessionaire shall notify the locality's fire department or communications center no later than 24 hours after reconnection of such hydrants.

**1.12.4 Not Used**

**1.12.5 Not Used**

**1.12.6 Not Used**

## **1.13 Emergency Services**

### **1.13.1 Liaison**

The Concessionaire shall comply with the Department requirements for participation in industry and statutory initiatives regarding Emergency management, where applicable.

### **1.13.2 Emergencies and Extraordinary Circumstances**

- A. Subject to the Agreement, the Concessionaire's response to Emergencies and extraordinary circumstances as part of the Opitz Project will be in accordance with the Agreement and not inconsistent with the Department's Emergency evacuation plan and shall ensure that:
  - 1. safety of motorists, pedestrians and workforce personnel shall be the primary objective for all decisions and actions;
  - 2. clearance of a travel lane for Emergency response vehicles shall be by the most expedient route whether GP Lanes or HOT Lanes (in such circumstances, the decision of the Department or the Emergency services in charge shall govern);
  - 3. military vehicles acting in an Emergency response capacity or in defense of the sovereign homeland of the United States of America shall be given free and unrestricted access to the HOT Lanes;
  - 4. if the U.S. Secret Service (USSS), in coordination with the Virginia State Police (VSP), determines movements of the President of the United States require use of the HOT Lanes, the Concessionaire shall cooperate and comply fully with USSS and VSP instructions with respect to Work activities, lane closures and traffic management;
  - 5. the Department reserves the right, by direction of the Fredericksburg and Northern Virginia District Administrators or the NRO Director, to assume and exercise control of the HOT Lanes in part and/or in

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their entirety, including all applicable systems and field devices via available interfaces, pursuant to the Agreement; and

6. the Concessionaire will, as needed, participate in Emergency exercises conducted by Governmental Authorities.
- B. During special events that have significant impact on traffic flow, the Concessionaire shall designate a responsible party in charge to work with the Department's NRO Special Events and Incident Management Coordinator to develop traffic management plans for the event.
- C. Should the Concessionaire fail to respond to an Emergency or extraordinary circumstance in a timely manner in accordance with the requirements of the Agreement, the Department shall have the right to take necessary and appropriate action to handle such Emergency or extraordinary circumstance.

### **1.14 Safety**

#### **1.14.1 General Requirements**

- A. The Department and the Concessionaire recognize that in every circumstance, activity, and decision related to the Opitz Project, safety of the public, Concessionaire personnel, and Department personnel is the primary concern. Ensuring and maintaining safety on the Opitz Project shall supersede any and all other objectives.
- B. The Concessionaire shall designate a full-time Opitz Project safety officer for the Construction Period. The Opitz Project safety officer will ensure that designated Opitz Project personnel can be contacted by the Department and Emergency services personnel at all times. The safety officer shall have the necessary expertise and experience required to ensure compliance with applicable laws and the Opitz project safety requirements.

#### **1.14.2 Construction Safety and Health Standards**

- A. Compliance with construction safety and health standards is a condition of the Agreement, and shall be made a condition of each subcontract entered into pursuant to the Agreement. The Concessionaire and any Contractor shall not require any worker employed in performance of the Agreement to work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to their health or safety, as determined under construction safety and health standards promulgated by the U.S. Secretary of Labor in accordance with the requirements of Section 107 of the Contract Work Hours and Safety Standards Act.
- B. The Concessionaire shall comply with the Virginia Occupational Safety and Health Standards adopted under the Code of Virginia and the duties imposed under the Code. Any violation of the requirements or duties that is brought to



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the attention of the Concessionaire by the Department or any other person shall be immediately abated.

- C. Pursuant to the above, the Concessionaire shall comply with the safety requirements as listed below, and as outlined in the Health, Safety and Security Plan as prepared under the Agreement and Attachment 1.3. The Concessionaire shall ensure that proper safety training that satisfies all Law and the Health, Safety and Security Plan is provided to all relevant personnel before such personnel are permitted access to the Opitz Project or Opitz Project site.
1. The Concessionaire shall ensure that all required safety training is properly conducted in a timely manner.
  2. Specialized training (e.g., work zone safety, confined space, erosion and sediment control, energized lines, etc.) shall be provided to all relevant personnel if such training is required.
  3. Hard hats and appropriate safety footwear (steel or composite toe) as per OSHA 1926.100 and ASTM F 2413 (Specification for Performance Requirements for Protective Footwear) shall be worn while participating in or observing all types of field Work when outside of a building or outside the cab of a vehicle, and exposed to, participating in or supervising construction.
  4. Respiratory protective equipment shall be worn whenever an individual is exposed to any item listed in the OSHA standards as needing such protection unless it is shown that the employee is protected by engineering controls.
  5. Adequate eye protection (safety glasses as per ANSI/ISEA Z87.1-2010 (Z87+) - Standard for Occupational and Educational Eye and Face Protection Devices) shall be worn in the proximity of grinding, breaking of rock and/or concrete, while using brush chippers, striking metal against metal or when working in situations where the eyesight may be in jeopardy.
  6. A Class 3 high visibility shirt, vest or jacket as per ANSI/ISEA 107-2004 (Standard for High-Visibility Safety Apparel and Headwear) shall be required at all times when on or near any roadway, whether or not protected by a concrete or steel barrier. In addition, Class 3 pants are required whenever not protected by a concrete or steel barrier. Note: This must be worn over any other clothing such as rain coats.
  7. Standards and guidelines of the current Virginia Work Area Protection Manual shall be used when setting, reviewing, maintaining, and removing temporary traffic controls.

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8. Flaggers shall be certified in accordance with the Virginia Flagger Certification Program.
9. No person shall be permitted to position themselves under any raised load or between hinge points of equipment without first taking steps to support the load by the placing of safety bar or blocking.
10. Explosives shall be purchased, transported, stored, used and disposed of by a Virginia State Certified Blaster in possession of a current criminal history record check and a commercial driver's license with hazardous materials endorsement and a valid medical examiner's certificate. All Federal, State and local regulations pertaining to explosives shall be strictly followed.
11. All electrical tools shall be adequately grounded or double insulated. Ground Fault Circuit Interrupter (GFCI) protection must be installed in accordance with the National Electrical Code (NEC) and current Virginia Occupational Safety and Health agency (VOSH). If extension cords are used, they shall be free of defects and designed for their environment and intended use.
12. No person shall enter a confined space without training, permits, and authorization.
13. Fall protection shall be required whenever an employee is exposed to a fall six feet or greater.
14. Hearing protection as per ANSI/ISEA S12.68-2007 for hearing protection must be carried at all times and must be worn when working near areas where excessive noise is being generated.
15. When working near hot areas, such as road asphaltting, long sleeve cotton shirts and pants must be worn whether night or day.
16. All damaged or worn PPE must be replaced immediately. No person may undertake any task using or wearing faulty PPE.

D. Safety Reporting

1. The Concessionaire shall submit, on a monthly basis, a Safety Statistics Report that shall, at a minimum, include the following information:
  - Number and Rate of First Aid Cases;
  - Number and Rate of Recordable Cases;
  - Number and Rate of Lost Work Day Cases;

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- Number of Days Away from Work;
- Number of Field Work Hours;
- Number of Near-Miss Incidents;
- Number of Utility Hits;
- Number of Investigation Reports;
- Number of Property Damage Claims; and
- Number of Field Personnel.

This information shall be provided for Direct Hire, Subcontract, and Total Labor on the Project. Information shall be provided for Current Month, Year-to-Date, and Project-to-Date.

2. For any First Aid, Near Miss, Injury, Illness, or Property Damage Incident involving the Concessionaire (including subcontractors, consultants and suppliers), within 24-hours of the incident, the Concessionaire shall provide a detailed Report of Incident that shall include time and date, brief description, classification type, location of injury. Within one week of the incident, the Concessionaire shall provide any update of the 24-hour report and an analysis of the root cause of the incident.
3. The Concessionaire shall submit, on a monthly basis, a Safety Corrective Actions Register showing all actions for the month (not just from incident sources, i.e. audits and inspections), their corrective action type (e.g. elimination, administration, isolation, engineering) and their status (open or closed).

## **1.15 Adjacent Project Coordination**

### **1.15.1 General**

- A. The timing of the Opitz Project will overlap with other Department projects, including the I-95 Southbound Auxiliary Lane Project in Prince William County. The Concessionaire shall coordinate and interface with the respective project team, including the Department and its associated consultants and contractors throughout the duration of the project to ensure that the respective projects are safely and properly coordinated and scheduled.
- B. In addition to the Department projects listed above, the Department may conduct yearly structural and bridge inspection/maintenance and paving maintenance that may include work on Opitz Boulevard and I-95. The Concessionaire shall cooperate with these projects during the March to

November paving season. In all cases, the existing projects that have been awarded for construction and any emergency maintenance projects and their respective contractors shall have priority in scheduling activities.

- C. The timing and scope of the Opitz Project will overlap with the Neabsco-Potomac Commuter Parking Garage Project by Prince William County. The Concessionaire shall coordinate and interface with the respective project team, including the County and its associated consultants and contractors throughout the duration of the Opitz Project to ensure that the respective projects are safely and properly coordinated and scheduled.

## **2 Public Information and Communications**

### **2.1 Public Information**

#### **2.1.1 General Requirements**

The Concessionaire in collaboration with the Department shall develop the required process and procedures for media relations and public information in the form of a Communications, Consultation, Public Outreach, and Community Engagement Plan (“Communications Plan”), which will be consistent with the Agreement and the requirements included in Attachment 1.3. These processes and procedures will acknowledge that there are differing responsibilities for both parties during the Work period and throughout the Operating Period.

#### **2.1.2 Interface and Liaison with the Department**

- A. Management protocols shall be developed between the Concessionaire’s Opitz Project communications team and the Department’s Representative. These protocols shall detail:
  - 1. a regime of regular reporting to the Department on communications activities, current and outstanding community issues, and recent media activity;
  - 2. media protocols, providing clarity of responsibility in relation to media comment on particular aspects of the Opitz Project;
  - 3. stakeholder relations protocols, assigning responsibility for briefing and information to stakeholders on Opitz Project progress and milestones;
  - 4. requirements in relation to Department’s review and comment on Opitz Project marketing, communications, and public outreach material; and
  - 5. processes for managing communications surrounding emergency management and recovery operations.

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- B. Meetings and public interface required by federal and state law will be conducted in accordance with the current version of the Department's *Policy Manual for Public Participation in Transportation Projects*. The Concessionaire will conduct additional meetings, public interface and marketing activities in accordance with the Communications Plan.
- C. The Concessionaire shall collaborate with the Department in the development of all communications and marketing strategies to ensure they are consistent with both parties' values, needs, and goals. The Concessionaire shall provide the Department with advance copies of project- communications materials for review and comment prior to dissemination. The Department will provide any comments in a timely fashion.
- D. The Department reserves the right to review and comment on any public communications, including publicity and branding.

### **2.1.3 Project Communications Team**

- A. The Concessionaire shall establish a Opitz Project communications team through which all communication and public outreach activities on the Opitz Project on behalf of the Concessionaire will be coordinated.
- B. The Opitz Project communications team will include:
  - 1. a public affairs manager and adequate support staff and/or consultants, who shall have responsibility for coordinating delivery of the Public Information and Communications Plan. The public affairs manager will manage the relationship with the Department's communication team and reporting on all communications and outreach activities;
- C. The Opitz Project communications team to develop and agree upon team protocols for communication between team members, incorporating measures related to notification and approval timeframes, media interface, and preparation of Opitz Project communication materials.

### **2.1.4 Public Information and Involvement**

- A. The Concessionaire's and the Department's communications team shall maintain an open dialogue with the stakeholders and communities immediately surrounding the Opitz Project with the objective of building a long-term relationship based on trust and respect. The Concessionaire will work with the communities to identify specific concerns and strategies for mitigation.

### **2.1.5 Pre-Operating Period and Operating Period – Public Engagement and Awareness**

- A. No less than 90 days prior to Service Commencement the Concessionaire shall take measures to inform users to ensure that the motorists are educated about

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the features and benefits of the Opitz Project, so that they can make an informed choice about their use of the HOT Lanes once open to traffic.

- B. The Concessionaire shall develop a public engagement and awareness program to fit within the context of the broader Communications Plan for the Opitz Project. It shall address but will not be limited to:
1. education about dynamic pricing, if used;
  2. information on requirements for using HOT Lanes, including HOV eligibility and transponder requirements;
  3. plans for the opening of the Opitz Project to traffic and communications that will facilitate smooth ongoing operations;
  4. interface with E-ZPass marketing and communications, to facilitate distribution of transponders to motorists who intend to use the HOT Lanes;
  5. education about driver information systems in use on the HOT Lanes, so motorists understand on-road sources of information that will facilitate choice and lane control signals (LCS) of the lane use management system (LUMS), if applicable;
  6. provision of information to motorists and stakeholders to facilitate the MOT during ongoing maintenance activities. This shall include:
    - i. packaging of all MOT information, such as anticipated delays and lane closures, for provision to the Opitz Project communications team and to the Department's communication team on a regular basis, to facilitate communication with the media, stakeholders, and the broader community; and
    - ii. communication with property owners in direct impact areas.
  7. The Concessionaire and the Department will coordinate closely in outreach and communications to elected officials related to the Opitz Project. The Opitz Project communications team will work with project management to develop and agree upon a protocol to ensure consistent and effective communications to elected officials directly related to the Opitz Project. Both the Department and the Concessionaire will have ongoing dialogues with the elected officials and other key stakeholders.
  8. coordination with local agencies; and
  9. notification program to inform motorists and the broader community about expected traffic changes/delays

## 2.2 Media Relations

### 2.2.1 Media Outreach

- A. While there will be some overlap between the Parties on some communications and outreach activities during the Work period and Operating Period, The Department will serve as the sole source to the news media and community stakeholders on specific lane closures, delays, detours, and other construction-related impacts associated with the Opitz Project. The Opitz Project communications team will put processes in place to ensure close coordination with the Department on media outreach activities, issues, and responses, and will promote consistency with the Communications Plan.
- B. The Concessionaire shall:
1. develop and provide a set of media protocols upon which the Department and Concessionaire will agree to govern responsibilities and reporting in relation to contact with the media, including guidelines for information sharing, policies to promote consistent messages, and procedures specific to managing emergencies and incidents.
  2. provide timely response to media inquiries and keep the Department informed of media inquiries regarding the Opitz Project and the nature of responses that are documented as mutually agreed;
  3. provide relevant Opitz Project information to the media in a timely fashion;
  4. monitor all media coverage of the Opitz Project; and
  5. provide copies of all press releases or other media materials to the Department in advance of distribution.

## 2.3 Project Marketing

### 2.3.1 Project Branding

All public communications on the Opitz Project will be undertaken within the framework of a uniform project 'brand' to ensure consistency of the marketing and communications across all project phases. The branding will be developed by the Concessionaire and is subject to the Department's review and comment.

## 2.4 Communities and Public Outreach

### 2.4.1 Integrated Communications, Consultation, Public Outreach, and Community Engagement Plan

- A. The Concessionaire shall deliver an integrated Communications Plan that:
1. provides an effective framework for communication between the Concessionaire and stakeholders;
  2. effectively engages the community in the design, construction, and operation of the Opitz Project to minimize negative impacts and maximize positive outcomes;
  3. builds a strong and enduring relationship with stakeholders and the community within the toll facilities catchments over the life of the Opitz Project;
  4. identifies and manages risks associated with the Opitz Project;
  5. develops a strong and enduring brand relationship between the community, toll facility drivers, and the owners and operators of the Opitz Project;
  6. maximizes public awareness of the features and benefits of the HOT Lanes; and
  7. ensures the public understands how best to use the HOT Lanes and the requirements for travel on the system, including congestion pricing and paying tolls, obtaining and using transponders, and user eligibility requirements.
- B. The Communications Plan, consistent with the Department's goals for the Opitz Project, will be presented to the Department for review and comment and will form the basis for all communication activities during the design and construction of the Opitz Project, as well as during the Work pre-operational and Operating Periods.
- C. The plan shall provide a detailed outline of communication tools and strategies to be employed during each phase of the Opitz Project development, delivery, and operation, including the matters outlined in the sections below.
- D. The plan shall contain a crisis communications plan and procedures for coordination with the Department and responsiveness to the media.



**2.4.2 Stakeholder Outreach and Information**

- A. The Concessionaire shall develop, deliver, and operate the Opitz Project in a manner consistent with building and maintaining effective working relationships with all stakeholders in the Opitz Project's success.

### **3 Design and Construction Requirements**

#### **3.1 General**

- A. The Opitz Project shall be designed and constructed pursuant to the design criteria and specifications set forth in the Agreement including these Technical Requirements.
- B. The Work shall not preclude the local, state, and federal long-range transportation planning improvements.
- C. All Design Documentation and Construction Documentation shall comply with the requirements of applicable Governmental Authorities.
- D. Where the Work to be performed does not meet minimum American Association of State Highway and Transportation Officials (AASHTO) standards and specifications, the Concessionaire shall submit to the Department a design exception, pursuant to the Department's Instructional and Informational Memorandum on design exceptions, (using LD-440 format) for Department and FHWA approval.
- E. Where the Work to be performed meets or exceeds minimum AASHTO design criteria, but does not meet the Department's minimum standards and specifications, the Concessionaire shall submit to the Department a design waiver (using LD-448 format) for Department approval.
- F. The Concessionaire is responsible for design and construction of any mitigation measures identified in design exceptions and design waivers.
- G. The Concessionaire is solely responsible for acquiring design exceptions and design waivers. The Department's approval of a Concessionaire request for a design exception does not guarantee FHWA approval. Previously submitted design exceptions and design waivers are subject to reevaluation if additional information becomes available that was not known at the time of initial submittal or conditions change that were used in the analysis of the original design exception or design waiver and, in either case, if such additional information or changed conditions materially affect the premise on which the original design exception or design waiver at issue was based.
- H. The Concessionaire shall take all reasonable efforts to ensure that the condition of existing buildings, structures, roadways, sidewalks, paths, trails, signs, lighting, TTMS and signal equipment, or other property that is to remain is not adversely affected by the performance of the Work. Prior to commencing Work, the Concessionaire shall perform property pre-condition surveys and monitor their condition during the Work period. The Concessionaire shall repair any damage caused by the Work to at least a condition comparable to that which existed immediately prior to the damage. The Department shall be given the opportunity to witness any pre-condition surveys and/or monitoring

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and the Concessionaire shall make the results available to the Department before commencing any Work that may affect the property.

- I. Values for properties of materials to be used in the Work shall conform to the specified values or range of values in the Standard Documents and specified in the Technical Requirements. Less than complete conformity may be tolerated if obtaining exact or complete conformity would not be feasible and if authorized by the Department. If permissible tolerances are exceeded or if consistent deviations from the plans or abrupt changes in grade occur, even though within the tolerances, the Concessionaire shall ensure that the affected areas are reconstructed to conform to the specified tolerance such that the Work is fit for its intended purpose.
- J. The Opitz Project is considered part of the Strategic Highway Network (STRAHNET).
- K. All Design Documentation and Construction Documentation shall be in US Customary units.
- L. The Concessionaire shall ensure that areas impacted by the Work are subject to continual and un-interrupted removal of rubbish, scrap material, and debris. Work sites shall have a neat, safe and orderly appearance at all times. Prior to Final Completion, the Concessionaire shall remove its construction equipment, materials and debris from the Opitz Project Right of Way and other property used by or adjacent to the Opitz Project.
- M. When removal of mailboxes and newspaper boxes is made necessary by construction operations, the Concessionaire shall place them in temporary locations so that access to the boxes will not be impaired. Prior to Final Completion, boxes shall be placed in their permanent locations as agreed with the Department, upgraded to current criteria, and left in as good condition as when found.
- N. The Concessionaire shall take all reasonable efforts to preserve property and improvements along the boundary lines of and adjacent to the Work unless the removal or destruction is absolutely required and consistent with the Construction Documentation. The Concessionaire shall use suitable precautions to prevent damage to such property. If property is damaged, the Concessionaire shall restore property to a condition similar or equal to that existing before such damage was done by repairing, rebuilding, or restoring, or making settlement with the property owner. Where property of third parties has been damaged and repaired by the Concessionaire, the Concessionaire shall secure from the owner a release from any claim against the Department. A copy of this release shall be furnished to the Department.
- O. The Concessionaire shall provide certified letters to the property owners at the address on record that comply with the Code of Virginia §33.2-1011, Right of Entry. Copies of the letters, signed return receipt or proof of delivery shall be

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provided to the Department fifteen days after the proof of delivery. Notice of intent to enter shall be deemed made on the earlier of the date of mailing, if mailed, or on the date delivered.

3.2 Not Used

3.3 Environmental

3.3.1 Environmental Documentation

- A. The Concessionaire will comply with the environmental commitments set forth in the approved NEPA Document(s) as defined in the Agreement.
- B. The Concessionaire will ensure that the environmental commitments and all conditions of regulatory approvals made in the approved NEPA Document(s), including the documentation referenced in Table 3.3 are implemented at the appropriate phase of the Opitz Project development. The Concessionaire will provide documentation to the Department as each environmental commitment and/or condition of a Regulatory Approval is implemented.

Table 3.3 NEPA Documentation for the Opitz Project	
Document	Date
Categorical Exclusion (CE) and Attachments	January 2022
Right of Way Re-evaluation (EQ-201) review (Opitz Project)	To be completed by the Concessionaire
Environmental Certification (EQ-103) review (Opitz Project)	To be completed by the Concessionaire
Plans, Specification and Estimate (PS&E) Re-evaluation (EQ-200) review (Opitz Project)	To be completed by the Concessionaire

- C. If the Concessionaire becomes aware of new information that may have a bearing on environmental impacts or the Concessionaire proposes changes to the Opitz Project design and/or footprint, it shall notify the Department who will then determine the need for a re-evaluation of the NEPA approvals. The Concessionaire shall be responsible for preparation of any information required for the re-evaluation of the NEPA approvals. The Concessionaire will perform any right of way re-evaluation reviews needed to determine that the Right of Way to be acquired is in compliance with the NEPA approvals.
- D. Prior to right of way authorization for total and partial takes, the Concessionaire shall provide the Department with the right of way plans (approved as per the Agreement) and the Re-evaluation for Right of Way Authorization (EQ-201). The Concessionaire will perform the right of way re-evaluation review to determine the Right of Way to be acquired is in

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compliance with the NEPA approvals. For all acquisitions of Opitz Project Right of Way, if the Department or FHWA determine that the plans are not consistent with the NEPA approvals, the Concessionaire shall revise the plans until they are consistent; or the Concessionaire shall provide necessary studies and other information needed to support the Department's completion and re-evaluation of the NEPA documentation for FHWA approval at the expense of the Concessionaire. The Department will provide copies of all right of way re-evaluation reviews to the FHWA.

- E. Prior to approval of the AFC Documents, the Concessionaire shall provide the Department with final construction plans. The Concessionaire shall update and finalize the Document Re-evaluation for PS&E Authorization (EQ-200), and update and finalize the Environmental Certification/Commitments Checklist (EQ-103) prior to the Department releasing the Project for construction. The Department shall perform the Environmental Certification review and PS&E re-evaluation review and determine if plans are consistent with the scope of the NEPA approvals and all environmental commitments. If the Department or FHWA determines that the plans are not consistent with the NEPA approvals, the Concessionaire shall revise the plans until they are consistent; or the Concessionaire shall provide necessary studies and other information needed to support the Department's completion and re-evaluation of the NEPA documentation for FHWA approval at the expense of the Concessionaire. The Department will provide copies of all Environmental Certification reviews and PS&E re-evaluation reviews to the FHWA.
- F. If the Project includes phased work, each phase will be clearly identified and provided to the Department so that the Department can update and finalize versions of the EQ-200, EQ-201 and EQ-103 documents prior to authorizing right-of-way acquisition and construction for each phase. The Concessionaire shall verify that the EQ-200, EQ-201 and EQ-103 forms have been updated and finalized prior to obtaining approval signatures for each title sheet submittal required for right-of-way acquisition and construction approval.
- G. The Concessionaire is responsible for compliance with Law for potential staging and disposal areas outside the Opitz Project limits. The Concessionaire is also responsible for obtaining a property owner agreement for potential areas outside the existing Department right-of-way (outside the Project limits).

### **3.3.2 Water Quality Permits**

- A. The Concessionaire is responsible for any determinations, delineations, coordination, applications, mitigation, avoidance measures, acquisitions for impacts to streams and wetlands, and administration of required state and federal water quality permits and permit modifications required for construction of the Opitz Project. The Concessionaire shall be responsible for compliance with pre-construction, construction-related and post-construction

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permit conditions. Compensation, per the Agreement, for impacts to streams and wetlands mitigated by the purchase of wetland and stream credits are the responsibility of the Concessionaire. Compensation, per the Agreement, for impacts to streams and wetlands mitigated by stream restoration construction are the responsibility of the Concessionaire. Any fines or delays associated with water quality permit violations arising out of the performance of the Concessionaire's obligations under the Agreement are the responsibility of the Concessionaire.

- B. The Concessionaire is responsible for obtaining all water quality permits required to construct the Project, including utility relocations. Should the Concessionaire propose design changes acceptable to the Department, permitting requirements may also change; the Concessionaire remains responsible for obtaining any and all necessary water quality permits and permit modifications required by the regulatory agencies.
- C. The Concessionaire or its nominee will be listed as the "permittee" in all cases. These permits, and any permit modifications, will be obtained by the Concessionaire, copies provided to the Department, and verified prior to commencing construction.
- D. After receiving the Department's release of the work, the Concessionaire shall notify the Department and the regulatory permitting agencies in writing fourteen (14) days prior to beginning work in the jurisdictional areas covered by the water quality permits.
- E. The Concessionaire shall provide to the Department copies of all permits, documentation, and correspondence with regulatory agencies. Construction activities shall not impact regulated areas within the Project limits until all applicable water quality permits have been issued to the Concessionaire. The Concessionaire shall not proceed with work covered by the water quality permits until the Department releases the work in writing. The Department may release a portion or all of such work not in jurisdictional areas, but may order a suspension of the same work after its release. The Concessionaire shall not be allowed to begin work that pre-determines the work required in the jurisdictional areas until the permits are secured.
- F. At the conclusion of the Project, the Concessionaire shall notify the Department and the regulatory permitting agencies in writing of the completion of the work in the jurisdictional areas covered by the water quality permits. At the completion of the Project, the Concessionaire is required to transfer any Virginia Marine Resources Commission (VMRC) permit back to the Department.
- G. The Concessionaire shall ensure that Project schedules accommodate any Special Provisions, Time of Year Restrictions (TOYR), and the duration of permit acquisition from the regulatory agencies. The Concessionaire shall be responsible for adhering to permit conditions and Special Provisions, as

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identified in the permit authorizations including but not limited to TOYR, avoidance and minimization recommendations, restoration of temporary impact areas, and countersinking culverts.

### 3.3.3 Water Pollution

- A. The Concessionaire shall exercise every reasonable precaution throughout the Term to prevent pollution of rivers, streams, and impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, paints, sedimentation, and other harmful material shall not be discharged into or alongside rivers, streams, or impoundments or into channels leading to them.
- B. Construction discharge water shall be filtered to remove deleterious materials prior to discharge into state waters. During specified spawning seasons, discharges and construction activities in spawning areas of state waters shall be restricted so as not to disturb or inhibit aquatic species that are indigenous to the waters. Neither water nor other effluence shall be discharged onto wetlands or breeding or nesting areas of migratory waterfowl. When used extensively in wetlands, heavy equipment shall be placed on mats.
- C. Temporary construction fills and mats in wetlands and flood plains shall be constructed of approved non-erodible materials and shall be removed by the Concessionaire to natural ground upon completion of the Work in the wetlands or flood plains, unless specifically approved by the Department (in writing) to be left in place.
- D. If the Concessionaire dumps, discharges, or spills any oil or chemical that reaches or has the potential to reach a waterway, it shall immediately notify all appropriate jurisdictional state and federal agencies and shall take immediate actions to contain, remove, and properly dispose of the oil or chemical in accordance with the local, State and federal requirements.
- E. Excavation material shall be disposed of in approved areas above the mean high water mark shown on the plans in a manner that will prevent the return of solid or suspended materials to state waters. If the mark is not shown on the plans, the mean high water mark shall be considered the elevation of the top of stream banks.
- F. Constructing new bridge(s) and dismantling and removing existing bridge(s) shall be accomplished in a manner that will prevent the dumping or discharge of construction or disposable materials into rivers, streams, or impoundments in violation of Law. Construction operations in rivers, streams, or impoundments shall be restricted to those areas where channel changes are permitted and must be entered for the construction of structures. Rivers, streams, and impoundments shall be cleared of falsework, piling, debris, or other obstructions placed therein or caused by the performance of the Work.

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- G. Stabilization of the streambed and banks shall occur immediately upon completion of Work if Work is suspended for more than 15 days. The Concessionaire shall prevent stream constriction that would reduce stream flows below the minimum, as defined by the State Water Control Board, during construction operations.
- H. If it is necessary to relocate an existing stream or drainage facility temporarily to facilitate construction, the Concessionaire shall design and provide temporary channels or culverts of adequate size to carry the normal flow of the stream or drainage facility. Stabilization of the streambed and banks shall occur immediately upon completion of, or during the Work if the Work is suspended for more than 15 days.
- I. The Concessionaire shall submit a temporary relocation design to the Department for review and acceptance in sufficient time to allow for discussion and correction prior to beginning the Work the design covers. The Concessionaire shall pay costs for the temporary relocation of the stream or drainage facility shall be included in appropriate items of the Agreement. Temporary bridges or other structures shall be used wherever an appreciable number of stream crossings will be made.

### **3.3.4 Hazardous Substances**

- A. In accordance with the Agreement, the Concessionaire shall perform any additional studies and investigations as necessary to constitute an appropriate level of due diligence and/or determine actions to ensure due care with respect to Hazardous Substances. The Concessionaire shall submit a summary of findings to the Department.
- B. The Concessionaire shall not acquire property until any required Phase I Environmental Site Assessment is complete and approved.
- C. Following the acquisition and vacation of properties and associated activities, the Concessionaire shall perform asbestos inspections of all structures (including bridge structures) and if necessary, shall perform asbestos abatement and asbestos monitoring in accordance with the Department's asbestos inspection procedures and asbestos abatement specifications. The Concessionaire shall perform abatement of asbestos-containing materials and asbestos project monitoring in accordance with all Law, as well as the applicable standards and specifications referenced in Attachment 1.5a.
- D. The Concessionaire shall be responsible for the development of a Spill Prevention, Control, and Countermeasure Plan as required by regulation and for submission of any required plan to the Department prior to start of construction. In the event of spills or releases of petroleum products and other hazardous liquids or solid materials, the Concessionaire shall take immediate action to contain and eliminate the spill release, including the deployment of environmental protection measures to prevent the migration of the spill into



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the waters of the United States and of worker exposure protection measures. The Concessionaire shall notify the Department immediately of all instances involving the spill, discharge, dumping or any other releases or discovery of hazardous materials into the environment and shall provide all required notifications and response actions.

- E. The Concessionaire shall manage solid waste, hazardous waste, and hazardous materials in accordance with all applicable federal and state environmental regulations and shall implement good housekeeping, waste minimization and pollution prevention practices.
- F. Unless a structure has been otherwise classified, the Concessionaire shall assume all coated structures are Type B.
- G. Asbestos inspection, abatement and project monitoring shall be performed by individuals and firms licensed by the Virginia Department of Professional and Occupational Regulation. Asbestos abatements shall not be performed by an asbestos contractor who has an employee/employer relationship with, or financial interest in, the laboratory utilized for asbestos sample analysis nor shall the asbestos contractor have an employee/employer relationship with, or financial interest in, the asbestos inspector and project designer working on the Project. Copies of all asbestos inspection, monitoring and disposal records shall be provided to the Department.
- H. For any asbestos waste and other non-hazardous waste, the Concessionaire shall have the signatory responsibility for the waste shipping manifest(s) and/or bill(s) of lading. For hazardous waste, the Concessionaire shall be considered the co-generator and shall be responsible for preparing the hazardous waste shipping manifest(s) for the Department's signature and as otherwise consistent with the signatory requirement under Section 411 of the Road and Bridge Specifications.
- I. The Concessionaire shall retain copies of all property studies, documents prepared for containment, management, mitigation and/or remediation, asbestos-related records and any other construction-related Hazardous Substances records in accordance with the requirements of the Agreement. A final copy of all such records shall be submitted to the Department within 30 days after Final Completion.

### **3.3.5 Environmental Monitoring**

- A. The Concessionaire shall carry out environmental commitments during design and construction, as applicable, as identified in the CE, the final Document Re-evaluation for Right of Way Authorization (EQ-201) and PS&E Authorization (EQ-200), and the final Environmental Certification/Commitments Checklist (EQ-103). All commitment compliance shall be supported by appropriate documentation, to be provided by the Concessionaire to the Department.

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- B. The Concessionaire is responsible for the monitoring of compliance, in accordance with environmental permit requirements, with all applicable environmental laws and regulations. Should any non-compliant item(s) be identified by the Concessionaire or Department, continuous corrective action will be taken by the Concessionaire to bring the item(s) back into compliance. Notification of this circumstance shall be provided promptly by the Concessionaire to the Department.
- C. The Concessionaire shall be responsible for compliance with pre-construction and construction-related environmental commitments and permit conditions. The Concessionaire shall assume all obligations and costs incurred by complying with the terms and conditions of the permits and certifications.
- D. The Concessionaire will be responsible for, but not limited to, monitoring the Opitz Project Right of Way for nesting migratory bird species and complying with the Migratory Bird Treaty Act for recommended time of year restrictions.
- E. Except as set forth in the Agreement, the Concessionaire will be responsible for all costs, fines, penalties, and delays associated with any non-compliant items.
- F. The Department reserves the right to perform quality assurance environmental monitoring of the Opitz Project to determine whether the Concessionaire is complying with environmental commitments to Governmental Authorities and is performing activities in accordance with Law and Department specifications.

### **3.3.6 Environmental Stipulations**

The Concessionaire hereby stipulates that any facility used in the performance of the Agreement is not listed on the EPA's List of Violating Facilities pursuant to 40 C.F.R. 15.20 (unless the Concessionaire confirms that the Opitz Project is exempt under the Clean Air Act as amended (42 U.S.C. 1857, et seq., as amended by P.L. 91-604), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq. as amended by P.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 C.F.R., Part 15)) during the Term of the Agreement.

### **3.3.7 Not Used**

### **3.3.8 Air Quality**

- A. The Project has been assessed for potential air quality impacts and conformity with all applicable Federal and state air quality regulations and requirements. This project is located in a nonattainment area for the National Ambient Air Quality Standards (NAAQS) for 8-hour Ozone and is in attainment for all other NAAQS. The project is considered to be exempt from regional emissions analysis requirements for Ozone and all other transportation conformity requirements are not applicable. However, Virginia Department of

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Environmental Quality (VDEQ) air pollution regulations must be adhered to during the construction of this project: 9 VAC 5-130, Open Burning restrictions; and 9 Virginia Administrative Code 5-50, Article 1, Fugitive Dust precautions. The Concessionaire shall adhere to the limitations outlined in Special Provision 107E for Volatile Organic Compound Emissions Control Areas.

- B. The Concessionaire shall comply with the provisions of the Agreement, all applicable Federal requirements, the State Air Pollution Control Law and Rules of the State Air Pollution Control Board, including notifications required therein.
- C. Burning shall be performed in accordance with all applicable state and local laws and ordinances and under the constant surveillance of watchpersons. Care shall be taken so that the burning of materials does not destroy or damage property or cause excessive air pollution. The Concessionaire shall not burn rubber tires, asphalt, used crankcase oil, or other materials that produce dense smoke. Burning shall not be initiated when atmospheric conditions are such that smoke will create a hazard to the motoring public or airport operations. Provisions shall be made for flagging vehicular traffic if visibility is obstructed or impaired by smoke. At no time shall a fire be left unattended.
- D. Asphalt mixing plants shall be designed, equipped, and operated so that the amount and quality of air pollutants emitted will conform to the Rules of the State Air Pollution Control Board. Emission standards for asbestos incorporated in the EPA's National Emission Standards for Hazardous Air Pollutants apply to the demolition or renovation of any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof that contains friable asbestos.

### **3.3.9 Noise Mitigation**

- A. Noise Barriers
  - 1. As part of the approved NEPA Document(s) for the Opitz Project, a noise screening analysis was prepared and concluded that noise barriers are warranted, but not feasible for the Opitz Project. The Concessionaire, at its sole cost and expense, will be responsible for the design and construction of all required noise barriers.
  - 2. As part of the Work, the Concessionaire shall prepare final design and Noise Abatement Design Reports (NADR) in accordance with the requirements of this Section 3.3.9 for the Opitz Project. The Final Design Noise Analysis shall consist of a re-analysis of all noise sensitive receptors in the project area to confirm whether noise mitigation abatement is required.

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3. The Concessionaire shall be advised that noise abatement measures that were found to be feasible and reasonable during the preliminary noise analysis may not be found to be feasible and reasonable during the Final Design Noise Analysis. Conversely, noise barriers that were not considered feasible and reasonable may meet the established criteria and be recommended for construction.
4. The final barrier location(s) and dimension(s) will be determined during the final design noise analysis. A draft NADR shall be submitted to the Department for review and approval prior to the submittal of the final NADR. The NADR shall be furnished by the Concessionaire at its sole cost and expense. The Concessionaire shall be responsible for developing the ENTRADA for the final NADR based on the approved design and or latest design information.
5. In accordance with the results of the final NADR, the Concessionaire will provide permanent noise mitigation abatement in compliance with the Virginia State Noise Abatement Policy, the VDOT Highway Traffic Noise Impact Analysis Guidance Manual, the FHWA Highway Traffic Noise Analysis and Abatement Guidance, the VDOT Noise Report Development and Guidance Document Version 5, the Special Provision for Sound Barrier Walls, the Special Provision for Architectural Finish Concrete Form Liners and Color Stain Coating, the VDOT Soil Design Parameters for Sound Barrier Walls, Retaining Walls and Non-Critical Slopes, and the VDOT Road Design Manual.
6. Upon approval of the final NADR the Department shall prepare a concurrence letter outlining the results of the analysis for the Department's Chief Engineer and FHWA. Once concurrence is achieved, the Concessionaire shall prepare and mail letters "certified return receipt" to benefitted receptors (for barriers that are determined to be feasible and reasonable) to ascertain the desire to have those noise barriers constructed as part of the Opitz Project. In the event a sufficient number of benefitted receptors do not reply, a second mailing may be required. Upon completion of the citizen survey the Department shall prepare a second concurrence letter documenting the results, if necessary. All noise barriers should be named as presented within the NEPA Noise Analysis Technical Report noise screening analysis.
7. All noise barriers recommended for construction and concurred with by the Chief Engineer and FHWA, and approved through the public input process for benefitted receptors, are included in the scope of the Opitz Project and shall be designed, procured and constructed by the Concessionaire in accordance with the Agreement. This includes barriers with conditions, as long as those conditions have been met.
8. Prior to submitting a noise barrier wall plan for the Department's review, the Concessionaire will have the noise consultant that

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completed the NADR review the plan set and certify that the proposed design meets the noise abatement requirements. This certification will be included in the plan set when it is submitted to the Department for review.

9. If deviations in the horizontal or vertical alignment of a noise barrier are proposed following concurrence from the Chief Engineer or FHWA, then the Concessionaire shall perform any additional noise analysis and provide the results to the Department for review and approval prior to construction (to include fabrication of any unique panels or posts). This will include a plan and profile view of the roadway with the alignments recommended barrier and the proposed design. A justification of the deviation will be included with the plan set. The revised NADR chapter for the noise barrier for which modification is requested will be submitted with this additional information.
10. The Department's written approval of the barrier deviation will be required before the Concessionaire can approve AFC Documentation.
11. A key plan will be clearly labeled to show the location of the ground-mounted combo walls (noise barrier on retaining wall) and bridge-mounted noise barriers.
12. Plan view will provide the alignment of the noise barrier with the roadway plan view.
13. Profiles of the wall alignment will include the noise attenuation line and the existing and proposed elevation. If combo walls or bridge-mounted barriers are present along the alignment, the pattern of the line will be different so that all lines can be distinguished.
14. Stations of the roadway and noise barrier will be included on both the plan and profile views.
15. Noise barrier walls will be designed (including location, grading, and drainage) with a 10-foot wide maintenance area behind the walls with access for personnel and equipment. The back of the noise barrier wall shall be a minimum of 10 feet from the existing Department right of way line. If the 10-foot wide maintenance area is unavailable, requires support of excavation or right-of way acquisition, the 10-foot maintenance area dimension may be reduced as approved by the Department.
16. A minimum 3 foot wide bench of a slope of 4:1 or flatter shall be provided at the front and back of the noise wall to allow for inspection and maintenance access. The bench shall be sloped away from the wall.

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17. The color, texture, and finish of all noise barrier walls constructed on the Opitz Project Project (both the roadway side and the back side) shall be in accordance with Section 3.11.
  18. Use of access doors is not allowed unless approved by the Department. Access shall be provided via overlapping wall gaps. Gaps may be provided in the walls with a 3:1 overlap to gap ratio. If the use of access doors is approved by the Department, the Concessionaire shall provide the plans for review and approval by Department prior to fabrication. Personnel access doors shall have:
    - i. A minimum inside frame dimension of 48-inches by 86-inches;
    - ii. Stainless steel hardware, industrial grade pull handle;
    - iii. A deadbolt lock with key on both sides;
    - iv. Open away from I-95; and
    - v. A minimum 4-ft by 4-ft 4-inch thick concrete pad on both sides of the door.
  19. Noise barrier walls will have a setback from the back of the barrier no more than one foot, where feasible. The area between the barrier and wall will be filled to prevent debris from collecting in the area, if setback is one foot or less.
  20. Noise barrier wall design will be coordinated with first responders to ensure access to fire hydrants and other Emergency equipment, where feasible.
  21. The Concessionaire shall begin construction of new noise barriers within 60 days of the demolition of an existing noise barrier and/or cutting of trees which were acting as a screen for adjacent properties. The Concessionaire shall complete construction of any new noise barrier intended to replace an existing noise barrier and/or trees which were acting as a screen for adjacent properties within 180 days from the start of construction of that noise barrier.
  22. If the Concessionaire is unable to begin construction of a new noise barrier within 60 days of the demolition of an existing noise barrier and/or cutting of trees which were acting as a screen for adjacent properties, the Concessionaire shall provide temporary noise mitigation to noise sensitive receptors where the existing noise barriers and/or trees were removed.
- B. Construction Noise

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1. The Concessionaire's operations shall be performed so that exterior noise levels measured during a noise-sensitive activity shall be not more than 80 decibels. Noise-sensitive activity is any activity for which lowered noise levels are essential if the activity is to serve its intended purpose. Such activities include those associated with residences, hospitals, nursing homes, churches, schools, libraries, parks, and recreational areas.
2. Concessionaire shall monitor its construction-related noise if requested by local agencies, the Department or neighboring property owners. If construction noise levels exceed 80 decibels during noise-sensitive activities, the Concessionaire shall take corrective action before proceeding with operations.
3. The Concessionaire shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to non-compliance with these requirements.
4. The Concessionaire is responsible for obtaining any necessary local noise ordinance variances prior to the scheduling of night time operations
5. Concessionaire shall determine whether certain portions of the Opitz Project that produce objectionable noise should be restricted or prohibited between 10 PM and 6 AM. If other hours are established by local ordinance, the local ordinance shall govern.
6. Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment. When feasible, the Concessionaire shall establish haul routes that direct his vehicles away from developed areas and ensure that noise from hauling operations is kept to a minimum.
7. These requirements are not applicable if the noise produced by sources other than the Concessionaire's operation at the point of reception is greater than the noise from the Concessionaire's operation at the same point.

### **3.3.10 Forests**

- A. The Concessionaire shall take all reasonable precautions to prevent and suppress forest fires in any area involved in construction operations or occupied by it or its contractors as a result of such operations.
- B. The Concessionaire shall cooperate with the proper authorities of the state and federal governments in reporting, preventing, and suppressing forest fires. Labor, tools, or equipment furnished by the Concessionaire upon the order of

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any forest official issued under authority granted the official by law shall not be considered a part of the Agreement.

- C. The Concessionaire shall negotiate with the proper forest official for compensation for such labor, tools, or equipment.

### 3.3.11 Cultural Resources

- A. In the event that a previously unidentified historic property (prehistoric or historic district, archaeological site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places) is discovered once construction has begun, the Concessionaire shall immediately halt all construction work in the area of the resource and in surrounding areas where additional subsurface remains can reasonably be expected to occur. Work in all other areas of the Opitz Project may continue. The Concessionaire shall immediately notify the Department, which will in turn notify the FHWA. The Department and the FHWA, in cooperation with the Concessionaire, shall then address the discovery in accordance with one of the applicable processes described at 36 CFR 800.13. The Concessionaire shall be responsible for conducting any technical studies needed to determine whether the resource is eligible for inclusion on the National Register of Historic Places and whether the Opitz Project will affect the resource, and for implementing appropriate treatment as determined through FHWA's consultation with the Virginia State Historic Preservation Officer (SHPO). Subject to the exception in the Agreement, all costs associated with these technical studies and treatment actions shall be the responsibility of the Concessionaire. Pursuant to §10.1-2302 of the Code of Virginia, prior to conducting any archaeological investigations on state-controlled lands (including state-owned highway right of way), the Concessionaire must first obtain a permit from the Director of the Virginia Department of Historic Resources.
- B. In the event fossils, meteorites, or other articles of paleontological or rare mineralogical interest are discovered once construction has begun, the Concessionaire shall immediately suspend work at the site of the discovery and notify the Department. The Department will immediately notify the proper state authority charged with the responsibility of investigating and evaluating such finds. The Concessionaire shall cooperate and assist the Department in protecting, mapping, and removing the finds as determined necessary by the Department in consultation with the proper state authority.
- C. Any archaeological remains, fossils, meteorites, or other articles of paleontological or rare mineralogical interest found on state-controlled lands (including state-owned highway right of way) are the property of the Commonwealth of Virginia. Articles recovered from other than state-controlled lands are the property of the landowner unless other agreement is reached with the owner.



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- D. When the discovery of historic properties, fossils, meteorites, or other articles of paleontological or rare mineralogical interest delay the progress or performance of the Work, the Concessionaire shall notify the Department immediately.
- E. The Concessionaire shall consider historic properties to be design constraints and avoid impacting them. In addition, the Concessionaire shall notify the Department in advance of any other project-related activities, including but not limited to staging, borrow/disposal, and any temporary or permanent easements, proposed to be located on or within the viewshed of historic properties. These activities, any changes to the design, alignment, right-of-way limits, or easements, or any additions to the Project such as stormwater management facilities, stream or wetland mitigation sites, or noise barriers, may require review by the Department and could require additional cultural resources studies and/or coordination with the VA SHPO. The Concessionaire is responsible for conducting all cultural resources studies necessitated by the proposed changes, in accordance with the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation*, and the Virginia Department of Historic Resources' most current *Guidelines for Conducting Survey in Virginia*, while the Department is responsible for coordinating both the studies and the proposed changes with the VA SHPO. The Concessionaire shall then carry out any additional cultural resources commitments that result from such coordination at its sole expense and at no additional cost to the Project.

### **3.3.12 Not Used**

### **3.3.13 Section 4(f) and Section 6(f) Resources**

- A. The approved NEPA Document(s) concluded that there is no Use of Section 4(f) Resources on the Project, nor a Section 6(f) of the Land and Water Conservation Act of 1965 (54 U.S.C. § 200305) conversion associated with any planned or existing park or historic resource within the vicinity of the Project area.
- B. Any changes to the right-of-way or easements as shown on the Opitz Design Plans, proposed by the Concessionaire, may require additional technical studies and analysis to be performed by the Concessionaire. The Concessionaire shall be responsible for notifying the Department of plan revisions, right-of-way/easement changes, and providing any necessary studies and other necessary information to support the Concessionaire's completion of any required Section 4(f) documentation. The Department will be responsible for the coordination of any Section 4(f) documentation with FHWA. The Concessionaire shall then carry out any additional commitments that result from such coordination at its sole expense and no additional cost or time delays to the Project.

### 3.3.14 Threatened and Endangered Species

- A. The Categorical Exclusion (CE) document prepared for the Project determined that Threatened and Endangered (T&E) species are neither present nor will be impacted within the limits of the Project.
- B. The Concessionaire shall be advised that new and updated T&E information is continually added to agency databases. The Concessionaire shall be responsible for any subsequent coordination to obtain updated information, requirements, and clearances from environmental regulatory agencies that provide T&E species oversight. The Concessionaire shall copy the Department's District Environmental Manager on any submittals requesting concurrence from the United States Fish and Wildlife Service (USFWS) on effect determinations of federally-listed species. This additional T&E species coordination is also a standard component of the water quality permit acquisition process and may result in permit conditions for which the Concessionaire will be responsible. The Concessionaire is responsible for ensuring that all T&E species are correctly identified and impacts assessed, noting that more or less resources may be present than initially identified. Avoidance and minimization shall be implemented to the greatest extent possible. The Concessionaire shall provide to the Department copies of all documentation and correspondence with regulatory agencies.
- C. For Endangered Species Act consultation on all federally eligible projects/activities:
  - 1. The Department's District Environmental Manager must review the USFWS Project Review Package and transmittal letter prior to submittal to USFWS for informal consultation and must be copied on any submittal by non-VDOT entities.
  - 2. For formal consultation, the Department's District Environmental Manager must submit formal consultations through the FHWA. If formal consultation is required, the Concessionaire is responsible for developing or obtaining any necessary documentation to support its effect determination.

## 3.4 Geotechnical

### 3.4.1 Geotechnical Design

- A. **Geotechnical Design Engineer** – This individual shall be responsible for ensuring that all geotechnical investigations, analysis and recommendations that are necessary for the design and construction of the Opitz Project are performed in accordance with the Technical Requirements. The geotechnical design engineer shall ensure that all geotechnical design and construction

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considerations have been properly considered in the design and included in the work plans, specifications, copied notes, and constructability reviews for the Opitz Project. This individual shall have a minimum fifteen (15) years of geotechnical engineering experience and expertise working in the region and/or in areas of similar geologic settings with similar project features for this Opitz Project. The geotechnical design engineer shall be a professional engineer licensed in the Commonwealth.

- B. The minimum soil parameters to be used for design of foundations for noise barrier walls, minor retaining walls (e.g., less than 15 feet in height) and for the design of non-critical slopes (e.g., less than 25 feet in height) shall be in accordance with the standards and specifications set forth in Attachment 1.5a.
- C. The Concessionaire shall collect appropriate data for geotechnical evaluation of embankments, soil and rock cuts, culverts, bridge and wall structures, noise barriers, storm water management facilities, minor structures including drainage pipes, and any other earth-supported structures or elements of highway design and construction. The Concessionaire shall be responsible for obtaining any Regulatory Approvals required for any borings needed in performance of the Concessionaire's geotechnical investigation for the Opitz Project. The Concessionaire shall complete laboratory tests in accordance with pertinent VTM, ASTM or AASHTO standards and analyze the data to provide design and construction requirements. Soils and materials tests shall be performed by a laboratory accredited by AASHTO for each test it conducts for the Opitz Project, unless otherwise approved by the Department. The Concessionaire shall have a geotechnical engineering report approved by the Department before beginning construction.
- D. The Concessionaire shall provide to the Department records of all subsurface explorations and describe the soils encountered and their depth limits, in accordance with the requirements outlined in Chapter 3 of the Department Manual of Instructions for Materials Division and conduct the investigation in accordance with an exploratory boring plan(s) approved by the Department. Preliminary and final/design geotechnical investigations shall be performed to meet the minimum requirements set forth in Attachment 1.5a. The final geotechnical investigation plan(s) shall be in compliance with Chapter 3 of the Department's Materials Manual of Instructions, the AASHTO LRFD Bridge Design Specifications, and VDOT Modifications; and Section 700.05 (c) of the Road and Bridge Specifications unless otherwise approved by the Department. The Concessionaire shall provide electronic copies of all subsurface explorations in accordance with the boring log template available on the website address included in Chapter 3 of the Department Manual of Instructions for Materials Division. The electronic files shall be provided by a certified Professional Geologist or a suitably qualified registered Professional Engineer licensed in the Commonwealth, in gINT© software, before beginning of construction. Upon request, the Department will provide its

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gINT© and Microsoft Access file structures for the Geotechnical Database Management System.

- E. When deviating from the standards and specifications outlined in Attachment 1.5a, the Concessionaire shall incorporate reliability assessments in conjunction with standard analysis methods. An acceptable method for evaluation of reliability is given by Duncan, J.M. (April 2000) *Factors of Safety and Reliability in Geotechnical Engineering*, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Discussions and Closure August 2001. A suitable design will provide a probability of success equal to or greater than 99%.
- F. The Concessionaire shall provide to the Department a geotechnical design report that summarize pertinent subsurface investigations, test, and engineering evaluations. Technical specifications for construction methods that are not adequately addressed in the standards and specifications set forth in Attachment 1.5a shall be provided by the Concessionaire. The Concessionaire shall review the Construction Documentation to assure that they have appropriately incorporated the geotechnical components. The quality control-quality assurance documents shall document how each specific geotechnical recommendation or requirement is addressed in the Construction Documentation. The results of the geotechnical investigation and laboratory results shall support the design and construction efforts to meet the requirements for the pavement design set forth in Attachment 1.5a.
- G. The Concessionaire shall minimize differential settlements of the approach to a bridge for new construction and when applicable provide construction recommendations to address soil-structure interaction to accommodate the unique construction methods applied to the Opitz Project. All geotechnical work shall be completed to satisfy baseline and post- construction contract performance requirements, as described below.
- H. The Concessionaire shall design and construct pavements, subgrades, and embankments to meet the following post-construction settlement tolerances:
1. Total vertical settlement less than two inches over the initial 20-years, and less than one inch over the initial 20-years within one hundred (100) feet of bridge abutments;
  2. Settlement that will not impede positive drainage of the pavement surface especially within the travel lanes nor subject the roadway to flooding in area where it is applicable;
  3. Settlement that does not result in damage to adjacent or underlying structures, including utilities; and
  4. For pavement sections of approach slabs, bridge decks, and tie-ins to the Project, grade tolerances shall be measured with a 10-foot straightedge.

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The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than plus (+) 0.25-inch to minus (-) 0.125 -inch at structures and (+/-) 0.25-inch at Project tie-ins.

5. Humps, depressions, and irregularities exceeding the specified tolerance will be subject to correction by the Concessionaire. The Concessionaire shall notify the Department for any non-conformance items.
- I. The Concessionaire shall consider settlement and design foundations (bridges, retaining walls, pipes and other structures) based upon requirements of the VDOT Manual of the Structure and Bridge Division.

A general note shall be placed on the Design Documentation which communicates the amount of settlement evaluated and accommodated by the structure.

- J. The total vertical and/or differential settlements of the proposed structures shall not exceed the performance tolerance noted above for pavements and of the bridge decking. In addition, angular distortion between adjacent foundations greater than 0.008 radians in simple span and 0.004 radians in continuous span structures is not permitted unless first approved by the Department.
- K. In the vicinity of existing structures, the Concessionaire shall analyze settlement and flexibility of the existing substructure elements due to additional fill and shall minimize the impact on the existing structure. In any case, the total settlement of the existing ground shall be limited to ½ inch over 20 years within 100 feet of the structure. If the reduction of total settlement is not feasible, the Concessionaire shall develop an engineered solution that isolates any existing structure(s) from the adjoining settlement.
- L. The Concessionaire's qualified geotechnical engineer shall perform an inspection of all pavement subgrades and minor structure excavations immediately prior to placement of aggregate base, subbase or bedding materials to identify excessively soft/loose or saturated soils that exhibit excessive pumping, weaving or rutting under the weight of the construction equipment. Such soils are also considered unsuitable and must be removed or modified in place to provide adequate support for embankment, pavement subgrade or minor structures.

### 3.4.2 Slope Design

- A. Embankments and certain aspects of retaining wall design are not addressed by LRFD. Embankments and cut slopes shall be designed in accordance with Section 305 of the Department's Materials Division's MOI. Cut and fill slopes shall be no steeper than 2H:1V, unless supported by an engineering analysis and design based on site-specific field investigation and site-specific

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laboratory strength testing. Slopes steeper than 2H:1V must be approved by the Department. All cut and fill slopes shall be designed to be stable for the interim construction stages, for the end-of-construction condition, and for design-life conditions. The Concessionaire is responsible for verifying the stability of all slopes, including those retained by structures.

- B. The following factors of safety are to be used with limit equilibrium methods of analysis to identify factors of safety for representative sections of all soil cut and soil embankment fill slope areas higher than 10 feet, and/or where slopes are supporting, or are supported by, retaining structures. The factors of safety listed in Table 3.4 are valid for subsurface investigations performed in accordance with Chapter III of the Department’s Materials Division’s Manual of Instructions or for site-specific investigation plans approved by the Department’s Materials Engineer. Approval of site-specific investigation plans with reduced boring frequency may require higher factors of safety. Table 3.4 is not applicable for rock cut slopes.

Table 3.4 Minimum Factors of Safety for Soil Cut/Fill Slopes		
Soil Slope analysis parameters based on:	Factor of Safety	
	Involves Structure or Critical Slope <sup>1</sup>	Non-Critical Slope
In-situ or lab. tests and measurements <sup>2,3</sup>	1.5	1.3
No site specific tests	N/A <sup>3</sup>	1.5
<ol style="list-style-type: none"> <li>1. A critical slope is defined as any slope that is greater than 25 ft. in height, affects or supports a structure, or whose failure would result in significant cost for repair, or damage to, private property</li> <li>2. Site specific in-situ tests include both groundwater measurements and SPT testing but may also include CPT or DMT</li> <li>3. Parameters for critical slopes involving structures must be based on specific laboratory testing</li> <li>4. Problem soils (fissured or heavily over-consolidated soils), must be analyzed using shear strength parameters determined from appropriate laboratory strength tests</li> <li>5. Problem soils should be analyzed for short- and long-term stability using residual strength parameters obtained from laboratory shear testing. These parameters should be determined by drained direct shear tests using sufficient stress reversals to obtain large strains as discussed in the U.S. Army Corps of Engineers laboratory testing procedures EM-1110-2- 1906. Many reversals are required to reach residual strengths and some references suggest using a pre-split sample (Ref. Engineering properties of Clay Shales, Report No. 1 by W. Haley and B.N. Maclver).</li> <li>6. Construction plans shall specify use of soil types consistent with the parameters used in slope analyses</li> </ol>		

- C. Potomac Formation clay/silts are known to be present within the limits of the proposed construction. Global and slope stability analyses of Potomac Formation clay/silts shall be analyzed using residual strength parameters for

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problem soils wherever they are encountered and/or mapped on local geologic/soils maps.

### 3.4.3 Pipe Installation Methods

- A. Culverts or utility pipes shall be installed by either conventional methods in accordance with Section 302.03 of the Road and Bridge Specifications, or Jack and Bore and/or by Micro-tunneling in accordance with the applicable Special Provisions. Trenchless technology other than these methods of installation is not permitted unless otherwise approved by Department. The Concessionaire's design Professional Engineer shall choose which of the methods of installation is best suited for the ground and site conditions where the work is to be performed and that will meet the design requirements of the proposed culverts or utility pipes.
- B. Any utility or storm drain installations which crosses the I-95 mainline travel lanes or ramps shall be installed using trenchless methods. Under no circumstance shall open trench installation of a utility or storm drain be allowable across any mainline travel lanes, shoulders, or ramps which are actively in use during full pipe installation (i.e. lane or ramp closures for pipe installation will not be permitted). Additional changes to traffic patterns utilized only for the installation of pipes using open cut methods shall not be permitted. The Concessionaire shall be responsible for requesting and receiving Department approval for any installations proposed to use the open cut method prior to plan submissions reflecting this work.
- C. The design Professional Engineer shall be responsible to establish both the vertical and horizontal tolerances in support of the design. Such tolerances shall be noted on the construction plans. The design tolerance may be more stringent than what is called for in the both the Jack and Bore and Micro-Tunneling Special Provisions; however, under no circumstances shall the performance requirements and design tolerances used in design of either culverts or utility pipes exceed those specified in the Road and Bridge Specifications and the applicable Special Provisions unless first approved by the Department. Performance requirements and tolerance stipulated in the Special Provision for Micro-Tunneling shall also apply to conventional tunneling methods.

### 3.4.4 Geotechnical Exploration Plan Submission and Approval

- A. The Concessionaire shall develop a Geotechnical Exploration Plan (GEP). Additional explorations shall be performed, as determined necessary by the Concessionaire and to meet the minimum requirements of the Project.
- B. The exploration shall meet or exceed the minimum requirements stated in Chapter III of the MOI, AASHTO LRFD Bridge Design Specifications, and AASHTO Manual on Subsurface Investigations. The Concessionaire shall determine the specific scope of the GEP (exploration locations, depths, etc.).

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- C. The Concessionaire shall conduct a meeting to review the Concessionaire's GEP prior to proceeding with the field exploration work..
- D. Following completion of exploratory work, all as-performed boring/field testing locations shall be surveyed. The survey shall determine station and offset, elevation, and state plane coordinates, which shall be included on the boring logs with accuracy as stated in MOI Chapter III. Following drilling and laboratory Work, the Concessionaire shall retain all samples until Final Completion and shall provide such samples to the Department in accordance with Section 303.06, Chapter III of the MOI.
- E. Laboratory testing of soil and groundwater samples shall be performed in accordance with AASHTO testing procedures. Laboratories conducting geotechnical testing shall be either AASHTO accredited for the testing being performed or fulfill the requirements of AASHTO R18 for qualifying testers and calibrating/verifying of testing equipment for those tests being performed. All lab test results shall be included in the Geotechnical Engineering Report.

### 3.4.5 Unsuitable Materials

- A. Unsuitable Material is defined as material used as embankment fill, and in cut areas to a depth of at least three (3) feet below subgrade directly beneath pavements and at least two (2) feet beneath the bedding of minor structures and laterally at least two (2) feet beyond the outside edge of the pavement shoulders and bedding limits of the minor structures that meets one or more of the following criteria: classifies as CH, MH, OH and OL in accordance with the Unified Soil Classification System (USCS); contains more than five (5) percent by weight organic matter; exhibits aggressive soil properties as deemed by the Concessionaire's geotechnical engineer; exhibits a swell greater than five (5) percent as determined from the California Bearing Ratio (CBR) test using VTM-8; exhibits strength, consolidation, durability of rock or any other characteristics that are deemed unsuitable by the Concessionaire's geotechnical engineer for use in the Work. All materials within the uppermost three (3) feet of a pavement subgrade that exhibits a CBR value less than that stipulated in the pavement design shall also be considered unsuitable.
- B. The anticipated locations and methods of treatment for unsuitable materials identified by the Concessionaire's qualified geotechnical engineer shall be shown on the design plans and cross sections as required by the Location and Design Division's Road Design Manual. Acceptable methods of treating unsuitable soils are: a) complete removal from 2 feet beyond the outside edge of shoulder on each side of the pavement or bedding limits of minor structures and replacement with structural fill; b) partial removal to at least 3 feet below final pavement subgrade or minor structure bedding elevation to within the limits noted in (a) and replacement with select material, type I, min. CBR 30 and geosynthetic material; c) raising grades with select fill and geosynthetic material to provide a minimum 2 feet of separation between these soils and final pavement subgrade or minor structure bedding; d) chemical stabilization



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of the soils to a minimum depth of 12 inches below final pavement subgrade. Highly plastic clays and elastic silts mapped as Potomac Formation or Iredell, Jackland or Jackland-Haymarket complex (problem soils) shall not be chemically stabilized. Highly plastic clays or elastic silts may be used by compacting them in confined embankment fills and capping them with at least 2 feet of suitable subgrade fill material provided these fills are adequately engineered and constructed.

- C. Saturated or very dry and/or loose or very soft coarse- and fine-grained soils that exhibit excessive pumping, weaving or rutting under the weight of construction equipment are also considered unsuitable unless they can be moisture conditioned through either mechanical or chemical means to an acceptable moisture content that allows adequate compaction to meet project specifications, and classification testing indicates they are not otherwise unsuitable. Topsoil, peat, coal and carbonaceous shale shall also be considered unsuitable material. All unsuitable material shall be disposed of and/or treated as discussed in Section 106.04 of the Road and Bridge Specifications at no additional cost to the Department. Topsoil or other organic soils are also considered unsuitable for use in embankment fill other than as a cover for slopes for the purpose of establishing vegetative cover. When used as cover for slopes, the thickness of topsoil shall not exceed twelve (12) inches.

### **3.4.6 Not Used**

### **3.4.7 Vibration Control**

- A. The Concessionaire shall control vibrations in accordance with the requirements of the *Monitoring of Adjacent Structures During Construction Special Provision* included in Attachment 1.5a. In addition to private/adjacent properties, this includes structures under construction, structures owned by the Department, and structures constructed by the Concessionaire within the scope of the Opitz Project. Adjacent structures shall be defined as structures within a 200' radius of driving, drilling, or excavation activities. The Concessionaire shall be responsible for providing vibration monitoring and repairing any and all damage to adjacent facilities and structures for construction-induced damage. The Concessionaire shall provide vibration monitoring data reports to the Department.

### **3.4.8 Coordination and Review by Geotechnical Engineer**

- A. The Concessionaire's geotechnical engineer of record shall identify the elements of the Project in which the geotechnical engineer or their qualified designated representative is required to monitor/inspect during construction to ensure that the completed Project will function in accordance with the design intent over its expected lifetime. This shall include, but not limited to foundation subgrades, installation and load testing of deep foundations, embankment and pavement subgrades, instrumentation and monitoring of settlement, assessment and treatment for potential weak or unsuitable soils,

rock excavation and rock slopes, and retaining structures that include tie-backs and anchors. A complete listing of these elements shall be included as part of the QMSP.

## **3.5 Materials**

### **3.5.1 Rights for and Use of Materials Found on the Opitz Project**

- A. With approval of the Department, the Concessionaire may use in the Opitz Project any materials found in the excavation that comply with the standards and specifications set forth in Attachment 1.5a. The Concessionaire shall replace at its own expense with other acceptable material the excavation material removed and used that is needed for use in embankments, backfills, approaches, or otherwise, unless used on the Opitz Project. The Concessionaire shall not excavate or remove any material from within the construction limits that is not within the grading limits, as indicated by the slope and grade lines. The Concessionaire shall not waste, bury, deposit, or abandon any material within the Opitz Project limits.

### **3.5.2 Not Applicable**

### **3.5.3 Not Applicable**

### **3.5.4 Not Applicable**

### **3.5.5 Samples, Tests, and Cited Specifications**

The Concessionaire is responsible for quality control, quality assurance, and ensuring compliance with the Technical Requirements. The Department, at its discretion, may conduct testing and audits in its performance of Oversight Services.

### **3.5.6 Material Delivery**

The Concessionaire shall advise the Department at least two weeks prior to the delivery of any material from a commercial source. Upon delivery of any such material to the Opitz Project, the Concessionaire shall confirm that the material meets the requirements of the Technical Requirements and, if so, shall provide the Department with one copy of all invoices (prices are not required).

### **3.5.7 Plant Inspections**

If the Department inspects materials at the source, the following conditions shall be met:

- A. The Department shall have the cooperation and assistance of the Concessionaire and producer of the materials.
- B. The Department shall have full access to parts of the plant that concern the manufacture or production of the materials being furnished.

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- C. The Concessionaire shall arrange and bear any cost associated with travel and lodging for the Department to witness factory acceptance testing (FAT) of TMS, ETTM Equipment and ETTM System which occurs more than 200 miles from the Opitz Project site.

### 3.5.8 Storing Materials

- A. Materials shall be stored in a manner so as to ensure the preservation of their quality and fitness for the Work. When considered necessary by the QAM or the Department, materials shall be stored in weatherproof buildings on wooden platforms or other hard, clean surfaces that will keep the material off the ground. Materials shall be covered when directed by the Department. Stored material shall be located so as to facilitate its prompt inspection. Portions of the Opitz Project Right of Way approved by the Department may be used for storage of material and equipment and for plant operations. However, equipment and materials shall not be stored within the clear zone of the travel lanes open to traffic.
- B. Additional required storage space shall be provided by the Concessionaire. Private property shall not be used for storage purposes without the written permission of the owner. Copies of the written permission shall be furnished to the Department. Upon completion of the use of the property, the Concessionaire shall furnish to the Department a release signed by the property owner indicating that the property has been satisfactorily restored.
- C. Chemicals, fuels, lubricants, bitumens, paints, raw sewage, and other harmful materials as determined by the QAM or the Department shall not be stored within any floodplain unless no other location is available and only then shall the materials be stored in a secondary containment structure(s) with an impervious liner. Also, any storage of these materials in proximity to natural or man-made drainage conveyances or otherwise where the materials could potentially reach a waterway if released under adverse weather conditions, must be stored in bermed or diked area or inside a container capable of preventing a release. Double-walled storage tanks shall meet the berm/dike containment requirement except for storage within flood plains. Any spills, leaks, or releases of such materials shall be addressed in accordance with the Agreement. Accumulated rain water may also be pumped out of the impoundment area into approved dewatering devices.
- D. ETTM, electronic devices, network and computer gear shall be stored in an environmentally controlled space as might be required in accordance with manufacture's recommendation.

### 3.5.9 Handling Materials

Materials shall be handled in a manner that will preserve their quality and fitness for the Work. Aggregates shall be transported from storage to the Work in vehicles constructed to prevent loss or segregation of materials.

### **3.5.10 Unacceptable Materials**

Materials that do not conform to the Technical Requirements shall be considered unacceptable. Such materials, whether in place or not, will be rejected and shall be removed from the site of the Work. If it is not practical for the Concessionaire to remove rejected material immediately, the Concessionaire will mark the material for identification. Rejected material whose defects have been corrected shall not be used until approval has been given by the Department in accordance with the QMSP.

### **3.5.11 Not Used**

### **3.5.12 Local Material Sources (Pits and Quarries)**

- A. Local material sources, other than active commercial sand and gravel and quarry operations, opened by the Concessionaire or its subcontractors shall be concealed from view from the completed roadway and any existing public roadway. Concealment shall be accomplished by selectively locating the pit or quarry and spoil pile, providing environmentally compatible screening between the pit or quarry site and the roadway, or using the site for another purpose after removal of the material, or restoration equivalent to the original use (such as farm land, pasture, or turf).
- B. Should the Concessionaire wish to source construction materials from (non-commercial) new pits or quarries the Concessionaire shall furnish the Department a statement signed by the property owner in which the property owner agrees to the use of their property as a source of material for the Opitz Project. Upon completion of the use of the property as a material source, the Concessionaire shall furnish the Department a release signed by the property owner indicating that the property has been satisfactorily restored. This requirement will be waived for commercial sources, sources owned by the Concessionaire, and sources furnished by the Department.
- C. Local material pits and quarries that are not operated under a local or State permit shall not be opened or reopened without authorization by the Department.

### **3.5.13 Materials Disposal**

- A. Unsuitable or surplus material shall be disposed of by the Concessionaire off the Opitz Project Right of Way. The Concessionaire shall obtain the necessary rights to property to be used as an approved disposal area. An approved disposal area is defined as that which is owned privately, not operated under a local or State permit and has been approved by the Department for use in disposing unsuitable or surplus material.
- B. Disposal areas shall be cleared but need not be grubbed. The clearing work shall not damage grass, shrubs, or vegetation outside the limits of the approved area and haul roads thereto. After the material has been deposited, the area

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shall be shaped to minimize erosion and siltation of nearby streams and landscaped in accordance with the approved plan for such work or shall be used as approved by the Department. The Concessionaire's design and restoration shall conform to the requirements of the Agreement.

- C. The Concessionaire shall furnish the Department a statement signed by the property owner in which the owner agrees to the use of their property for the deposit of material from the Opitz Project. The property owner will hold harmless the Department, their officers, their agents, and their employees. Upon completion of the use of the property as an approved disposal area, the Concessionaire shall furnish the Department a release signed by the property owner indicating that the property has been satisfactorily restored. This requirement will be waived for commercial sources and sources owned by the Concessionaire.
- D. The Concessionaire will obtain a VPDES Construction Permit as well as any other applicable permits for a disposal area, which shall be in compliance with the standards and specifications set forth in Attachment 1.5a.
- E. The Concessionaire shall dispose of all defunct TMS, ETTM, cable, devices, electric, and electronic equipment properly and provide documentation to the Department.

### **3.6 Drainage, Erosion and Siltation, and Stormwater Management**

#### **3.6.1 Drainage**

- A. The criterion detailed herein is shown in the Department's Drainage Manual and associated Instructional and Informational Memoranda (IIM) and shall be used to provide for flood protection, drainage design, erosion and sediment control, and stormwater management. All other hydraulic criteria not referenced herein, including but not limited to, increases in existing flood levels, bridge scour protection, protection of downstream waterways, upstream and downstream property impacts, and compliance with environmental and safety requirements, shall be in accordance with the Attachment 1.5a.
- B. The Opitz Project will be governed by the Part II-B Technical Criteria under the VSMP Regulations. Final Design Documentation for any hydraulic design shall include a complete set of final drainage computations sealed and signed in accordance with latest IIM-243.
- C. The drainage design will include but not be limited to enclosed storm sewer systems, curb inlets, drop inlets, stormwater management systems for water quality and water quantity, manholes, junction boxes, culverts, headwalls, channels, ditches, bridge drainage assemblies and structures that remove and transport runoff or convey stream flows, adequate outfalls, and erosion and sediment control. These efforts shall be in compliance with the Attachment 1.5a.

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- D. The Concessionaire will prepare drainage design criteria and a list of software packages to be used in the design prior to commencement of Work for review and approval by the Department.
- E. The Concessionaire will assemble and review all available data, studies, and development plans impacting the Opitz Project corridor for use in preparing the drainage design. The Concessionaire will perform a hydrologic and hydraulic analysis within the limits of the Opitz Project and extend the analysis to include all offsite areas that will drain through or impact the Opitz Project.
- F. The Concessionaire shall design and install new drainage facilities and will be permitted to use existing drainage systems that have adequate hydraulic capacities and adequate structural integrity in accordance with applicable standards and specifications set forth in Attachment 1.5a. Existing drainage assets determined not to be needed for the Concessionaire's drainage design or other Department use, as determined by the Department, shall be abandoned in place or removed by the Concessionaire at its sole cost.
- G. All existing drainage facilities within the Opitz Project Right of Way that are adversely impacted by the Concessionaire's activities and that the Concessionaire intends to leave in place shall be evaluated and verified to have adequate hydraulic capacity for the ultimate land use condition in accordance with the VDOT Drainage Manual at the Concessionaire's cost. The evaluation of existing drainage facilities shall be based on the applicable design storm frequency per the current Department criteria.
- H. The Concessionaire shall provide the Opitz Drainage Existing Condition Assessment Report to the Department for review and approval prior to proceeding to final design. The report shall include all the pipes that the Concessionaire intends to leave in place for continued use and also the pipes which will be subjected to additional embankment, and/or live loading. The report shall include a certification from the Concessionaire's structural engineer attesting to the structural adequacy of the structures and specific recommendations relative to improvements to the structural condition and serviceability of the structures.
- I. If any existing drainage facility within the Opitz Project Right of Way is not utilized as a functional element in the proposed drainage design or adversely impacted by Opitz project, but is determined to be structurally or hydraulically deficient, then the Department shall determine whether to rehabilitate/replace the drainage system to ensure a continued service life of 70 years or leave as is. Where the Department desires the Concessionaire to carry out the rehabilitation, the Concessionaire will produce a proposal for the work required and agree with the Department on a schedule and cost for carrying out such work as a Department Change.
- J. The Concessionaire shall provide for new storm water management facilities and the replacement of capacity for any existing storm water management

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facilities that may be removed in accordance with applicable standards and specifications set forth in Attachment 1.5a and Section 3.6.3 of these Technical Requirements.

- K. No drainage inlet grate or at-grade structure will be permitted to be located or extend within the travel way of the Interstate or the associated Interstate ramps, unless approved by the Department.
- L. Prior to the commencement of construction Work, the Concessionaire will determine all existing drainage facilities the Concessionaire intends to utilize and leave in place for continued use. The Concessionaire shall perform such activities as may be necessary to cause such facilities to be completely clean and free of debris and silt prior to the commencement of construction Work on or near such existing drainage facilities. The Concessionaire shall be responsible, at its sole cost and expense, for cleaning any debris or silt accumulation caused by performance of the construction Work from all (pre-existing and new) Opitz Express Lanes drainage facilities.
- M. As part of the Work, the Concessionaire may tie in or connect new drainage assets it is designing and constructing to existing drainage assets present along the I-95 Corridor as of the Agreement Date. If there is an existing drainage asset the Concessionaire desires to tie in or connect to, but is prevented from doing so because of physical damage to such existing drainage asset not caused by or attributable to the Concessionaire's activities, the Concessionaire shall repair or replace the existing drainage asset in the immediate area of the proposed tie-in or connection so it can perform the proposed tie-in or connection. Any such repair or replacement work shall be completed in accordance with the standards and specifications set forth in Attachment 1.5a.
- N. The above provisions shall not apply if the hydraulic capacity or structural loading of the existing drainage asset to which the Concessionaire desires to connect is verified to be inadequate by the Concessionaire as a result of the proposed tie-in or connection. In that case, the Concessionaire shall, at its sole cost and expense, replace, repair, or otherwise upgrade the existing drainage asset (in accordance with the standards and specifications set forth in Attachment 1.5a) in order to accommodate the proposed tie-in or connection.
- O. All existing culverts, storm sewer, and drainage appurtenances to be abandoned shall be removed and backfilled or filled and plugged with flowable fill.
- P. See Structures and Bridge Section 3.15 of these Technical Requirements for bridge deck drainage requirements.
- Q. For all impacted permanent structures, the bridge, hydrology, hydraulics, and scour requirements shall be in accordance with the requirements set forth in Attachment 1.5a, including but not limited to AASHTO LRFD Bridge Design

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Specifications and VDOT Modifications (the more stringent requirements shall govern).

- R. The Concessionaire will perform a comprehensive Hydrologic and Hydraulic Design Analysis (H&HA) for impacted major culvert and/or bridge-crossing locations where the 100-year discharge is 500 cfs or more, and/or floodplain studies have been published by federal agencies. The outline for the H&HA will be in accordance with the standards and specifications set forth in Attachment 1.5a. The Concessionaire will ensure the H&HA is coordinated with the bridge design when bridges over waterways are involved. The Concessionaire will deliver the final H&HA to the Department for review and approval prior to the commencement of construction at each impacted major culvert and/or bridge crossing location.
- S. The scour analysis and reporting shall be in accordance with the standards and specifications set forth in Attachment 1.5a and shall include all existing structures undergoing major rehabilitation and new and replacement bridges at stream crossings. The scour profile shall also include the effects of existing adjacent bridges and the effect of the new bridge on the existing adjacent bridge. Countermeasures to accommodate scour at existing piers shall only be used when approved by the Department. Scour countermeasures shall be provided at existing and new abutments in accordance with the standards and specification as set forth in Attachment 1.5a.
- T. The Concessionaire will perform a scour analysis on all new retaining walls parallel to stream flow or subject to longitudinal scour. Retaining walls subject to longitudinal scour will be designed to withstand the 500-year super flood scour without the aid of scour countermeasures, unless otherwise agreed by the Department. Appropriate bank protections and revetments are required for walls subject to flows and potential bank erosion.
- U. During the Work period the Concessionaire shall provide for positive drainage of all roadway facilities open to construction traffic. Construction activities shall not redirect or add drainage run-off to a private property.
- V. Where justified by site conditions within the Opitz Project corridor, the Concessionaire may submit a design for the slotted barrier drains and trench drains for Department review and acceptance. However, for all other locations and the general purpose lanes, such use of slotted barrier drains and trench drains would not be accepted.
- W. Metal pipes shall not be utilized for permanent installations.

### **3.6.2 Erosion and Siltation**

- A. The Concessionaire will develop and implement an erosion and sediment control plan, a stormwater pollution prevention plan and a post development stormwater management plan in compliance with the Department's approved



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Erosion and Sediment Control and Stormwater Management Standards and Specifications. The Concessionaire shall comply with the Department's Approved Erosion and Sediment Control Standards and Specifications (including IIM 11, IIM 246 and the Department's Drainage Manual, Chapters 10 and 11).

- B. The Concessionaire shall exercise temporary and permanent measures, throughout the Term, to control erosion and prevent or minimize siltation of rivers, streams, lakes, and impoundments. Erosion and sediment control measures will be installed in accordance with applicable standards and specifications set forth in Attachment 1.5a.
- C. Erosion and sediment control measures shall be applied to erodible material exposed by any activity associated with construction, including local material sources, stockpiles, disposal areas, and haul roads. Temporary measures shall be coordinated with the Work to ensure effective and continuous erosion and siltation control. Permanent erosion control measures and drainage facilities shall be installed and operational as the Work progresses before temporary measures are removed.
- D. Erosion and siltation control devices and measures shall be maintained in a functional condition at all times. The Concessionaire shall have, within the limits of the Opitz Project during all land disturbing activities, an employee certified by the Department in Erosion and Sediment Control who shall inspect erosion and siltation control devices and measures for proper installation and deficiencies immediately after each rainfall, at least daily during prolonged rainfall, and weekly when no rainfall event occurs. The Concessionaire shall make a daily review of the location of silt fences and filter barriers to ensure that they are properly located for effectiveness. Deficiencies shall be corrected immediately. Such employee shall also be certified through the Department of Environmental Quality Inspection Certification Program.
- E. Failure on the part of the Concessionaire to maintain appropriate erosion and siltation control devices in a functioning condition may result in the Department notifying the Concessionaire in writing of specific deficiencies. The Concessionaire shall correct or take appropriate actions to correct the specified deficiencies within 24 hours after receipt of such notification.
- F. Failure of the Concessionaire to maintain a Department-certified Erosion and Sediment Control employee within the Opitz Project Right of Way will result in a Opitz Project non-compliance and suspension of Work related to any land disturbing activity until such time as a certified Erosion and Sediment Control employee is present on the Opitz Project.
- G. Except as set forth in the Agreement, the Concessionaire shall be responsible for all costs, fines, penalties, and delays associated with any non-compliant items.

**3.6.3 Storm Water Pollution Prevention Plan and Virginia Stormwater Management Program General Permit for the Discharge of Stormwater from Construction Activities**

- A. The Concessionaire shall develop and provide for the Department’s review and approval a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is comprised of, but not limited to, an Erosion and Sediment Control (ESC) Plan and Narrative, a Pollution Prevention (P2) Plan, a post construction Stormwater Management (SWM) Plan, and the related specifications and standards contained within the Agreement. The SWPPP shall be prepared and implemented by the Concessionaire in compliance with applicable requirements of the standards and reference documents contained within the Agreement including the Virginia Erosion and Sediment Control Law and Regulations, the Virginia Stormwater Management Act (VSMA), and the Virginia Stormwater Management Program (VSMP) Regulations. The Opitz Project will be subject to the Part II-B Technical Criteria in the VSMP Regulations (9VAC25-870). A SWPPP shall be required for all land-disturbing activities that disturb 10,000 square feet or greater, or 2,500 square feet or greater in a Chesapeake Bay Preservation Area. Land-disturbing activities that disturb 1 acre or greater require coverage under the Department of Environmental Quality’s Virginia Pollutant Discharge Elimination System (VPDES) General Permit for the Discharge of Stormwater from Construction Activities (“VPDES Construction Permit”). Where applicable, the Concessionaire will apply for and retain coverage under the VPDES Construction Permit for those land disturbing activities for which it has control. The required contents of a SWPPP for those land disturbance activities requiring coverage under the VPDES Construction Permit are found in Part II-A of the General Permit section of the VSMP Regulations (9VAC25-880-70).
- B. A working conceptual ESC and post construction SWM plan and SWPPP for the entire Opitz project must be reviewed and approved by the Department prior to the Concessionaire applying for coverage under the VPDES General Construction Permit. This initial Plan Submittal shall include the proposed total expected Land Disturbance Area and Land Development Area, including off-site facilities, for the entire Project. Such plans shall be prepared in accordance with the standards and specifications set forth in Attachment 1.5a and submitted to the Department for its approval before the commencement of any land disturbing activities. The SWPPP, including ESC Plan and SWM Plan, shall be kept current as design work progresses. Updated versions of the SWPPP, including ESC Plan, and SWM Plan, must be submitted to the Department for its review and approval before the Department will approve AFC Documents. The Concessionaire shall be responsible for reading, understanding, and complying with all the terms, conditions and requirements of the permit and the SWPPP, including the following:

1. **Opitz Project Implementation Responsibilities.** The Concessionaire shall be responsible for the installation, maintenance,

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inspection, and, on a daily basis, ensuring the functionality of all erosion and sediment control measures and all other stormwater and pollutant runoff control measures identified within or referenced within the SWPPP, plans, specifications, permits, and elsewhere in the Agreement, including these Technical Requirements. The Concessionaire shall take all reasonable steps to prevent or minimize any stormwater or non-stormwater discharge that will have a reasonable likelihood of adversely affecting human health or public and/or private properties.

2. **Certification Requirements.** In addition to satisfying the personnel certification requirements contained herein, the Concessionaire shall certify its activities by completing, signing, and submitting Form C-45 VDOT SWPPP Contractor and Subcontractor Certification Statement to the Department at least seven days prior to commencing any Opitz Project related land- disturbing activities, both on-site and off-site.
3. **SWPPP Requirements for Support Facilities.** The Concessionaire shall develop a SWPPP with an ESC Plan, a P2 Plan, and a SWM Plan for submission and acceptance by the Department prior to usage of any on-site or off-site support facilities, including borrow and disposal areas, construction and waste material storage areas, equipment and vehicle storage and fueling areas, storage areas for fertilizers or chemicals, sanitary waste facilities, and any other areas that may generate a stormwater or non-storm water discharge related to performance of the Work. Such plans shall document the location and description of potential pollutant sources from these areas and shall include a description of the controls to reduce, prevent and control pollutants from these sources including spill prevention and response. The Concessionaire shall submit such plans and documentation as specified herein to the Department for review and approval with the initial Plan Submittal. If the VPDES permit was previously applied for without including the Support Facilities, the Concessionaire will need to revise the SWPPP and may need to file a VPDES permit modification.
4. **Reporting Procedures**
  - i. **Inspection Requirements.** The Concessionaire shall be responsible for conducting inspections in accordance with the requirements herein. The Concessionaire shall document such inspections by completion of Form C-107, Construction Runoff Control Inspection Form and Continuation Sheet, in strict accordance with the directions contained within the form.
  - ii. **Unauthorized Discharge Requirements.** The Concessionaire shall not discharge into state waters sewage, industrial wastes,

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other wastes or any noxious or deleterious substances nor shall otherwise alter the physical, chemical, or biological properties of such waters that render such waters detrimental for or to domestic use, industrial consumption, recreational or other public uses.

- iii. **Notification of non-compliant discharges.** The Concessionaire shall immediately notify the Department upon the discovery of, or potential of, any unauthorized, unusual, extraordinary, or non-compliant discharge from the land disturbing activity. Where immediate notification is not possible, such notification shall be not later than 24 hours after said discovery.
- iv. **Detailed report requirements for non-compliant discharges.** The Concessionaire shall submit to the Department within five days of the discovery of any actual or potential non-compliant discharge, a written report describing details of the discharge to include its volume, location, cause, and any apparent or potential effects on private and/or public properties and state waters or endangerment to public health, as well as steps being taken to eliminate the discharge. A completed Form C-107 shall be included in such reports.

### 5. **Changes, Deficiencies and Revisions**

- i. **Changes and Deficiencies.** The Concessionaire shall report to the Department when any planned physical alterations or additions are made to the land disturbing activity or deficiencies in the Opitz Project plans or the Agreement, including these Technical Requirements are discovered that could significantly change the nature or increase the quantity of the pollutants discharged from the land disturbing activity to surface waters.
- ii. **Revisions to the SWPPP.** Where site conditions or construction sequencing or scheduling necessitates revisions or modifications to the erosion and sediment control plan, storm water management plan, or any other component of the SWPPP for the land disturbing activity, such revisions or modifications shall be approved by the Department and shall be documented by the Concessionaire on a designated plan set. Such plans shall be kept on the Opitz Project site at all times and shall be available for review upon request. If a revision to the SWPPP results in a significant increase to the project Land Disturbance Area, the Concessionaire, in consultation with DEQ, may need to file a VPDES permit modification.
- iii. The Concessionaire shall prepare a post-construction Storm Water Management (SWM) Plan for the entire Opitz Project.

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Plans shall be prepared in accordance with the Standard Documents and submitted to the Department for its review and acceptance before any land disturbing activity.

6. Where the Project will be constructed in segments, the Concessionaire shall submit a finalized ESC Plan, a post construction SWM Plan and a P2 Plan, including the expected Land Disturbance Area, for the proposed initial work segment in addition to the conceptual plan for the entire Project. It is expected that the individual work segment submittals will be self-sustaining and not incur a deficit in post construction SWM design requirements requiring mitigation on future work segments. Subsequent work segment submittals shall include required modifications to the Land Disturbance Area value. However, these modifications, in total, shall not exceed the initially submitted Land Development Area value.
7. The Concessionaire shall not proceed with work to be covered by the permit until permit coverage is secured and the Department Project Manager releases the work in writing. Any request for an exception from the technical criteria of the VSMP regulation shall be coordinated and approved prior to receiving permit coverage. It is noted that permit coverage, and subsequent release of work, can take up to ninety (90) days from the time that the Concessionaire submits a request for coverage that includes all required information. The Concessionaire shall provide a completed SWPPP Certification form (LD-455E) before commencement of any land disturbing activity and shall complete and include the SWPPP General Information Sheets in the plan assembly per in accordance with the Department's Drainage Manual. The SWPPP Certification form (LD-455E) and SWPPP General Information Sheets shall be updated with each work segment submittal as necessary.
8. The Concessionaire shall be responsible for compliance with construction-related permit conditions and shall assume all obligations and costs incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations shall be the responsibility of the Concessionaire. Upon completion of the entire regulated land disturbing activity (including final stabilization of all disturbed areas), the Concessionaire shall provide updated/revised Permanent Best Management Practice (BMP) information in Section VI of the SWPPP General Information Sheets for each post construction BMP placed into service on the Project, provide As-Built drawings of all post-construction stormwater management facilities located on the Project, complete the VPDES Construction Permit Termination Notice form (LD-445D) and submit both documents (without signature) to the Department Project Manager for processing. The

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Concessionaire shall also have on-site during any land disturbing operations an individual or individuals holding a VDEQ Inspector Certification, a VDEQ Responsible Land Disturber (RLD) Certification and a VDOT Erosion and Sediment Control Contractor Certification (ESCCC) to ensure compliance with all VDEQ and VDOT erosion and sediment control plan implementation requirements. It shall be the responsibility of the Concessionaire's certified ESCCC representative and the Concessionaire's VDEQ certified ESC Inspector to monitor Project compliance with the approved SWPPP. The Concessionaire's VDEQ certified ESC Inspector must represent the Quality Assurance firm for the Project. The inspections carried out by the Concessionaire's certified ESCCC representative and the Concessionaire's VDEQ certified ESC Inspector shall be in accordance with the VDOT *Minimum Requirements for Quality Assurance & Quality Control on Design-Build & Public-Private Transportation Act Projects (July 2018)*. The inspections shall be documented and certified by both the Concessionaire's ESCCC representative and the Concessionaire's VDEQ certified ESC Inspector on the Construction Runoff Control Inspection Form (C-107 Part I).

- C. The Concessionaire shall be responsible for the design and construction of stormwater management facilities as required for the Project in accordance with the latest version of IIM-LD-195, and the other standards and reference documents listed in Attachment 1.5a, including the Virginia Stormwater Management Program Act and the Virginia Stormwater Management Program (VSMP) Regulation, and shall comply with the minimum geotechnical requirements contained therein. The Concessionaire, as a part of final design, shall develop a final post-construction stormwater management plan and construct facilities that meet all applicable requirements.
- D. The Concessionaire is to ensure proper ingress and egress to any stormwater management facility and that any specific proprietary facilities have proper maintenance details included in the As-Built Plans. When maintenance access can only be provided from a limited access roadway, a locked gate shall be provided.

### 3.7 Roadway Design

#### 3.7.1 General Requirements

- A. The Concessionaire will prepare the final geometric design of the roadway elements in accordance with Good Industry Practice. Functional classifications for roadways and specific design criteria on the Opitz Project are to be developed per the standards and specifications set forth in Attachment 1.5a.
- B. Except as outlined in design exceptions and design waivers, the design speed for the Opitz portion of the 95 Express Lanes shall be 65 miles per hour and

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the the existing I-95 general purpose lanes shall be 70 miles per hour. The design speed for all exit or entrance ramps and roadways shall meet AASHTO criteria as shown in the following table:

Opitz Project Design Speeds	
Roadway	Design Speed
I-95 Northbound and Southbound General Purpose Lanes	70 mph
Opitz Boulevard	45 mph
Opitz Boulevard Connector Ramp (OBTR)	50 mph
I-95 Southbound to 95 Express Southbound Slip Ramp (DBSR)	50 mph

- C. Except as outlined in design exceptions and design waivers, the Opitz portion of the 95 Express Lanes and shoulders, and the I-95 general purpose lanes and shoulders shall meet the Department’s criteria for freeways, as described in the standards and specifications set forth in Attachment 1.5a. The widths of reversible shoulders shall be equal and meet the wider criteria established in the Department and FHWA criteria.
- D. Concessionaire will have the flexibility to propose revised designs that produce time and cost benefits to the Department and/or the Concessionaire without impairing the essential functions and characteristics of the design, including safety, traffic operations, desired appearance, maintainability, environmental protection, drainage, and the constraints of any Regulatory Approvals. In accordance with the Agreement, the Technical Requirements, or the above conditions, the Department will have the right to accept or reject such revised design criteria or designs.
- E. Reversible ramp shoulder widths shall be the same width on both sides of the ramp and shall meet or exceed the widths cited in VDOT IIM-LD-227.
- F. All new and existing ramps shall be designed with a parallel design. Acceleration and deceleration lengths shall be designed to meet AASHTO requirements including operational characteristics of the ramp.
- G. In order to preclude toll violations and wrong-way access, Concessionaire shall provide a continuous physical barrier system throughout the corridor. Cross-overs from the GP lanes to HOT Lanes will utilize channelizing posts consistent with those in use on the 95 Express Lanes to deter unauthorized use. The Department will have the final approval on the location and type of such barrier system.
- H. The Concessionaire shall be responsible for compliance with applicable commitments made in the Opitz Interchange Access Report.

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- I. Where Standard MC-3B Asphalt Curb is used in conjunction with paving under guardrail on high fills, high fills shall be defined as fill heights over 7.5 feet.
- J. The MGS-1/1A standard shall be applied to all areas of guardrail installation, including those along I-95 SB and NB general purpose lanes.

### 3.7.2 Requirements for Operational Analysis

- A. The Concessionaire shall provide an operational analysis for any changes to the Opitz Project designs as presented in the Opitz Design Plans and/or the Opitz Interchange Access Report (IAR) and the analysis shall require an amendment to the Opitz Project Interchange Access Report.
- B. The operational analysis shall demonstrate that the Concessionaire's revised design does not have an adverse impact on the safety and operation of the existing and proposed facility based on an analysis of current and future design year traffic. Traffic and operational analysis shall conform to the requirements of IIM-LD-200 *Access Points to Limited Access Highways (Interchange Access Report Guidance)*.

## 3.8 Pavement

### 3.8.1 Minimum Pavement Sections

- A. Pavement designs must meet the requirements of this Section 3.8.1. The Concessionaire may propose changes to the specified minimum pavement section(s) for the Express Lanes travel lanes that either a) increases the thickness of the base or subbase layers specified below or b) uses an alternative base, drainage, and/or subbase layer type and thickness that meets or exceeds the Structural Number of the minimum pavement section(s) specified below without compromising long-term strength or durability. Use of a consistent pavement design for Express Lanes travel lanes and shoulders for the entire length of the Project is required. Shoulder pavement designs shall also meet the requirements of Section 3.8.1.H. Changes to the minimum pavement section(s) that rely on a CBR value that exceeds the requirements of Section 3.8.1.G are not acceptable.
- B. The Concessionaire shall prepare and incorporate into the plans, typical sections, profiles, and cross-sections with the validated pavement sections in accordance with the applicable manuals noted in Attachment 1.5a. This includes drainage and subdrainage requirements to ensure positive drainage both within the pavement structure and on the pavement surface.
- C. All existing paved shoulders and existing gore areas shall be cut with a smooth vertical face to expose the full depth of the existing mainline pavement structure, demolished and reconstructed with the mainline I-95 pavement



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section identified below. All underdrains beneath the existing paved shoulders shall be removed and replaced to the nearest available outlet.

- D. All travel lane and shoulder pavements shall be constructed or resurfaced in accordance with the pavement criteria below:

Facility	Minimum New Travel Lane Pavement Requirements	Minimum Existing Pavement Resurfacing Requirements	Minimum New Shoulder Pavement Requirements
95 Express Lanes and Ramps	<ul style="list-style-type: none"> <li>• <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> <li>• <u>Intermediate</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0D</li> <li>• <u>Base</u>: minimum 11.0 inches of Asphalt Concrete Base Course BM-25.0A</li> <li>• <u>Subbase</u>: 15.0 inches of Aggregate Base Material, Type 1, Size No. 21B</li> </ul>	<ul style="list-style-type: none"> <li>• Where existing pavement markings and/or existing snow plowable raised pavement markers that conflict with the proposed pavement marking design are to be eradicated and removed or the pavement is behind barrier and not subjected to traffic, the existing pavement shall be milled and overlaid to the following depths and materials up to the nearest longitudinal lane divide:               <ul style="list-style-type: none"> <li>○ <u>Milling Existing Pavement</u>: minimum 2.0 inches</li> <li>○ <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> <li>• <u>Intermediate</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0D</li> <li>• <u>Base</u>: minimum 11.0 inches of Asphalt Concrete Base Course BM-25.0A</li> <li>• <u>Subbase</u>: 15.0 inches of Aggregate Base Material, Type 1, Size No. 21B</li> </ul>

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Facility	Minimum New Travel Lane Pavement Requirements	Minimum Existing Pavement Resurfacing Requirements	Minimum New Shoulder Pavement Requirements
I-95 General Purpose Lanes and Ramps	<ul style="list-style-type: none"> <li>• <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> <li>• <u>Intermediate</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0A</li> <li>• <u>Base</u>: minimum 11.0 inches of Asphalt Concrete Base Course BM-25.0A</li> <li>• <u>Drainage</u>: 4.0 inches of Aggregate Base Material, Type 1, Size No. 21B</li> <li>• <u>Subbase</u>: 6.0 inches of Aggregate Base Material, Type I, Size No. 21A, pugmill mixed with 4% hydraulic cement by weight</li> </ul>	<ul style="list-style-type: none"> <li>• For use as a travel lane, existing shoulder pavement after proposed wedge and level must be resurfaced to the following depths and materials:               <ul style="list-style-type: none"> <li>○ <u>Milling Existing Pavement</u>: minimum 4.0 inches</li> <li>○ <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> <li>○ <u>Wedge and Leveling</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0A</li> </ul> </li> <li>• Where existing pavement markings and/or existing snow plowable raised pavement markers are to be eradicated and removed for temporary lane shifts, the existing pavement shall be milled and overlaid to the following depths and materials up to the nearest longitudinal lane divide:               <ul style="list-style-type: none"> <li>○ <u>Milling Existing Pavement</u>: minimum 2.0 inches</li> <li>○ <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-12.5E</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Same as Minimum New Travel Lane Pavement Requirements</li> <li>• Paving adjacent to guardrail shall be in accordance with VDOT standard MC-4</li> </ul>

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Facility	Minimum New Travel Lane Pavement Requirements	Minimum Existing Pavement Resurfacing Requirements	Minimum New Shoulder Pavement Requirements
Opitz Boulevard	<ul style="list-style-type: none"> <li>• <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-9.5D</li> <li>• <u>Intermediate</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0A</li> <li>• <u>Base</u>: minimum 8.0 inches of Asphalt Concrete Base Course BM-25.0A</li> <li>• <u>Subbase</u>: 6.0 inches of Aggregate Base Material, Type 1, Size No. 21B connected to a standard UD-4 edgedrain located beneath the outer edge of the paved shoulder</li> </ul>	<ul style="list-style-type: none"> <li>• No less than 25 feet from the end of full depth pavement reconstruction, the existing pavement shall be milled and overlaid to the following depths and materials up to the nearest longitudinal lane divide:                             <ul style="list-style-type: none"> <li>○ <u>Milling Existing Pavement</u>: minimum 2.0 inches</li> <li>○ <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-9.5D</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <u>Surface</u>: 2.0 inches of Asphalt Concrete Surface Course SM-9.5D</li> <li>• <u>Intermediate</u>: minimum 2.0 inches of Asphalt Concrete Intermediate Course IM-19.0A</li> <li>• <u>Base</u>: minimum 8.0 inches of Asphalt Concrete Base Course BM-25.0A</li> <li>• <u>Subbase</u>: 6.0 inches of Aggregate Base Material, Type 1, Size No. 21B connected to a standard UD-4 edgedrain located beneath the outer edge of the paved shoulder</li> </ul>

- E. The Concessionaire shall add the following note to the typical section sheets in the construction plans: “The VDOT District Materials Engineer shall be notified within 24 hours of exposing the existing concrete, and at least 48 hours prior to placement of widening pavement, to allow for verification of the exposed edge of pavement.”
- F. Pavement design and construction shall meet the requirements of the federal pavement policy, 23 CFR 626 (Chapter 1).

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- G. The minimum pavement sections are based upon the following requirements:
1. a minimum soil CBR value of 5 within 3 feet of subgrade (therefore all imported fill material shall have a minimum CBR value of 5),
  2. all subgrade is compacted in accordance with the applicable sections of the Road and Bridge specifications and applicable special provisions and,
  3. all unsuitable materials have been removed or modified in accordance with Section 3.5.13.
- H. Pavements shall be designed to ensure positive drainage on the pavement surface and within the pavement structure, including connecting to existing or any new sub-drainage systems. Pavement drainage layers between adjacent pavement sections must consist of similar material and permeability. Drainage layers shall extend continuously across travel lanes and shoulders, connect to appropriate sub-drainage systems, and accommodate pavement drainage from existing or adjacent pavement.
1. Standard UD-4 edgedrains shall be required for all pavements on this project. Modified UD-1 underdrains shall be installed, in lieu of standard UD-4 edgedrain for pavement sub-drainage, in wet areas, areas of high groundwater, springs, and in cuts greater than 25 feet. The modification consists of wrapping the aggregate with geotextile drainage fabric.
  2. Standard Combination Underdrain (CD-1) shall be provided at the lower end of cuts.
  3. Standard Combination Underdrain (CD-2) shall be provided at grade sags, bridge approaches, and at the lower end of undercut areas.
- I. Any pavement reconstruction on arterials, local streets, or interchange ramps not specifically noted above shall be designed to meet the design-year traffic and match the existing pavement type at tie-in in accordance with standard WP-2 and in accordance with the Department's pavement design standards and guidelines.
- J. Approach slabs for all bridges shall be full width – from face to face of barrier/parapet (including extending under sidewalks and shared-use paths).
- K. Concessionaire's plans, typical sections, profiles and cross-sections shall include the appropriate elements identified as a result of the drainage analysis/design and the pavement design. This shall include, but is not limited to, underdrains, stormwater inlets and pipes, and pavement sections reflecting the elements identified in the Concessionaire's final pavement design.

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- L. The area surrounding pavements shall be graded to direct surface water away from paved areas. Any utility excavations or excavations for storm drains within pavement areas shall be backfilled with compacted structural fill in accordance with applicable sections of the Road and Bridge Specifications and applicable special provisions.
- M. The Concessionaire shall submit to the Department for its review, 30 days before the submission of associated final Design Documentation, a pavement design report that documents the assumptions, considerations, and decisions contributing to the Concessionaire's proposed pavement design, including the following:
  - 1. pavement design details by location, including structural layer materials, general specifications, and thicknesses;
  - 2. relevant pavement evaluation data (structural and functional) and condition information on adjacent roads;
  - 3. relevant geotechnical data and drainage information to verify the pavement design(s);
  - 4. design criteria used in determining the pavement design(s), including annual average daily traffic, percentage heavy vehicles, cumulative traffic loading, pavement material strength factors, and pavement design life; and
  - 5. design calculations documenting the pavement design(s) in accordance with the specified design methodology.
  - 6. a minimum soil CBR value of 5 within 3 feet of subgrade (therefore all imported fill material shall have a minimum CBR value of 5),
  - 7. all subgrade is compacted in accordance with the applicable sections of the Road and Bridge specifications and applicable special provisions and,
  - 8. all unsuitable materials have been removed or modified in accordance with the requirements of the the Concessionaire's final roadway plans and specifications and the geotechnical engineering reports.

### 3.8.2 Temporary Pavement

- A. The Concessionaire shall be responsible for any temporary pavement design and construction. Temporary pavements shall be designed in accordance with the AASHTO Guide for the Design of Pavement Structures (1993 edition) and the VDOT Materials Division's Manual of Instructions. All temporary pavement designs shall be submitted to the Department for review and approval. All temporary pavement designs for interstate mainline or ramp

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pavements shall have a minimum 6 inches of asphalt concrete and shall meet the following minimum design criteria:

- Design Life – 6 months minimum or such longer duration as may be required per the Concessionaire’s construction sequencing
  - Reliability – eighty-five percent (85%) minimum
  - Initial Serviceability – 4.2 minimum
  - Terminal Serviceability – 2.8 minimum
  - Standard Deviation – 0.49 minimum
  - CBR value for subgrade soils determined through laboratory tests.
- B. Temporary pavement shall be required for all locations where the Concessionaire will shift traffic onto an existing shoulder. If the existing shoulder is currently paved, the pavement must either meet or be modified to meet the requirements in Section 3.8.2.A.
- C. Temporary pavement that is installed to strengthen the existing shoulder pavement to meet the requirements of Section 3.8.2.A. shall remain in place once the Work is complete. Temporary pavement that is installed outside the limits of the existing shoulder pavement shall be completely removed once it is no longer in service.
- D. The Concessionaire shall be responsible for maintenance of all temporary pavements and temporary pavement markings.
- E. Any paved shoulder areas used for temporary traffic shall be restored after any such temporary use for the Project has concluded. This restoration work must include the milling of two inches of existing asphalt and placement of a new two-inch asphalt concrete surface course (SM-12.5E) overlay, and the installation of rumble strips, pavement markings and/or raised markers in accordance with VDOT requirements.

### **3.9 Traffic Engineering**

#### **3.9.1 General**

- A. The Concessionaire shall provide plans for all traffic control devices with its Design Documentation. Transitions from new markings, markers, and delineators to existing shall be planned such that road users will discern only a minimum change in delineation concept. Design Documentation for the Department’s review and approval for traffic control devices shall be submitted as a complete package for each construction segment. All new and existing traffic control devices within the Opitz Project limits and those signs outside the Opitz Project limits shall be installed modified or replaced in accordance with the standards and specifications set forth in Attachment 1.5a.

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- B. All traffic control devices shall be designed and installed to comply with the standards and specifications set forth in Attachment 1.5a and the requirements of the maintaining agency.
- C. The Concessionaire shall be responsible for the design and construction of the Opitz Project signing, pavement markings, pavement markers, delineators, roadway and sign lighting, and traffic signals. Traffic control devices shall include:
  - 1. all signs, signals, pavement markings, pavement markers, roadway and interchange lighting, overhead signs and delineators necessary within the Opitz Project limits; and
  - 2. signs, mounting structures, and associated lighting outside the Opitz Project limits that are necessary to orderly lead, guide, and regulate traffic to the Opitz Project.

### **3.9.2 Pavement Markings**

- A. The Concessionaire shall provide and maintain pavement markings and reflective pavement markers meeting the applicable standards and specifications set forth in Attachment 1.5a.
- B. On any pavement reconstruction undertaken by the Concessionaire, the Concessionaire shall tie in and match the existing permanent pavement marking systems.
- C. Temporary pavement markings and striping shall not be placed on the final surface course unless approved by the Department.
- D. All existing pavement markings and markers that do not conform to the final traffic patterns shall be eradicated and removed in accordance with the applicable standards and specifications in Attachment 1.5a.
- E. Permanent pavement markings (lane division lines, edge lines, ramp and gore markings) on the 95 Express Lanes and ramps and the I-95 General Purpose lanes and ramps shall be Type B, Class VI, patterned pre-formed tape. All other pavement markings shall conform to the Road and Bridge Specifications.
- F. Purple E-Z Pass Logos shall be installed at the locations shown on the Opitz Design Plans.
- G. High-Contrast Pavement Markings shall be used on all bridge decks and concrete pavements.
- H. The use of thermoplastic pavement markings and pavement marking tape shall conform to the applicable standards and specifications in Attachment 1.5a.

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- I. Channelizing posts used in the Emergency crossovers shall match existing channelizing posts on 95 Express Lanes and be yellow in color for reversible and opposing movement.
- J. Metal casing inlaid pavement markers shall not be used. Any existing metal casing inlaid pavement markers shall be removed and replaced when any lane shifts are implemented for construction sequencing or maintenance of traffic. New or replacement plastic inlaid markers shall meet the requirements of the Road and Bridge Standards PM-8 and other applicable standards and specifications set forth in Attachment 1.5a.

### 3.9.3 Static Signs

- A. The Concessionaire shall design, fabricate, and install all new guide, supplemental, route marker, trail blazer, regulatory and warning signs required for this Opitz Project to meet standards and specifications set forth in Attachment 1.5a. The Concessionaire shall also modify or remove any signage, including associated structure, foundation and lighting, outside of the limits of the Opitz Project that is no longer appropriate or pertinent to the Opitz Project.
- B. The Concessionaire shall prepare and present signing roll plans for review and comment by the Department. The signing roll plans will be used for reviewing the dynamic messaging and static signs on the I-95 corridor and connecting roadways to include proposed sign locations and messages for all guide signs and HOT lane signs applications, and for reviewing existing and proposed static signs (trail blazers and route market assemblies) on highways, feeder roadways and other roadways directing and notifying motorists of the access to the Opitz Project.
  - 1. The signing roll plans shall show proposed locations for relocating existing signs, and proposed locations for existing and new structures.
  - 2. The signing roll plans shall also display signing, both existing (to remain) and proposed, for all mainlines, ramps and interchanges, as well as for the arterial streets, frontage roads, and any other roadways that contain signing that is affected by the Opitz Project.
  - 3. The signing roll plans shall also include the locations of all proposed and existing Dynamic Message Signs. The signing roll plan features shall include but are not limited to, the existing and proposed roadway alignments, right-of-way, baseline of construction (including stationing), and existing topography at the tie-in points of the roadway limits of work. The proposed pavement markings may also be shown on the signing roll plans.
  - 4. The signing roll plans shall show all existing and proposed highways and feeders with all existing and proposed trail blazers and router



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marker assemblies to I-95 and Opitz Express Lanes for at least one mile from the nearest Express Lanes entrance point or to the extent of the existing I-95 routing signs. New Express Lanes trailblazers should be co-located with existing I-95 trailblazers to the extent possible. All trail blazing signs (Express Lanes and GP Lanes) shall be of the same size.

- C. Existing fixed sign panels can be re-used or relocated if they are demonstrated to be in good condition with no damage or deterioration and in accordance with the requirements of Attachment 1.5a.
- D. The Opitz Express Lanes signage scheme will:
  - 1. support the integration of the Opitz Express Lanes with the existing road network;
  - 2. facilitate navigation of the road network, including access to, travel along and egress from the Opitz Express Lanes; and
  - 3. be consistent with the existing directional and regulatory signing system on the existing road network and the 95 Express Lanes.
- E. The types of signage that constitutes Opitz Project signage include:
  - 1. regulatory, guide, and warning signs
  - 2. advance direction signs
  - 3. intersection direction signs
  - 4. trailblazer signs
  - 5. advance exit signs
  - 6. exit direction signs
  - 7. advance and/or confirmation signs (static and dynamic)
  - 8. rules of use permission signs
- F. All new full span sign structures and foundations shall be designed to accommodate an additional static sign load of 200 sq. ft. for future use. All cantilever and butterfly sign structures and foundations shall be designed to accommodate an additional static sign load of either 50 sq. ft., or a 25% increase in the sign panel area shown in the Opitz Design Plans, whichever is greater, for future use.
- G. The Concessionaire shall relocate all signs within the construction limits that conflict with construction work. Signs that are not needed for the safe and

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orderly control of traffic during construction may be removed and stored in a manner that will preclude damage and reinstalled in their permanent locations prior to Final Completion.

- H. No overhead sign structures shall be bridge-mounted or parapet-mounted. Sign structures built into the bridge to support signs to be viewed by traffic traveling over the bridge shall be permitted.
- I. The Concessionaire shall be responsible for coordination with the Department or the pertinent local agencies or jurisdictions in order to install directional signage, including, without limitation, obtaining all applicable Regulatory Approval.
- J. The Concessionaire shall provide the necessary guide, warning and regulatory signs for the Opitz Project.
- K. The Concessionaire shall maintain all existing signs during construction, unless they are to be removed permanently or have been replaced as required by the Opitz Project. For any existing signs that require relocation due to construction, the Concessionaire shall present pertinent details, such as sign designs, mounting details, locations, and existing condition, for the Department's review and comment, prior to relocation.
- L. The Concessionaire shall modify or remove existing signs and structures that are rendered inaccurate, ineffective, confusing or unnecessary. Where sign panels are replaced or added to existing sign structures, vertical strut lengths will be designed or modified as needed to not extend beyond the limits of the new sign panels. The Concessionaire shall obtain the Department's approval prior to making any such changes.
- M. The Concessionaire shall identify and provide a summary of all existing signage impacted by the Opitz Project, including signs and associated sign structures that are outside the physical limits of roadway construction. For modifications (including adding, deleting or modifying sign panels) to any existing overhead/cantilever sign structure affected by the Opitz Project, the Concessionaire shall provide a comprehensive structural analysis for the Department's review and written comment prior to the commencement of design in accordance with the requirements of Section 3.15.3. To assist with the structural analysis, the Department will provide (if available) existing structural information, shop drawings, and foundation calculations to the Concessionaire for each existing sign structure identified by the Concessionaire.
- N. The Department will review the structural analysis provided by the Concessionaire for each sign structure to determine whether or not the existing structure and/or sign can be modified as proposed. If it is determined that modifications to the existing sign structure and/or signs are not structurally acceptable, the Concessionaire shall provide new signs and structures, in

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accordance with Attachment 1.5a, to replace the existing sign structures and signs.

- O. Sign lighting conditions shall conform with the Department's standard lighting requirements for freeway operations and shall be subject to the Department's approval. Signs shall incorporate highly reflective sheeting material to optimize lighting installation. The Concessionaire shall perform an Overhead Sign Lighting Study in conformance with IIM-TE-380 (Overhead Sign Lighting) to determine which, if any, overhead signs require lighting. Overhead and ground-mounted signs which do not require lighting must use Type XI reflective sheeting. The same sign lighting design shall be applied throughout the Opitz Project for both existing and new signs. The Concessionaire shall provide the Overhead Sign Lighting Study to the Department for review and approval prior to final design. Luminaire retrieval systems will not be required for luminaires that are maintained by the Concessionaire.
- P. Post Interchange Signs (as defined in MUTCD Section 2E.38) shall be installed on the Opitz Project in accordance with applicable standards where space and/or permanent structures permit.
- Q. The Concessionaire shall place milepost and intermediate markers at 0.2 mile intervals facing northbound on the right side of the roadway on the reversible lanes and facing southbound on the left side of the roadway.
- R. The mile markers shall conform to MUTCD Figure 2H-2, Reference Location Signs, and intermediate markers shall conform to MUTCD Figure 2H-3, Intermediate Reference Location Signs.
- S. For signing along I-95, all guide signs, dynamic message signs and supplemental guide signs on overhead structures shall be installed such that 800 foot minimum spacing is maintained between signs. In areas where the 800 foot minimum spacing cannot be maintained the Concessionaire shall obtain approval from the Department to reduce the spacing.
- T. The limits of directional and Opitz Express Lanes signage, for the Opitz Project for which the Concessionaire is responsible, shall extend to provide sufficient information to users of the Opitz Express Lanes for direction and access purposes to all entry and exit points.
- U. The Concessionaire shall perform line of sight analysis for all sign structures as necessary to confirm drivers have sufficient time to read the sign messages, and signs are not visually obstructed.
- V. The Concessionaire shall provide accurate and detailed elevations for all sign structures, including all dimensions, existing physical features and proposed constructed features to confirm physical locations and orientation.

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- W. Clearview font will be permitted on new or modified signs in conformance with IIM-TE-337 (Clearview Highway Font Lettering for Guide Signs).
- X. The Concessionaire shall prepare and submit for approval a Sign Sequencing Plan and a Sign Unveiling Plan. The Sign Sequencing Plan shall be coordinated with and included in the Opitz Project TMP, as defined in Section 1.9.3 of these Technical Requirements. The Sign Unveiling Plan shall be coordinated with the events of, and included in the Opitz Project TMP and the opening schedule of the completed lanes. Both plans shall be approved by the Department prior to implementation. These plans shall provide a detailed sequence for covering and removing the existing signs and unveiling the covered existing and completed proposed signs. The Sign Sequencing Plan shall be focused on signs during construction activities while the Sign Unveiling Plan shall be focused on opening the completed lanes to traffic. The Department will coordinate with the Concessionaire to provide a permitted timeframe to implement these plans. The Sign Unveiling Plan shall be finalized no later than sixty (60) days prior to Service Commencement.
- Y. The use of purple backgrounds shall be as depicted in the Opitz Express Lanes signing concept as provided in the Opitz Opitz Design Plans. The Concessionaire is responsible for getting approval from FHWA for any deviations from the Opitz Design Plans. The Department will facilitate coordination with FHWA and support the Concessionaire in obtaining such approval.

### **3.9.4 Traffic Signals**

- A. The Concessionaire shall design, supply and install all necessary temporary and permanent traffic signals and related infrastructure for the Opitz Project as provided by this section and the standards and specifications set forth in Attachment 1.5a.
- B. The Concessionaire shall design the Opitz Project to include new traffic signal installations and modifications to existing traffic signal installations meeting the design requirements of the maintaining agency. The Department shall provide reasonable assistance to the Concessionaire in obtaining the relevant design requirements from any maintaining agency.
- C. The Concessionaire shall provide communications between all temporary and permanent traffic signals for the Opitz Project and the maintaining agency's traffic signal system. The communications medium shall be broadband and compatible with the maintaining agency's communication system or plan. The broadband connection from the service provider shall be hard wired.
- D. New traffic signals on the Opitz Project will be integrated with existing traffic signals using the following approach:

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1. The Concessionaire shall design, program, adjust controller timings, test, and commission the new signalized intersection(s) and existing impacted or modified signalized intersection(s) for coordinated operations matching the maintaining agency's existing coordination plans. If incorporation of the new signal is not compatible with existing signal coordination plans, the Concessionaire shall provide timing plans for optimization of existing signal coordination plans in coordination with the Department.
  2. The Department or the maintaining agency will test and commission any existing signalized intersection(s) that are not impacted by the Concessionaire for the Opitz Project for network operations with the existing traffic signal system(s) in accordance with the updated signal coordination plans and will re-time network signals, as needed, to accommodate network demand.
  3. The Department or maintaining agency will be responsible for optimizing traffic signal timing at intersections with Opitz Project entry and exit ramps and approaching roadways to ensure that traffic does not normally produce queues that create a safety hazard on either the Opitz Project or the approaching roadways.
- E. The Concessionaire shall keep the existing signalized intersections within the Rights of Way functional during the Work period. If signals must be shut down, the Concessionaire shall provide temporary signals or appropriate traffic controls. Temporary signal shut down without replacement shall not be permitted.
- F. For any temporary traffic control phase that impacts existing traffic signals, the Concessionaire shall develop signal timing plans for the Opitz Project and roadways designated as detours and submit the plans to the Department. The Concessionaire shall implement, test, and adjust signal timings to prevailing conditions. The Concessionaire shall develop signal timing plans for all peak and non-peak periods which may require more than eight (8) plans.
- G. The Concessionaire shall install and be responsible for all aspects of temporary and permanent traffic signal installation to include but not be limited to design, obtaining permits, installation, rehabilitation of disturbed areas, and acquiring dedicated SE-5 metered electric service power and hard wired broadband communication connections.
- H. The Concessionaire shall install and connect dedicated SE-5 metered electric service power service for temporary and permanent traffic signals for the Opitz Project.
- I. Conductor/communication cables shall be placed in buried conduit, embedded conduit, and structure and bridge-mounted conduit.

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- J. The Concessionaire shall not open trench any existing pavement for the installation of conduit, except in areas that will be overlaid or rebuilt. For overlays over trench areas, the new pavement section shall match the existing pavement section.

**3.9.5 Roadway Lighting**

- A. Roadway lighting shall conform to this section and the Standards and Specifications set forth in Attachment 1.5a.
- B. The Concessionaire shall install Partial Interchange Lighting for new or modified entry and exit connections to the Express Lanes. The Concessionaire shall complete a lighting analyses for these locations in accordance with IIM-TE-390. Continuous roadway lighting is not required for the Opitz Project.
- C. The Concessionaire shall design and construct any permanent roadway lighting such that the lighting systems for the General Purpose lanes and the Express Lanes are separately operated and maintained by VDOT and the Concessionaire, respectively, unless otherwise approved.
- D. Temporary and permanent lighting facilities for the project shall be installed to ensure lighting facilities meet current Department Lighting Design Standards and Guidelines (found in Chapter 2 of the VDOT Traffic Engineering Design Manual) and ANSI/IESNA RP-8 requirements.
- E. Light Emitting Diode (LED) luminaires shall be used for all new lighting.
- F. All lighting design shall:
  - 1. Be prepared in accordance with the USDOT Roadway Lighting Handbook; VDOT Road and Bridge Specifications; Illuminating Engineering Society of North America Recommended Practices (RP-8-18); AASHTO Roadway Lighting Design Guide and the VDOT *Special Provision for Light Emitting Diode (LED) Luminaires*.
  - 2. Include point-to-point lighting analysis and calculations performed using AGI-32 computer software; and
  - 3. Use fixtures with required Backlight-Uplight-Glare (BUG) rating.
- G. The Concessionaire shall preserve all existing lighting assets along the I-95 Corridor throughout the Construction Period in order to avoid a diminution of the existing lighting conditions for a period of more than thirty (30) days unless otherwise approved by the Department. If the necessary repair or replacement of an existing lighting asset cannot be completed within the 30 day period, the Concessionaire shall provide, prior to the expiration of the 30 day period, temporary lighting equipment until the completion of the repair or replacement Work.

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- H. The Concessionaire shall install new or replacement roadway lighting as necessary to provide equal or better lighting conditions for any existing permanent roadway lighting that is impacted by the Concessionaire's Work. Such lighting shall conform to the requirements of this section and the Standards and Specifications set forth in Attachment 1.5a.

### **3.9.6 Power**

- A. The Concessionaire shall design, install, and connect electrical power service to sustain all operations for the ETTM system, including all other facilities required for the Opitz Project.
- B. Junction boxes shall not be combined for Concessionaire and Department power facilities.
- C. The Concessionaire shall be responsible for new utility service connections, including full coordination with the utility owners and payment of connection fees. The Concessionaire shall be responsible for paying the monthly utility bills associated with new service panels, up to and including the date of Service Commencement. The Concessionaire is responsible to perform or cause to be performed the design, supply, and installation of all new power feeds (from service panel to power source) necessary or feed modifications requiring service upgrade from the electric utility company as part of the Work.
- D. The Concessionaire shall install and have connected dedicated metered SE-5 power service for new or relocated traffic signals and separate dedicated metered power service compliant with the standards and specifications set forth in Attachment 1.5a and the requirements of the maintaining agency for lighting (sign, roadway, and interchange) for the Opitz Project.
- E. The Concessionaire shall provide back-up electrical power service to support Operations and Maintenance Work in Emergency situations where the primary power source is not available, where practical.
- F. The power supply for the ETTM Equipment shall be metered independent from any non-ETTM Equipment. The power supply for any Opitz Project equipment (including lighting) shall be metered independent from any Department power supply. The power supplies for all (both Concessionaire and Department owned) existing roadside equipment and infrastructure must remain in service at all times.
- G. Where approved by the Department, and consistent with 3.9.6.F above, new Opitz Express Lanes lighting, ITS and TMS roadside equipment may be connected to existing Department electrical service panel frames if separately metered and controlled.
- H. The Concessionaire shall provide back-up power (generators and UPS) for the operations of the gate systems which includes the reversible gates, the pricing

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confirmation DMS signs, CCTV cameras, and other ETTM Equipment if part of the gate system.

1. Generator sizing shall be determined by the Concessionaire based on the projected equipment loading.
  2. Propane fuel supply lines between the generators and the fuel storage tank shall be above ground.
- I. The Concessionaire shall provide an uninterruptible power supply (UPS) back-up power for the operations of all gate systems' DMS, which includes the pricing confirmation DMS signs and all parts of the gate system. For traffic signals, the Concessionaire shall provide an uninterruptible power supply (UPS) back-up power with external portable generator port in accordance with the VDOT Road and Bridge Specifications.
- J. Vehicle access shall be provided at each generator site for refueling. Such access shall accommodate safe ingress/egress for a typical refueling vehicle.
- K. Phase taping of electrical conductors shall not be permitted. Electrical conductors shall have a continuous colored jacket between connection and termination points.
- L. Power infrastructure shall not share conduit or junction boxes with communications infrastructure.
- M. The minimum size of electrical junction boxes for lighting power shall be JB-S2 or JB-R2.

### **3.10 Fences and Barriers**

- A. The Concessionaire shall be responsible for securing the Work and providing all temporary fencing necessary to ensure the safety of the work force and members of the public.
- B. The Concessionaire shall perform a safety risk analysis to determine whether fencing should be used to separate the noise barrier wall erection work zones from adjacent properties and, if such analysis shows that fencing is required, the Concessionaire shall provide temporary six-foot-high (minimum) chain link security fencing at any such locations.
- C. Fencing on bridges and abutments, where applicable shall be black, vinyl coated, ClearVu, Beta, BearGrille mesh or equivalent. Standard Details for fencing shall be modified as necessary to accommodate light poles and signage. All fences and handrails shall be grounded in accordance with VDOT Road and Bridge Standards, and VDOT Road and Bridge Specifications,



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Sections 410, 504, and 507. The proposed fence and railing shall be grounded according to the National Electric Code (NEC).

- D. Fencing surrounding all generator sites shall include screening that is a minimum 6 ft tall industrial type fence, chain link fence, or equivalent protection with privacy screening material consisting of vinyl slats. The open area within the generator site fencing shall be covered with six (6) inches of compacted gravel (Aggregate Base Material Type 1, Size 21) and a four (4) inch concrete slab to provide a level surface for installation of equipment and fuel tank.

### 3.11 Aesthetics

- A. Structural elements for the Opitz Project shall be designed and constructed to be visually consistent with the nearby vicinity of the I-95 corridor and, where applicable, compatible with any specific third-party requirements.
- B. Where existing structural elements that are to be incorporated into the Opitz Project have aesthetic treatments, the surface finish for new and adjacent elements (for noise barriers, retaining walls, bridge parapets and walls, and bridge abutments, etc.) shall match existing to the maximum extent practicable. Where these existing structural elements currently have no architectural or aesthetic treatments, such new and adjacent elements shall receive a smooth concrete finish. The existing and new structural elements in these cases shall be stained to match AMS Standard 595-36492 Gray.
- C. The Concessionaire shall coordinate with Prince William County to obtain feedback about aesthetic treatments that may be incorporated into specific project features.

### 3.12 Landscaping

- A. If determined by the Department to be required, landscaping will be handled as a Department Change, without any time extensions. This shall include design and installation of plant material, sodding, associated watering, necessary maintenance, a guaranteed 2 year post-Final Completion establishment period, and other associated costs to complete the landscaping work.
- B. The landscaping species and locations will be finalized with the Department's input. The Concessionaire shall complete the landscaping plans within 60 days, once the final noise walls study, design and are approved by the Department.
- C. A Department Change authorizing the initial design efforts shall be issued in a timely manner.

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- D. Any Department Change subject to Section 3.12 will be issued before 365 days from Final Completion Date.
- E. The Department Changes for landscaping will generally be limited to reforestation and enhancement of area disturbed during construction.
- F. Stabilization of disturbed areas of the project to maintain permit conditions shall not be included in the Department Change for landscaping and shall be the Concessionaire's responsibility.
- G. The Concessionaire shall provide landscaping as required to mitigate Project impacts to the community.
- H. Landscape plans shall be prepared by a Virginia Licensed Landscape Architect and shall be submitted to the Department for review and approval. The plans shall be prepared in a format consistent with the Department's standards for roadway plans.
- I. The Concessionaire shall assume that adequate locations will be identified within the proposed Right Of Way.
- J. Progress payments will be made monthly by the Department in accordance with the Agreement.

### **3.13 Not Used**

### **3.14 Bicycle and Pedestrian Facilities**

- A. The Concessionaire shall design and construct the Opitz Project to include reconstruction of any disturbed pedestrian and bicycle facilities in accordance with IIM-TMPD-1.0 *Bicycle and Pedestrian Accommodations* and the latest version of the *Manual on Uniform Traffic Control Devices (MUTCD)*.
- B. All existing pedestrian and bicycle facilities shall be maintained throughout construction until permanent facilities can be fully opened. Any temporary pedestrian or bicycle facility closure request shall be submitted in writing to the Department for review and comment.
- C. All new facilities and modifications to existing facilities will be designed in accordance with the standards and specifications set forth in Attachment 1.5a.
- D. The Concessionaire shall conduct coordination meetings with all local jurisdictions and the Department to ensure all existing and planned pedestrian and bicycle facilities are identified within the Opitz Project limits.
- E. If bicycle or pedestrian facilities are identified (either existing or proposed), the Concessionaire shall coordinate with the Department's District Bicycle

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Pedestrian Coordinator and local jurisdictions on the design, temporary traffic control and construction staging of the bicycle and pedestrian facilities within the project limits.

- F. Pedestrian signals shall be accessible pedestrian signals. All pedestrian signal displays shall be countdown signals.
- G. Pedestrian pushbuttons shall be a minimum of 2 in. across in one dimension and shall contrast visually with the housing or mounting.
- H. Pavement designs for sidewalks and paths shall include a minimum four inch layer of Aggregate Base Material Type 1, Size 21 B, or comply with site and subsurface conditions, whichever is greater.

### 3.15 Structures and Bridges

#### 3.15.1 Bridges and Culverts

##### A. General Requirements

1. All new bridges, bridge replacements, widening and/or modifications of existing bridges (including any geometric changes to roadways on and underneath the existing bridge), repair of existing bridges, new culverts and retaining walls, and modifications to existing culverts and retaining walls shall be designed in accordance with AASHTO LRFD Bridge Design Specifications including its Errata (“AASHTO LRFD”) and all current revisions and VDOT modifications (*IIM-S&B-80 VDOT Modifications to AASHTO LRFD Bridge Design Specifications*) issued as of the issuance date of the RFP. All other structures shall be designed to the appropriate design Standards and Specifications set forth in Attachment 1.5a.
2. The Concessionaire shall comply with VDOT’s Manual for the Structure and Bridge Division.
3. Infinite life fatigue requirements shall apply to all bridges.
4. Under no circumstance shall the minimum vertical clearance for proposed structural elements be less than 16 feet 6 inches over existing and proposed roadways and streets carrying vehicular traffic, unless an applicable Design Exception or Design Waiver is approved.
5. The Concessionaire shall use Concrete Low Shrinkage Class A4 Modified, for all bridge decks and Concrete Low Shrinkage Class A4 Modified (lightweight) for bridge parapets/railings, bridge sidewalks, and bridge medians.

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6. Post-tensioning of any type shall not be allowed (with or without grout or ducts).
7. High Performance Steel Grade HPS 100W shall not be allowed.
8. High Performance Steel Grade HPS 70W shall only be allowed with an approved Design Waiver.
9. Furnishing and placing hydraulic cement concrete for concrete elements whose minimum dimensions exceed five (5) feet shall be performed in accordance with the *Special Provision for Hydraulic Cement Concrete for Massive Construction*. Regardless of minimum concrete element dimensions, the maximum allowable thermal gradient between the core and skin temperature of a concrete pour is limited to 35° Fahrenheit and the maximum allowable temperature in any portion of the concrete pour shall be 170° Fahrenheit for slag and cement mixes and 160° Fahrenheit for fly ash and cement mixes. For concrete elements where the minimum dimension is five (5) feet or less, and where the potential for exceeding the maximum allowable thermal gradient and maximum allowable temperature limits above may exist, it shall be the Concessionaire's responsibility to determine if the *Special Provision Hydraulic Cement Concrete for Massive Construction* should be used for furnishing and placing the hydraulic cement concrete for such elements.

### B. Details and Drawings

1. All details and drawings should be in accordance with the VDOT Manual of the Structure and Bridge Division. Should any such details not be applicable, Concessionaire shall implement a modified version of the requirement such that it is in compliance with AASHTO LRFD.
2. Details and drawings not specifically included in the Manual of the Structure and Bridge Division may only be included in the structural plans and working drawings after review and approval. Should any such details not be acceptable, the Concessionaire shall make the necessary modifications or shall submit an alternate detail that is acceptable.
3. Any new bridge, replacement bridge or repairs, and modifications to existing bridges or structures (including any geometric changes to roadways on or underneath the existing bridge) shall be designed, detailed, and submitted as a plan package for review and approval. A preliminary type, size and location plan, including all proposed stages of construction (as applicable), shall be submitted for Stage I review and approval prior to proceeding with final design.

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### C. Superstructure

1. Bridge type and layout shall be based on reducing long-term maintenance costs. The use of continuous span units and jointless bridge design technologies shall be used as outlined in the VDOT Manual of the Structure and Bridge Division, Part 2 Chapter 17. The Virginia Abutment details shall be developed as shown in VDOT Manual of the Structure and Bridge Division.
2. VDOT standard parapets and rails shall be used.
3. All bridges with pedestrian and/or bicycle facilities shall include CPSR railing in accordance with VDOT Structure and Bridge Manual.
4. VDOT standard pedestrian fences for all applicable structures shall be vertical fencing with curved top. All fence elements shall meet the requirements of Section 3.10.
5. No timber bridge elements of any kind will be acceptable in proposed structures.
6. Either prestressed concrete or structural steel beams and girders may be used.
7. The use of asphalt overlays on concrete bridge decks shall not be permitted.
8. All connections of ramp bridges to intersecting overpass structures shall be made without the introduction of joint at the interface between the ramp bridge and the overpass. The connection at the intersection between the two structures, shall be designed either as a moment connection or, if a moment connection is impractical, a shear connection with a link slab (see Manual of the Structure and Bridge Division Part 2 file 32.09-2 for a typical detail of a link slab).
9. The use of prestressed deck panels as stay-in-place forms for proposed deck widening shall not be permitted.
10. Use of fracture critical elements is not permitted. The use of integral pier caps is not permitted.
11. The Concessionaire shall submit girder erection plans, procedures and calculations in accordance with the applicable Standards and Specifications set forth in Attachment 1.5a.

### D. Substructure

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1. The Concessionaire shall ensure that all recommendations related to the suitability of foundation material for spread footings at the time of construction are confirmed in the field by the Geotechnical Engineer registered and licensed by the Commonwealth of Virginia. Foundation recommendations for the proposed bridge shall be submitted for review with the submittal of final foundation construction plans.
2. Piers used for all bridges shall be limited to the following types: hammerhead piers with rectangular columns, multi-column piers with square or circular columns, and wall piers.
3. Substructures shall be self-supporting under all service life conditions, including superstructure replacement. Superstructure shall not participate in the stability or strength of the substructure.

### E. Existing Bridges

#### 1. General Requirements

- a. The Concessionaire is required to submit plans for the modification of an existing structure that are consistent with applicable Standards and Specifications set forth in Attachment 1.5a. Plan sets are also required to show all changes, including but not limited to vertical and horizontal clearances, lane configurations on and beneath the bridge, addition of bridge conduit systems, and other modifications.
- b. All modifications to existing bridges, including complete or partial removal of a bridge, shall be staged as necessary to maintain travel lanes for the duration of construction and in accordance with these Technical Requirements.
- c. It is the Concessionaire's responsibility to obtain and verify any required as-built field details and dimensions needed for any purpose, including but not limited to modifying or dismantling any existing bridge.
- d. To obtain copies of Bridge Safety Inspection Reports, the Concessionaire must complete a CII/SSI Non-Disclosure Agreement as outlined in IIM- S&B-71 Critical Infrastructure Information (CII)/Sensitive Security Information (SSI).
- e. Barrier protection of structures shall satisfy the requirements of AASHTO LRFD, including the

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requirements of article 3.6.5 and the requirements of the Manual of Structure and Bridge Division Part 2, Chapter 15. Existing bridge piers, shall be protected by a standard VDOT Bridge Pier Protection System (BPPS series). The standard BPPS series barriers shall be designed and detailed in accordance with the VDOT Manual of Structure and Bridge Division. If Bridge Pier Protection System is not provided for substructure units with 30 feet of the edge of roadway, the substructure unit shall be designed for collision forces in accordance to AASHTO LRFD and VDOT S&B Manual.

- f. Existing bridge spans shall be widened with the same beam type and same material (e.g., steel or concrete).

### 2. Scope of Work for Bridges to Remain in Place

The scope of work for repair of bridges to remain in place or to be widened shall include the following:

- a. Inspection and evaluation of bridge deck shall be limited to delineating delaminated concrete for removal prior to placement of new patching or overlay, if required.
- b. Inspection and evaluation of substructure shall be limited to delineating delaminated and spalled concrete for removal prior to performing substructure repair. Delineated areas shall be expanded 6 inches beyond each side, and top and bottom. Repair of substructure spalls and delaminations shall include providing and installing embedded galvanic anodes in accordance with the VDOT Road and Bridge Specifications. Substructure cracks shall be repaired with Crack Repair Type B (Epoxy injection) in accordance with the VDOT Road and Bridge Specifications.

### 3. Additional Requirements

- a. Only bearings that are included in the Manual of the Structure and Bridge Division Vol. V Part 3 shall be used in the widened portion of the bridge structure regardless of the superstructure type selected. Installation of new bearings and all necessary work shall be included in the scope of work for any superstructure replacement, and no existing bearing components shall be re-used. The Concessionaire shall ensure that the existing and new bearings are compatible with each other, and will not result in over stressing the existing or new bearings.

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- b. Existing structural approach slabs shall be in accordance with File No. 06.07 of Part 2, of the Manual of the Structure and Bridge Division where the existing bridge is being widened or where the travel lanes are being modified unless otherwise approved.
- c. The location of any deck construction joint shall be over a girder and between shear connectors from the girder to the deck, unless otherwise approved.
- d. Existing bridge elements shall be evaluated to determine effects of bridge widening, joint closures or other modifications for the bridge. Regardless of design method used on the existing bridge, AASHTO LRFD shall be used for the initial evaluation of existing elements. For existing bridges not designed using LRFD and where it is determined that resulting LRFD factored loads are in excess of LRFD factored resistance, the Load Factor Method or Allowable Stress Method in accordance with the AASHTO Standard Specifications for Highway Bridges, 16<sup>th</sup> Edition, may be used for the evaluation of the existing elements.

#### 4. Dismantling and Removing Existing Structures or Removing Portions of Existing Structures

With any demolition and temporary support over or adjacent to live traffic, the Concessionaire shall submit a plan for review and approval prior to the commencement of any demolition work. The demolition plan shall include, but is not limited to, details of protection of the underlying bridges, roadway, and users. The Concessionaire shall determine the effect of equipment loads on the bridge structure, and develop and submit plans that show the procedures for using the loaded equipment without exceeding the structure's design capacity. The Concessionaire's plans shall be signed and sealed by a Professional Engineer licensed by the Commonwealth of Virginia.

#### 5. Live Load Rating of Modified Bridges

- a. All modifications to existing bridges shall be evaluated for their impacts on the live load rating of the bridge. In addition to the requirements set forth below, modifications to an existing bridge shall not result in the bridge requiring a posting for live load carrying capacity.
- b. If the current HL93 Rating Factor (as computed per the Manual for Bridge Evaluation) is greater than or equal to



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1.0 at the inventory level, then the HL93 inventory rating factor for the modified structure shall be greater than or equal to 1.0.

- c. If the current HL93 Rating Factor (as computed per the Manual for Bridge Evaluation) is less than 1.0 at the inventory level, then the HL93 inventory rating factor for the modified structure shall be greater than or equal to the inventory rating factor for the unmodified subject structure.

### F. Bridge Drainage

1. The minimum dimension of pipe used in a drainage system for new bridges and widened portions of existing bridges shall be eight (8) inches.
2. To the extent possible, pipes and downspouts shall be designed to avoid interference with aesthetics of the bridge.
3. The use of ditches and open channels with grades greater than 10% shall not be permitted on slopes directly underneath a bridge or on slopes located within 100 ft. of a bridge structure. An enclosed drainage system shall be used to capture the bridge deck runoff, including runoff from its approach slab, and convey the runoff to the bottom of the slope or into a drainage system.

### G. Load Ratings for Bridges

1. Structure load ratings are required and shall be performed in accordance with the requirements of IIM-S&B-86 – *Load Rating and Posting of Structures (Bridges and Culverts)* and the following:
  - a. When a phased portion of a newly constructed structure is intended to carry traffic in a temporary configuration.
  - b. Load rating of any partial configuration of the existing structure.
  - c. A final, as-built, load rating analysis of each new structure reflecting traffic in its final configuration. This load rating should incorporate any as-built changes that may have been made, which in the judgment of the Concessionaire will affect the load rating (e.g., minor changes to stiffener or diaphragm locations may not affect a load rating).
2. No partial or completed structure shall be placed into service if a Load Restriction (Posting) is required based upon the load rating

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analyses. The Concessionaire is responsible for all remedial measures and corrective action required to provide a structure that satisfies the load rating requirement outlined in IIM-S&B-86– *Load Rating and Posting of Structures (Bridges and Culverts)*.

### II. Safety and Acceptance Inspection for Bridges

1. Acceptance of the bridge structure will require the following two independent inspections:
2. A satisfactory safety and inventory inspection as described below is required prior to opening the structure or portion of the structure to public traffic. This safety and inventory inspection by VDOT will serve as the initial inspection of the structure. Data gathered will include, at a minimum, location, date completed, alignment, description, horizontal and vertical clearances, structure element description and condition data, and traffic safety features. Such inspections will be required prior to opening any newly constructed portion or phase of the bridge to traffic.
3. A satisfactory final construction inspection by VDOT is required prior to acceptance of the structure. To facilitate inspection of the structure, the Concessionaire shall ensure that all structural elements are accessible and shall provide adequate resources including:
  - a. Man-lifts, bucket trucks, under bridge inspection vehicles, or other equipment necessary to inspect the structure, as well as properly trained staff of sufficient composition to support the inspections; and
  - b. Plans, procedures, personnel, and equipment to implement traffic control measures.
4. The Concessionaire shall provide a minimum of thirty (30) days' notice whenever it requires VDOT to undertake an inspection. The Concessionaire's notice shall include the latest version of the plans (including all field design changes), traffic control procedures, a description of the items to be inspected and an anticipated schedule for the inspections.
5. Unless otherwise approved, structures shall be substantially complete (i.e., roadway, slopes on the approaches, and slopes underneath the structure are already in place) before the final construction inspection will be performed.

### I. Plan Submission

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1. The Concessionaire shall make Stage I (Preliminary Plan) submissions and Stage II (Final Plan) Submissions.
  2. Stage I (Preliminary Plan) Submission
    - a. The Concessionaire shall submit a Stage I (Preliminary Plan) submission for each new bridge, bridge replacement, and bridge widening and/or modification.
    - b. Stage I submission must be submitted prior to any final design submittal. Final design prior to approval of the Stage I submission shall be solely at the risk of the Concessionaire.
    - c. The approval of the Stage I submission shall be subject to the approval of the preliminary geotechnical report completed in accordance with the requirements of Section 3.4 Geotechnical, and roadway geometry.
    - d. Stage I submission shall include: Stage I drawings prepared in accordance with the Stage I Plan Review Checklist, Stage I Report, Stage I Report Summary Form, and other preliminary plan requirements indicated in the applicable Standards and Specifications set forth in Attachment 1.5a.
    - e. The Stage I report shall follow the Stage I – Report Template, which shall be provided upon request, except as modified below.
- (i) Section 3.10, Constructability Issues: The Report need not consider constructability issues (except for how it relates to maintenance of traffic; the report shall include a section on maintenance of traffic).
- a. Section 6, “Bridge Preliminary Recommendation” is modified as follows: the report need only describe the single alternative being presented for approval.
  - b. Section 6, the report requirements are extended to specifically address in detail all non-standard items, unique or complex features.
  - c. Section 7, Engineer’s Cost Estimate for each Alternative, is not required.
  - d. Section 8, Schedule, is not required.
  - e. The report will include copies of design exceptions and waivers that influence the design of the structure or roadway approaches,

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both over and under, and shall include a write-up on how the design exceptions and Design Waivers affect the bridge.

3. Stage II (Final Plan) Submission
  - a. The Concessionaire shall submit structure Stage II (Final Plan) submission for each new bridge, modification to an existing bridge, bridge rehabilitation, modification to lane and shoulder configuration on or under an existing bridge and/or culvert, or modifications to culvert structures.
  - b. Final plans may be submitted as completed plan set(s) or in plan submission packages (i.e., foundation plan package, substructure plan package, superstructure plan package, etc.). The final plans are to be submitted according to the submission schedule provided by the Concessionaire.
  - c. The Stage II drawings shall be prepared in accordance with the Stage II Plan Review Checklist.
  - d. Final design calculations and construction drawings shall be signed and sealed in accordance with the VDOT Manual of the Structure and Bridge Division, Part 2, Chapter 1, Section 16: Sealing and Signing of Plans and Documents.
4. Additional Requirements for Bridges

The Concessionaire is responsible for obtaining the VDOT B-number, Federal Identification and plan number for each new bridge included in the Opitz Project. Plan sets should contain sheets that are arranged and detailed as outlined in the Manual of Structure and Bridge Division Part 2.

### 3.15.2 Retaining Walls

#### A. General Requirements

1. The retaining walls shall be designed using AASHTO *LRFD Bridge Design Specifications*; including its Errata; VDOT Modifications (IIM S&B-80 *VDOT Modifications to AASHTO LRFD Bridge Design Specifications*); The Manual of Structure and Bridge Division Part 2 Chapter 18 Earth Retaining Walls; and applicable sections of the Road and Bridge Standards, Vol. I & II and as specified in the Technical Requirements. Timber lagging for post and panel walls shall be pressure treated in accordance with the VDOT Road and Bridge Specifications.

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2. If the Concessionaire elects to use mechanically stabilized earth (MSE) walls, the fill material used in the reinforced zone shall be a crushed aggregate with properties in accordance with the VDOT's Special Provisions for approved proprietary MSE walls. The Concessionaire shall provide both global and external stability analysis utilizing an approved computer program submit the results of the analysis, including boring logs, laboratory data, and any other applicable data for review. The wall supplier shall provide to the Concessionaire an internal stability analysis that validates the design of the wall. Retaining walls shall be designed to control settlements within tolerances identified in VDOT's Guidelines for Preparation of Alternate Retaining Wall Plans.
3. Should any standard for retaining walls not be in accordance with AASHTO LRFD, then the Concessionaire shall verify design and implement a modified version of the requirement such that it is in compliance with AASHTO LRFD.
4. Retaining walls at bridge abutments shall be designed for a minimum service life of 100 years.
5. Except for tie-backs required for the support of retaining walls, all components of the retaining walls shall be contained within VDOT's right-of-way. Tie-backs for retaining walls may be located within permanent underground easements provided that such easements are approved.
6. MSE walls that require traffic protection at the top shall use barriers or railings on moment slabs.
7. Parapets/railings and moment slabs located on top of MSE walls shall use Concrete Low Shrinkage Class A4 Modified.
8. Concrete paved ditches shall be used behind retaining walls, except where the top of the wall is located adjacent to a roadway shoulder in which case an approved concrete barrier system shall be used. Paved ditches shall extend to the back face of the retaining wall. For soldier pile retaining walls, where a post extends behind a retaining wall panel, the ditch shall be located adjacent to the post. The area between the edge of the ditch and the back of the retaining wall panel shall be paved with 4 inches thick concrete, graded to drain away from the wall.
9. For maintenance of the area at the top of a wall or working surface, a VDOT Standard HR-1, or equivalent fencing system as approved, shall be required when routine maintenance or inspection will be performed from the working surface or platform for which there is a 4-foot or greater distance above the next lower surface (OSHA

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1910.23(c)1). All HR-1 railing shall be powder coated in accordance with applicable Standards and Specifications set forth in Attachment 1.5a.

10. The following requirements in the Manual of the Structure and Bridge Division Part 2 File No. 17.01-7 Abutments, General Information and Selection Criteria, Use of MSE Walls and GRS Technology shall not apply to this Project:
  - a. MSE wall location for overpass structures shall accommodate a minimum of one future lane in each direction for the roadway below the overpass.
  - b. MSE wall limits shall extend sufficiently to allow future widening of the overpass by one lane in each direction.

### 3.15.3 Traffic Structures

#### A. General

1. If required, Lane Use Management Signs (LUMS) shall be treated in the same manner as overhead sign structures that support variable message signs except that LUMS may be erected on cantilever structures.
2. Small (i.e., 48" x 48' max. size) regulatory type sign panels on bridge structures may be installed using brackets attached to bridge parapets and deck slabs. The edge of sign panels shall clear parapet or rail by a minimum of 12 inches.
3. Span type overhead sign structures shall not be supported on bridge deck blisters. Sign structures shall be supported on pier caps or independent foundations, unless prior written permission allows for mounting to a frame supported by the superstructure. The main bridge beams and girders shall be investigated for fatigue loading from wind loads of the sign structure. The minimum vertical clearance between the bridge deck and sign shall be in accordance with the VDOT Road and Bridge Standards. Cantilever overhead signs shall not be mounted on bridge superstructures or substructures.
4. All poles, including poles for lights, cameras, and microwave vehicle detectors, which are located within the clear zone shall be protected from vehicular impact by guardrail or barrier. Supports shall be configured such that the poles, baseplates and anchor bolts are not located within the Zone of Intrusion for Test Levels 2 and 3; and within the Truck Cab Zone of Intrusion for Test Level 4.

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5. The Concessionaire will be required to obtain a Design Waiver for any overhead sign structures that exceed the maximum span limits as defined in VDOT IIM-S&B-89 – VDOT Modifications to the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

### B. Existing Traffic Structures

1. The Concessionaire may re-use existing sign structures for the combination of the existing and proposed signs and ITS or TMS devices upon the submittal and approval of documents that include a condition assessment based on reviews of the most recent structure inspection reports, a detailed listing and plan of repair items required to address any existing defects in poor or substandard condition (if applicable), existing structural information, structural calculations, details of any proposed repairs and modifications to be performed by the Concessionaire, and a certification statement sealed by a Professional Engineer licensed in the Commonwealth that the structure meets all current structure design criteria and is fully compliant with these Technical Requirements. The structural analysis provided by the Concessionaire for each structure will be reviewed to deem whether or not the existing structure will be permitted to be re-used as proposed. If the Concessionaire's analysis shows that re-use of the structures, with or without modifications, are not structurally acceptable in accordance with the applicable Standards and Specifications in Attachment 1.5a, the Concessionaire shall provide new structures in accordance with the Attachment 1.5a requirements and remove and salvage the existing structures at no additional cost.
2. VDOT Structure ID for any sign and VDOT ITS structure to be modified for reuse or to be removed shall be clearly shown on the plans. VDOT Structure ID for any existing sign may be obtained by contacting VDOT's Northern Virginia District Structure and Bridge Section. VDOT's Northern Virginia District Structure and Bridge Section shall be notified prior to the removal or relocation of any existing traffic structure.
3. Removed existing lighting poles shall not be reused (new lighting poles shall be required).
4. If applicable, existing bridge-mounted sign structures located above the proposed Express Lanes within the project limits shall be removed and if necessary replaced with new signs mounted on independent sign structures.
5. Existing overhead signs mounted to bridge fascia shall be completely removed, including frames, sign panels, hardware, and incidentals.

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Removed materials shall become the property of the Concessionaire and shall be properly disposed of off-site. Connection bolts anchored into concrete parapets shall be mechanically cut flush with the surface of the parapet, and then removed by mechanical drilling to a depth of one-half inch below the surface of the parapet. The holes shall be patched to match the color and texture of the existing parapet surface with hydraulic cement mortar or grout conforming to Section 218 of the Road and Bridge Specifications. Connection bolts to steel beams shall be removed, and the affected areas of steel beams cleaned, primed, and painted in accordance with the requirements of Section 411 of the Road and Bridge Specifications to match the existing structure. Electrical service, where applicable, shall be disengaged at the nearest junction box, and all conductors shall be capped and sealed in place unless existing service is to be reused for lighting of replacement structures.

### C. Inspection of Traffic Structures

1. Acceptance of new or modified traffic structures will require an initial safety inspection. The purpose of an initial inspection is to verify compliance with the requirements of IIM-S&B-82 *Traffic Structures* and to identify deficiencies, including incomplete work, and variances from approved plans and specifications and which must be rectified by the Concessionaire before the structure can be accepted.
2. The initial inspection shall be performed by VDOT. The Concessionaire shall provide Approved for Construction (AFC) drawings and working drawings, including all revisions at least two weeks prior to scheduling the inspections.
3. During the initial inspection, data including but not limited to location, date completed, description, horizontal and vertical clearances, structure element description and condition, and traffic safety features will be gathered by the Concessionaire and verified by VDOT.
4. The Concessionaire shall ensure that all structural elements are accessible for inspection of all structures. This requirement may dictate that the Concessionaire provide man-lifts, barges, remote operated vehicles, bucket trucks, or other equipment necessary to inspect the structure and plans, personnel, and equipment to implement traffic control.
5. Upon completion of the initial inspection, VDOT will submit an inspection report to the Concessionaire within 10 days of the inspection either recommending acceptance of the structure or identifying deficiencies, including incomplete work, which must be



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rectified by the Concessionaire before the structure can be accepted. If a structure is not accepted, the Concessionaire shall rectify the deficiencies and certify in writing the deficiencies have been corrected. Within 5 days of receipt of such certification, a follow-up inspection may be performed to verify that the deficiencies have been corrected; upon such time, VDOT will provide a written response to the Concessionaire as to whether the structure is acceptable or deficiencies still exist.

6. The final acceptance of traffic structures will occur when the initial inspection is completed and any necessary follow-up (verification) inspections are performed. The initial inspection may be accomplished through multiple inspections, as long as the inspection program is properly coordinated with all required participants.

### 3.15.4 Miscellaneous Requirements

- A. The parapet and barrier walls on structures may be constructed using slip forming after review and approval of a trial section.
- B. All temporary shoring and erection elements shall be dismantled and removed in their entirety following construction, unless otherwise approved.
- C. The following utilities shall be designed, furnished, and installed by the Concessionaire:
  1. Lighting on the bridge;
  2. Under bridge lighting (if required); and
  3. Any required Standpipe Fire Hydrant and Water Supply fire protection systems shall comply with the requirements of NFPA 502 Section 6.6. Prior to fire protection acceptance, the Concessionaire shall test with the local authority the hose and standpipe systems for compliance with NFPA 25 and provide a letter from the Fire-Marshall confirming such successful test results.
- D. The Concessionaire shall submit estimated quantities along with the associated unit costs for all standard and non-standard items in the final bridge plan submittal. The structure unit cost data is required to complete the VDOT Annual Bridge Construction Unit Cost Report which is provided to FHWA. This data shall be submitted within 120 days of the approval of the construction plan submittal.
- E. Where any part of a drilled shaft, footing, or any other stiff element is to be permanently located directly beneath any permanent pavement, there shall be a minimum clearance of five (5) feet from the top of finished grade to the top of drilled shaft, footing, or stiff element.

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- F. Drilled shaft for support of bridges and retaining structures shall be constructed in accordance with the requirements of VDOT *Special Provision for Drilled Shafts Using Self-Consolidating Concrete* for Design-Build and PPTA Contracts.
- G. All structure and bridge working or shop drawings shall be reviewed prior to formal submittal. Each submitted working/shop drawing shall be individually annotated with the resulting disposition of the drawing after the review of each sheet. Supporting computations for shop drawings may be stamped on the cover sheet only. Annotation requirements apply to all structures, whether detailed by the supplier (e.g. MSE walls, noise barrier walls, etc.) or designed and detailed by the EOR (e.g. plate girders and prestressed beams).

### 3.16 Tolling and Traffic Management System

#### 3.16.1 General

- A. The Concessionaire shall be responsible for the planning, design and installation of any ETTM System expansion.
- B. The ETTM System shall be designed, implemented, maintained, repaired, and replaced in accordance with all relevant standards and specifications as set forth in Attachment 1.5a.
- C. All ETTM Equipment, including but not limited to electronic devices, network and computer gear, shall be stored in an environmentally controlled space as required in accordance with manufacture's recommendation.
- D. Definitions and abbreviations:
  - 1. ATMS – Advanced Traffic Management System
  - 2. Burn Period – The time duration required for the ITS devices to successfully operate over consecutive days in a real-world condition, without interruption due to device or system deficiencies or failures.
  - 3. Commissioning – The systematic verification of each component or system of the Opitz Project in question is physically complete, checked, calibrated, and safe for initial operation.
  - 4. HOT-OC – Express Lanes Operations Center
  - 5. MPSTOC – McConnell Public Safety and Transportation Operations Center
  - 6. NRO – VDOT Northern Region Operations
  - 7. Roadside Equipment (RSE) – The Roadside Equipment is to include Dynamic Message Signs (DMS) to provide toll and driver information

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(T&DI) and general traffic management information; Pan-tilt-zoom (PTZ) CCTV and Automated Incident Detection (AID) cameras to provide video surveillance; traffic monitoring sensors to provide traffic volume, lane occupancy, and speed data; roadway gates (and all related systems) at all reversible access points, and all supporting electrical and communications equipment to support the Traffic Management System (TMS), including but not limited to service panels, generators and cabinets.

8. Traffic Management System (TMS) – means any application of computer, electronics and/or telecommunications equipment and software and supporting fixtures and equipment whose function is to provide information, data and/or services to the traveling public, the Department, or to manage and control traffic, and any future systems or services conceived or developed for the same or similar purposes.

**3.16.2 Existing ITS Infrastructure**

- A. Existing ITS roadside equipment and infrastructure is located within the Project limits. Portions of the ITS roadside equipment and infrastructure are owned and maintained by the Department while other portions are owned and maintained by the Concessionaire.
- B. Existing ITS roadside equipment may include, but is not limited to, the following equipment located within the Opitz Project Right of Way:
  1. Weather stations;
  2. DMS for the existing Express Lanes, and GP Lanes to provide general traffic management and Express Lanes regulatory information;
  3. Express Lanes access gates;
  4. CCTV and AID cameras;
  5. Traffic monitoring sensors (microwave vehicle detectors);
  6. Fiber optic cables;
  7. Generators and UPS; and
  8. ITS and Electrical Cabinets.
- C. The Concessionaire shall relocate existing Department and Concessionaire ITS roadside equipment located within the Opitz Project Right of Way that is affected by construction, including power and communication service to the equipment, and shall ensure that loss of functionality is planned and minimized.

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- D. The Concessionaire and Department will remain responsible for the operations and maintenance of the existing and relocated Concessionaire and Department ITS roadside equipment, respectively upon completion of construction.

### **3.16.3 Business and Toll Operating Model**

- A. The business and toll operating model shall comply with the requirements of the Agreement.
- B. Connectivity to the HOT-OC shall be provided to support facility administration, traffic management, Incident response, maintenance and tolling operations including handling of services directly related to the operation and maintenance of the HOT Lanes.
- C. Transponders that are read will be interoperable with the E-ZPass network (or any successor to E-ZPass used on other State Highways) and issued by either the Department or by another member of the Interagency Group (IAG).
- D. Equipment shall be installed allowing individual toll sections to be separately charged, with rates appropriate to the prevailing traffic flow conditions on the road.
- E. Toll pricing shall be in accordance with the Agreement.
- F. A Violation Enforcement System (VES) shall be implemented to enable detection, payment collection and toll enforcement for vehicles for which a valid E-ZPass transponder is not read or for which a pre-arranged payment cannot be applied via vehicle license plate. Enforcement shall follow practices established on similar systems and shall be in compliance with Law. Enforcement may include, but not be limited to, manual processes, video enforcement, integrating customer service, technology and operational performance elements.
- G. An enforcement area shall be provided at or near each tolling point or as agreed by the Concessionaire for enforcement operations to provide a safe location adjacent to the toll gantries or other locations for a law enforcement vehicle.

### **3.16.4 Systems Integration and Protocols**

- A. The Concessionaire shall implement a system engineering approach, consistent with FHWA 23CFR Part 940 Intelligent Transportation System Architecture and Standards (Federal Rule 940), in the development of systems and their associated interfaces. The system engineering approach shall address the following items where applicable:
  - 1. system architecture
  - 2. system specification

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3. interface identification
  4. interface specification
  5. interface control
  6. system integration
  7. configuration management
- B. The HOT Lanes TMS shall be required to interface to the Department's Northern Region Operations (NRO) ATMS at the McConnell Public Safety and Transportation Operations Center (MPSTOC) consistent with the *Capital Beltway I-495 HOT Lanes Program TMS to the VDOT NRO PSTOC ATMS External Interface Control Document (ICD)* and as amended for the Project.
- C. The Concessionaire shall develop and maintain a project-level ITS architecture that is coordinated with the Department's ITS architecture and the National Capital Region ITS Architecture. The project-level ITS architecture shall document all interconnects and information flows between the HOT-OC and the NRO MPSTOC ATMS.
- D. The Concessionaire shall prepare and submit to the Department, the *VDOT ITS Projects – Systems Engineering and Architecture Compliance (Rule 940) Checklist*. The Checklist shall demonstrate that the Opitz Project is in compliance with Federal Rule 940.
- E. Subject to the Agreement, the Concessionaire shall ensure that such standards, protocols and interfaces are represented in the HOT-OC Central Control Computer System (CCCS), so as to make the TMS system interoperable with the NRO MPSTOC ATMS in accordance with the Interface Control Document (ICD), including any mutually agreed revisions during the Operating Period.

### **3.16.5 ETC AND TMS System Design Documentation**

The following ETC system and TMS design documentation (collectively, the "ETTM System") shall be prepared and submitted to the Department by the Concessionaire:

- A. Functional Requirements – such requirements shall be documented in the Concept of Operations (Exhibit C-4, Attachment 4.1) and shall include characteristics of the ETTM Equipment with regard to its intended capability, including reversible gate operations and gate control. The documentation shall describe the intended behavior and functionality of the ETC and TMS and the operational interaction with the NRO MPSTOC ATMS.
- B. Technical Specifications - shall be a document or documents that specify the technical design of the integrated sub-systems that will comprise the ETTM System and its interfaces, including reversible operations and gate control.

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- C. ICD – shall be a document that describes the physical and logical architecture of system interface between the HOT-OC TMS and the NRO MPSTOC ATMS.
- D. Process definition deliverable or other agreed document – shall set out the business processes relating to the ETTM System (subject to intellectual property regulations, and the requirements of the Agreement) and the processes for interacting with the appropriate the Department system and/or other systems as required. The process definition deliverable will address reversible lanes and gate operations.
- E. Test strategy – shall establish the principles of, and the Concessionaire’s approach to, the testing of the ETC system and TMS and their interfaces, including the test stages and processes.
- F. Security plan – shall be a document (or part of another document) that sets out how the security of the ETTM System shall meet the relevant requirements for enforcement evidence and that data are held securely and only accessible to authorized personnel.
- G. Disaster recovery plan – shall be a document (or part of another document) that sets out the procedures to be adopted in the event of failure of the ETTM System.

### **3.16.6 Design of the Electronic Tolling System**

- A. The ETC system shall be provided to impose, charge, collect, and enforce payment of tolls and other incidental fees and charges in accordance with the Agreement.
- B. The ETC system is to comprise the following equipment and/or systems:
  - 1. ETC system roadside equipment; and
  - 2. ETC system equipment and/or subsystems.
- C. The ETC system roadside equipment is to comprise:
  - 1. Transponder detection equipment; and
  - 2. Control equipment.
- D. Access to the ETC system overhead and roadside equipment shall be provided such that it does not jeopardize the safety of authorized personnel.
- E. The ETC system shall have a Transponder Transaction Performance of at least 99.90% under normal operation, for properly fitted and operating transponders, excluding signal attenuation due to metallic wind screen or other similar conditions beyond the reasonable control of the Concessionaire.

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- F. The ETC system and dynamic pricing algorithm module shall:
1. receive data gathered from each road segment on traffic volumes, lane occupancy, and speed data at detection points from the TMS; and
  2. adjust toll prices in order to maintain Free-flow traffic conditions in accordance with the Agreement.
- G. The Concessionaire shall provide toll charge transaction information in compliance with the current version of the following:
1. *Discount Plan Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  2. *Toll Corrections File Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  3. *Toll Reconciliation Response File Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  4. *Transponder – Account Number File Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  5. *Virginia Department of Transportation E-ZPass Service Center (Block Box) Interface Specifications*
  6. *Outgoing Correspondence Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  7. *VTOLL Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
  8. *License Plate Interface: Virginia Toll Facilities Group – VDOT CSC Specifications*
- H. The Concessionaire shall develop, as needed, any additional interface file format and transfer protocols for the transmission of ETC data and related information in cooperation with the Department and in accordance with the ETC Agreement.
- I. Communication between the ETC system roadside equipment and the HOT-OC shall be via a fully redundant network.

### **3.16.7 Design of the Violation Enforcement System**

- A. A Violation Enforcement System (VES) shall be provided that detects vehicles using the HOT Lanes that do not have a transponder or a valid transponder.

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- B. The VES is to comprise:
  - 1. image capture equipment; and
  - 2. control equipment.
- C. When tolls for any toll section are suspended, there shall be a means to suspend vehicle enforcement.
- D. The VES roadside equipment shall have an In-service Availability (ISA) of at least 99.90%, excluding the effect of any condition beyond the reasonable control of the Concessionaire.

### **3.16.8 Design of the Integrated Roadside Units**

- A. The Concessionaire shall provide suitable integrated roadside units (IRUs) housing electrical components for the relevant ETTM Equipment as required.
- B. The IRUs shall be equipped with the following provisions:
  - 1. HVAC systems as required to support installed equipment and
  - 2. intrusion detection.
- C. Each service panel for the Opitz Express Lanes IRUs shall be capable of monitoring and reporting alarms for the main power and each branch circuit, the current flow and any tripped breakers.
- D. If telemetry is used, IRUs shall be powered by an uninterruptible power source to enable the telemetry to communicate for the first 60 minutes after a power failure.
- E. Service panels feeding IRUs shall be equipped with a backup generator sized to accommodate the attached electrical load and any other roadside equipment, including DMS, connected to the service panel.
- F. The IRU's canopy structural design shall be designed and constructed giving consideration to its life cycle. Allowable design bearing capacities shall be established to minimize foundation settlements and associated settlement cracking. These capacities shall be field verified by the Engineer prior to construction.

### **3.16.9 HOT-OC**

- A. The Concessionaire and Department agree that the existing HOT-OC shall be used for the Opitz Express Lanes in accordance with the Agreement.



**3.16.10 Traffic Management System (TMS)**

- A. A TMS shall be provided that meets the requirements of the Agreement and enables the Concessionaire to monitor and manage traffic flow on the HOT Lanes.
- B. The TMS must allow the Concessionaire to:
  - 1. support response to Emergency situations on the HOT Lanes in the shortest possible timeframe;
  - 2. manage traffic flow on the HOT Lanes;
  - 3. control reversible flow, including access gates and any regulatory DMS, on and approaching the HOT Lanes;
  - 4. detect and manage traffic Incidents effectively, through a comprehensive Incident management system, to mitigate the impacts of Incidents and prevent secondary Incidents occurring;
  - 5. provide credible and timely driver information about travel times, traffic conditions and Incident situations, contribute to the calculation of dynamic toll prices through the provision of traffic conditions data, and provide timely and accurate toll prices to motorists related to HOT Lanes;
  - 6. provide an interface with the NRO MPSTOC ATMS in accordance with the ICD;
  - 7. support provision of driver aid to motorists in vehicles that have stopped on the HOT Lanes;
  - 8. permit the NRO MPSTOC ATMS to control DMS (HOT Lanes) via the HOT-OC TMS in accordance with the Agreement;
  - 9. permit the NRO MPSTOC ATMS to control HOT Lanes access gates via the HOT-OC TMS in accordance with the Agreement;
  - 10. permit the NRO MPSTOC ATMS to change the time periods of reversible flow via the HOT-OC CCCS in declared Emergency events in accordance with the Agreement;
  - 11. provide for the control and monitoring of TMS components and subsystems through a modern and comprehensive computer-based control facility using graphical user-interface (GUI); and
  - 12. monitor facilities, plant, and equipment, if required.
- C. The TMS is to comprise the following equipment and/or systems:

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1. TMS roadside equipment; and
  2. TMS equipment and/or systems located in the HOT-OC and IRUs.
- D. The TMS roadside equipment is to include:
1. DMS for the HOT Lanes to provide toll and driver information (T&DI) and general traffic management information;
  2. Pan-tilt-zoom (PTZ) CCTV cameras to provide video surveillance;
  3. traffic monitoring sensors to provide traffic volume, lane occupancy, and speed data;
  4. lane control devices, if applicable; and
  5. roadway gates (and all related systems) at all reversible access points.
- E. The TMS HOT-OC-based equipment and/or systems are to comprise:
1. Automatic Incident Detection (AID) subsystem
  2. CCTV subsystem
  3. CCCS
- F. The CCCS shall have an ISA of at least 99.995% and the CCCS (redundant components) of at least 99.9%, excluding the effect of any condition beyond the reasonable control of the Concessionaire.
- G. The TMS roadside equipment shall have an ISA of at least 99.9%, excluding the effect of any condition beyond the reasonable control of the Concessionaire.
- H. Equipment cabinets shall be provided for the TMS roadside equipment at appropriate locations along the alignment and within the Project Right of Way.
- I. Existing Department-owned TMS roadside equipment that may be taken over by the Concessionaire will be removed or integrated into the new TMS system.

### **3.16.11 CCTV Video Coverage**

- A. Dedicated CCTV cameras shall be provided for the following functions:
1. Surveillance of the HOT Lanes including, approaches and interchanges
  2. AID on the HOT Lanes

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- B. Surveillance CCTV video coverage must be provided by PTZ CCTV cameras mounted on poles to enable HOT-OC operators and Department operators (under agreed circumstances in accordance with the Agreement) to observe traffic within the limits of the HOT Lanes at all hours of the day and in all weather conditions normally encountered in Virginia, consistent with reported visibility restriction (such as during snow events, rain storms, or fog). The video provided must be stable and jitter-free.
- C. The Concessionaire shall replace the Department's cameras that are disturbed by the Work.
- D. Dedicated cameras shall be provided for surveillance of the HOT Lanes or to enable video-based AID under Concessionaire HOT-OC operator control.
- E. CCTV line-of-sight distances shall provide for full CCTV coverage of the Opitz Express Lanes without image degradation. The CCTV cameras shall be placed at a minimum mounting height of forty (40) feet unless the camera is a fixed camera provided solely for DMS message verification in accordance with Section 3.16.16.F, in which case lower mounting heights will be permissible.
- F. All cameras installed by the Concessionaire shall meet the requirements of the Opitz Special Provision for Section 814 – Camera System.
- G. The video surveillance system must enable the identification of the number and vehicle types involved in an Incident at all locations within the surveillance area.
- H. The video provided must be stable at all zoom settings when viewing objects up to one mile away.
- I. Where a Concessionaire camera is relocated from a mounting pole that also supports a Department camera, the Concessionaire shall modify the mounting pole upon relocation of Concessionaire camera to remove all defunct equipment to preserve functionality of the Department camera.

### **3.16.12 Video-based AID**

- A. The Concessionaire shall implement video-based AID for the HOT Lanes at locations where:
  - 1. Roadway gates are installed;
  - 2. Traffic enters or exits the Express Lanes;
  - 3. the risk of traffic Incidents is expected to be higher than average, and
  - 4. rapid detection of Incidents is required for special reasons, such as near critical infrastructure.

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5. Wrong-way vehicle detection.
- B. The video-based AID system should be compatible to the existing HOT-OC Traffic Management System and capable of:
1. detecting 95% of Incidents involving stopped vehicles, slow vehicles, and slow traffic that are within the field of view of an AID camera or other equipment as specified;
  2. detecting pedestrians on the roadway within the field of view of an AID camera or other equipment, as specified;
  3. a false alarm rate of less than one false alarm per 10 true alarms; and
  4. detecting Incidents and providing an alarm to the HOT-OC in less than 30 seconds
- C. Upon the detection of an Incident, the AID system must be capable of recording the video at a rate of at least five frames per second for a period of 60 seconds.

### **3.16.13 Video Recording**

- A. It shall be possible to simultaneously record video from CCTV cameras, as designed, at a rate of at least one (1) frame per second.
- B. Sufficient capacity must be provided to store the recorded video from CCTV cameras for a duration determined by the Concessionaire and continue to record video without intervention.
- C. Video footages from VDOT CCTV cameras shall not be recorded or stored.

### **3.16.14 CCTV Communications Standards**

- A. The CCTV communications shall support the appropriate National Transportation Communications for ITS Protocol (NTCIP) 1205 communication protocol (version 1.08 or higher) to provide for functionality with the NRO MPSTOC ATMS software in accordance with the Interface Control Document (ICD).

### **3.16.15 Traffic Monitoring Sensors**

- A. Traffic monitoring sensors are to be installed to monitor and report in real-time traffic volume, lane occupancy and speed data on the HOT Lanes and, where available, the GP Lanes. Such sensors shall enable the Concessionaire to monitor the performance of the Opitz Project corridor.
- B. Information collected on the GP Lanes and HOT Lanes will be made available into the existing Project systems. Data will be provided in raw form and be

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subject to quality control requirements prior to submittal to the Department. Data shall be aggregated in increments to be mutually agreed.

- C. Traffic monitoring sensors shall be installed by the Concessionaire approximately every 1/3 mile to 1 mile on the HOT Lanes and, as applicable on GP Lanes, or as necessary to meet operational requirements. Under unusual circumstances or in specific situations, longer spacing may be used as long as data collection and operational requirements are met.
- D. Traffic monitoring sensors shall be installed on ITS poles based on the manufacturer's recommended mounting heights and roadway geometry. Each detection zone shall be shown on plans as a part of the final Design Documentation. Traffic monitoring sensors shall be located to gather data from both the 95 Express Lanes and GP Lanes wherever possible.

**3.16.16 Dynamic Message Signs (DMS)**

- A. The toll and driver information DMS for the HOT Lanes shall be located at strategic locations throughout the corridor and will display information to allow drivers to make decisions on whether to use the HOT Lanes. The proposed locations are shown on the Opitz Design Plans. The information to be displayed may indicate:
  - 1. price levels for up to three major destination points for each point of entry;
  - 2. travel-time information for HOT Lanes for up to three major destination points.
- B. DMS shall be installed at suitable distances from the HOT Lanes entry points to support motorist decision making and orderly movement of traffic.
- C. The Concessionaire shall coordinate the location of DMS with the Department to avoid over-populating signs and to seek co-location opportunities. The Opitz Project signing roll plans will identify over-population and potential co-location opportunities. The Concessionaire shall incorporate agreed upon recommendations in the final Design Documentation.
- D. The T&DI DMS shall have the following minimum features:
  - 1. full graphics color LED display
  - 2. capability to display congestion levels on HOT and GP lanes on each tolling section;
  - 3. capability to display toll price for destination points;

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4. capability to display travel-time information for GP Lanes and HOT Lanes or, alternatively, the travel time difference between GP Lanes and HOT Lanes,
  5. capability to display traffic management information, including warning and recommended diversions;
  6. advanced fault detection and reporting; and
  7. conformance to the National Transportation Communications for ITS Protocol (NTCIP) communications protocol or other industry protocol agreed with the Department.
- E. If communication with the HOT-OC CCCS is lost and the T&DI DMS has no reported errors, the T&DI DMS shall display a user-defined graphic/message.
- F. DMS cabinets shall be placed in front of DMS at a distance such that authorized personnel can read the message displayed on the DMS while working at the DMS cabinet. Each DMS shall be viewable by at least one PTZ CCTV camera such that the message displayed on the DMS can be visually confirmed by an operator in the HOT-OC.
- G. The traffic management DMS shall have the following minimum features:
1. full graphics color LED display
  2. capability to display traffic management information, including warning and recommended diversions;
  3. advanced fault detection and reporting; and
  4. conformance to the NTCIP communications protocol or other industry protocol agreed with the Department.
- H. The DMS must not display erroneous information due to a fault with the sign or the loss of pixels.

**3.16.17 TMS Availability**

- A. An ISA of at least 99.99% is required for the following functions, excluding the effects of any condition beyond the reasonable control of the Concessionaire:
1. calculation of dynamic toll prices and provision of information to other systems/ devices.
- B. All other TMS functions, unless noted otherwise, must have an ISA of at least 99.9%, excluding the effects of any condition beyond the reasonable control of the Concessionaire.

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- C. In cases where redundancy is provided, the system must switch between redundant components seamlessly (without impact to operator functionality). The system must also provide the capability to manually switch between redundant devices to support software upgrades/revision and maintenance procedures.

**3.16.18 Communications Infrastructure**

- A. The existing communications infrastructure must remain in place or be replaced in kind, as specified in the standards and specifications set forth in Attachment 1.5a.
- B. Communication between the ETTM Equipment and the ETTM Facilities shall be via a fully redundant fiber optic network using Open Shortest Path First (OSPF) protocol (or equivalent) to ensure no single points of failure and reliability and shall comprise the following, if applicable:
  - 1. Opitz Express Lanes trunk fiber optic loop;
  - 2. Opitz Express Lanes distribution fiber optic loop(s); and
  - 3. Necessary connections and/or interfaces with the redundant fiber optic ring (provided by the Department).
- C. The Opitz Express Lanes trunk and distribution fiber optic loops shall be comprised of new armored fiber optic cable.
- D. All new fiber optic cables shall be protected to prevent rodent damage, including but not limited to installing screens at bases of all ITS poles, completely sealed manhole covers without manhole hook holes to eliminate rodent entry.
- E. The new communications conduit bank for the Opitz Project shall consist conduits with the following configuration:
  - 1. one four inch conduit containing a 3-barrel inner duct carrying a 36-fiber Express Lanes distribution cable;
  - 2. one four inch conduit containing a 3-barrel inner duct carrying a 36-fiber Express Lanes trunk cable; and
  - 3. spare capacity in Express Lanes distribution and trunk conduit(s), as shown on the Opitz Design Plans, containing appropriate pull tape.
  - 4. Conduit requirements for Opitz Project work impacting existing or involving new Department communications conduit shall be coordinated with the Department during development of the Opitz Design Plans.

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- F. Communications and conductor cables shall be placed in separate buried conduits, embedded conduits, or structure and bridge-mounted conduits. Communications and conductor cables shall not share conduits, junction boxes, or related appurtenances.
- G. The Concessionaire shall coordinate with the Department to determine which fibers will need to be spliced to the existing 95 Express Lanes fiber to provide connectivity to the Express Operations Center. The Concessionaire shall be responsible for providing the necessary switch capacity and optics to support connectivity to the existing infrastructure.
- H. The Concessionaire shall provide fiber splicing diagram plans showing details of every splice and termination for every fiber strand as a part of the final Design Documentation. The number, color, and fiber assignment of each buffer tube and fiber strand shall be included. No underground splices shall be allowed.
- I. The maximum allowed cable length of a Category 5 or 6 Ethernet cable is 328 feet. If a longer running distance is needed, a media converter shall be used to convert Ethernet data to fiber optic signals.
- J. The Concessionaire shall furnish and install new ITS equipment cabinets for exclusive use to support the Opitz Project devices. Existing Department equipment cabinets shall not be used. The Concessionaire shall remove all defunct equipment.
- K. The Concessionaire shall furnish and install new conduit for exclusive use by the Express Lanes ITS equipment. Existing Department conduits shall not be used. The Concessionaire shall remove all defunct equipment.
- L. Where equipment is relocated or removed from an existing Department cabinet, the Concessionaire shall remove all non-operational equipment, and the cabinet must be kept in a manner that preserves the functionality of any remaining Department equipment.
- M. Locator Wire
  - 1. All duct banks, trenches, and bores containing non-metallic conduits with non-locatable cable (fiber optic) shall have at least one locator wire installed between all junction boxes or cabinets.
  - 2. At all locations where non-locatable conduit is installed in a common trench, and a non-locatable conduit diverges from the common trench, a locator wire shall be installed in both trenches.
  - 3. All locator wires shall be installed inside of conduit and shall run continuously from junction box to junction box.



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4. Locator wire shall be an insulated #8 AWG stranded copper wire. The insulation shall not be green in color.
- N. The Concessionaire is responsible for designing the connection diagrams, including the communications equipment to be provided in each cabinet and how the equipment connects to the fiber optic cables. The design shall be consistent with the 95 Express Lanes Network Architecture as described in the diagram in Opitz Special Provision 817.
- O. The Concessionaire shall be responsible for the construction and installation, testing, and commissioning of any necessary connections to the Department's fiber optic network and associated interface management, including any associated connection or splicing fees. This connection shall be made at the location shown in the Opitz Design Plans.

### **3.16.19 Existing Department TMS Roadside Equipment**

- A. Existing Department TMS roadside equipment or third-party TMS roadside equipment installed under permit with the Department may include the following equipment located within the Opitz Project Right of Way:
  1. weather stations;
  2. DMS for the existing GP Lanes to provide general traffic management and HOV regulatory information;
  3. CCTV cameras; and
  4. traffic monitoring sensors.
- B. The Concessionaire shall relocate existing Department TMS roadside equipment located within the Opitz Project Right of Way that is affected by construction, including power and communication service to the equipment, and shall ensure that loss of functionality is planned and minimized.
- C. Any third-party TMS roadside equipment located within the Opitz Project Right of Way that is affected by construction, including power and communication service to the equipment, shall be relocated by the third-party equipment owner under the direction of the Department at no cost to the Concessionaire. The Concessionaire shall provide notification of disturbance of equipment three weeks prior to commencing such activities.
- D. The Department will remain responsible for the operations and maintenance of the existing and relocated Department TMS roadside equipment. However, during the Operating Period, the Concessionaire shall operate and maintain the access gates and any DMS ties to the access gates.
- E. Third-party equipment owners shall remain responsible for the operation and maintenance of their existing and relocated TMS roadside equipment.

**3.16.20 Interface with the NRO MPSTOC ATMS**

- A. The interface with the NRO MPSTOC ATMS shall comply with the requirements of the ICD.
- B. TMS shall not affect any change to the NRO MPSTOC ATMS or the procedures for the operation and maintenance of the NRO MPSTOC ATMS unless otherwise required by the provisions of the Technical Requirements and the ICD.
- C. The ETC and TMS shall not cause any unscheduled interruption or adverse effect to the continued functioning of the NRO MPSTOC ATMS or the operations supporting it.
- D. The NRO MPSTOC ATMS shall not cause any unscheduled interruption or adverse effect to the continued functioning of the ETC and TMS or the operations supporting it.
- E. The ETC and TMS shall be capable of being electrically (and, where relevant, optically) and mechanically isolated from the NRO MPSTOC ATMS.
- F. The Concessionaire shall:
  - 1. provide external electronic interfaces between the ETC and TMS and the NRO MPSTOC ATMS in accordance with the ICD;
  - 2. work with the Department and its subcontractors to construct, test, and operate all specified interfaces; and
  - 3. prepare and document the designs as outlined in the Agreement, which may include but not be limited to the following:
    - i. the content of the data to be exchanged;
    - ii. the format of the data to be exchanged;
    - iii. the static data which are required to decipher the meaning of the data exchanged;
    - iv. the bearer protocols to be used;
    - v. any sequencing constraints or assumptions;
    - vi. error handling measures;
    - vii. measures to ensure data integrity;
    - viii. the nature of testing and the associated test data to be used; and

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- ix. any other information necessary for the interface to operate correctly.
- G. The TMS shall have a mechanism to control the rate of transmission of messages/file to the NRO MPSTOC ATMS, with such mechanism being mutually agreed to and in accordance with the ICD.
- H. If the interface to the NRO MPSTOC ATMS is unavailable, the TMS System shall be able to store relevant records for an agreed period of up to five days on secure media and transmit them to the NRO MPSTOC ATMS once the interface is restored.

**3.16.21 Data Processing Capacity**

- A. The Concessionaire shall ensure that the ETTM System has sufficient data processing capacity.

**3.16.22 Alarm Reporting**

- A. The ETTM System shall have the capability to monitor the status of all relevant components and to raise alarms in the event of component failure, performance degradation, or any other potential issues that might adversely affect the operation or performance of the ETTM Equipment.

**3.16.23 Security**

- A. The Concessionaire shall prepare and submit prior to Final Completion to the Department a security plan (“Security Plan”) for the HOT Lanes operations.
- B. The Security Plan shall embody the following key principles for the protection of data:
  - 1. Integrity: Data shall be protected from being corrupted by unauthorized changes, whether by system error, human error, or intentional alteration. Data shall only be modified by authorized users according to defined privileges and procedures.
  - 2. Confidentiality: Data shall be protected from unauthorized disclosure. Access to systems shall be restricted to authorized users with privileges appropriate to the confidentiality of the data.
  - 3. Availability: Data shall be prevented from being lost or becoming inaccessible. Authorized users shall be able to gain access to information to which they are privileged whenever they are authorized to do so.
- C. VDOT ITS and traffic signal cabinets shall be secured using Medeco XT Traffic Cabinet Locks and in accordance with the Virginia Information Technologies Agency (VITA) SEC-501 Information Security Standard.

### **3.16.24 Disaster Recovery**

- A. The Concessionaire shall prepare and submit prior to the Date of Service Commencement to the Department an update to the disaster recovery plan (“Disaster Recovery Plan”) for the HOT Lanes operations, which may include the following:
1. mitigating any adverse impact on the ETC system and its operation and/or TMS, in any circumstances where the ability of the Concessionaire to provide the operation of the ETTM System would otherwise be impaired; and
  2. making provision for action to be taken by the Concessionaire in the event of the unavailability of its premises.
- B. The Disaster Recovery Plan shall identify the measures to be taken in the event of:
1. HOT-OC site loss
  2. Roadside equipment site loss
  3. System data loss or corruption
  4. Systems failure
  5. Failure of the communications link with the NRO MPSTOC ATMS
  6. Failure of the communication links between the roadside equipment and the HOT-OC
  7. Loss of power in the locality
  8. Inability of staff to gain access to, or work effectively at, the HOT-OC facility.

### **3.16.25 Performance Recording and Reporting**

- A. The ETTM System shall incorporate the necessary tools to enable the recording and reporting of performance to meet the requirements under the Agreement.

### **3.16.26 Testing**

- A. The Concessionaire shall submit to the Department a test strategy for the Opitz Express Lanes that shall include as a minimum:
1. the scope, requirements and objectives of testing with a testing and systems integration period of no less than 120 days;

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2. an overall high-level plan for testing the ETC and TMS, including the test stages and processes and the scheduling of all tests prior to the Date of Service Commencement; and
  3. the roles and responsibilities of all those involved with the testing program and any dependencies on third parties, including Department personnel.
- B. Testing and commissioning, where applicable, shall be based on the application of a systems engineering methodology such as ANSI/GEIA EIA-632. Testing and commissioning shall be the primary responsibility of the Concessionaire with input and support from the Department and shall utilize:
1. a Verification Cross Reference Index (VCRI), which will be developed and documented to establish the way in which requirements are satisfied. The VCRI shall utilize test, demonstrate, inspect and analyze as methods for acceptance;
  2. a test series that shall demonstrate compliance with the performance requirements through a test plan and procedures;
  3. a testing strategy document that details how the testing plan will be implemented to demonstrate conformance of the proposed solution to the various functional, technical, and performance requirements; and
  4. a test plan document that describes how the testing strategy will be executed to demonstrate the various functional, technical, and performance requirements for compliance to requirements, which shall include:
    - i. test specifications for each of the test cycles
    - ii. detailed requirements traceability matrix linking each of the test series to relevant requirement(s)
    - iii. detailed test script(s) for each of the test series, including input / process / output at each of the steps so that conformance can be monitored.
  5. The testing strategy for the Opitz Express Lanes will provide the level of detail to ensure compliance with the overall testing requirements. This testing strategy shall include:
    - i. System design and integration overview. The Concessionaire will provide this documentation.

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- ii. Level A Testing – The objective of this test is to certify Roadside Equipment installed by the Concessionaire is installed and fully operational in line with agreed design requirements and via executing test plans and procedures approved and witnessed by the Department. The Concessionaire shall be responsible for this test and shall be accountable for successful and on-time execution of this test.
- iii. Level B Testing – The objective of this test is to certify Roadside Equipment is successfully integrated with other ETTM Facilities via executing test plans and procedures approved and witnessed by the Concessionaire. The Concessionaire shall be responsible for this test and shall be accountable for successful and on-time execution of this test.
- iv. Level C Testing – The objective of this test is to certify that Concessionaire’s ETTM System communicates and controls roadside equipment via executing test plans and procedures defined by the Concessionaire. The Concessionaire will be responsible for this test and shall be accountable for successful and on-time execution of this test
- v. Factory Acceptance Testing - tests to be conducted at the supplier’s premises to verify that the equipment, subsystem or system complies with the functional and performance requirements of that supplier’s subcontract.
- vi. Site Acceptance Testing - tests to be conducted at the point of installation (tolling point and HOT-OC) to confirm the factory acceptance testing results, plus any omissions and/or errors noted during the factory testing
- vii. Integration Acceptance Testing - a test conducted to ensure that the complete ETC and TMS meets the end- to-end system-level functional and performance requirements in normal operating conditions. The Concessionaire will provide this documentation.
- viii. User Acceptance Testing - to ensure that individual functions operate as defined in the requirements specification or similar documents and the complete end-to-end process is tested. User Acceptance Test will be completed at least thirty (30) days before Service Commencement of the ETTM. The Department will approve successful completion of the UAT for Service Commencement. The Department will provide this documentation.

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### **3.16.27 Training**

The Concessionaire shall develop and conduct a minimum of two information sessions for the Department in the operations and maintenance of the HOT TMS, if required as mutually agreed.

- A. The target audience for one information session shall be the Department's management staff and duty officers. The session shall include an overview of the capabilities and procedures used to operate the HOT lanes.
- B. The target audience for one information session shall be the Department's TOC operators and controllers and shall include detailed daily procedures used by the HOT TMS in interface with the NRO MPSTOC and management of Incidents.

### **3.16.28 Standards**

- A. The ETTM System shall be designed, implemented, maintained, repaired, and replaced in accordance with all relevant standards and specifications as set forth in Attachment 1.5a.

### **3.16.29 Department Testing and Integration Obligations**

- A. The Department will participate as necessary in the requirements for testing and integration as outlined above where such testing and integration involves the Department's infrastructure. The Concessionaire shall schedule adequate time for notification and testing by the Department.

### **3.16.30 Roadway Gates**

- A. Gate cabinets shall be placed to ensure safe and unimpeded access by authorized personnel. Roadway gates shall be designed and installed, including but not limited to tapered lengths and height above finished roadway, to fully close the ramps at all reversible access and egress points such that vehicles cannot go around a closed gate. Installed length of gates shall consider pavement markings, gore areas, and ramp widths. The Concessionaire shall submit a complete gate arm length schedule table for review and approval as a part of the Design Documentation.
- B. A gate cabinet shall be placed at locations where the technician and other authorized personnel can see the gates while working at the gate cabinet. All gates shall be viewable by at least one PTZ CCTV camera such that the gate open or close position can be visually confirmed by appropriate HOT-OC personnel.

### **3.16.31 Maintenance Access**

- A. All RSE cabinets, foundations, concrete pads, and junction boxes shall be installed at elevations and locations that facilitate maintenance and provide

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safe access. Handrails shall be installed for protection at locations with fall hazards.

- B. Junction boxes shall not be installed in roadways, driveways, parking areas, ditches or public sidewalk curb ramps. The Concessionaire shall avoid placing junction boxes in low-lying locations with poor drainage. Electrical junction box length (long side) shall be parallel to the conduit run. When the conduit run is perpendicular to the roadway at the junction point, the junction box shall be parallel to the roadway. The maximum spacing between any two adjacent electrical junction boxes shall be 500 feet. The maximum spacing between any two adjacent communication junction boxes be 500 feet.

### 3.16.32 Specified New ITS Roadside Equipment

A. New TMS Roadside Equipment used on the Opitz Project shall be as specified in the table below to ensure the equipment will be fully compatible with the existing 95 Express Lanes TMS and operating protocols.

Device	Equipment Make/Model	Firmware Version
Generator/Tank with PLC Comms from TS&T	**Cummins 35GG + Comm Cabinet	latest
Telemetry Remote Terminal Unit	Moxa ioLogic E4200	latest
Telemetry Remote Monitor	Cummins PowerCommand PCC500 (SNMP)	latest
Industrial Ethernet Access Switch	Cisco IE-4000-8T4G-E	latest
Industrial Ethernet Access Switch Power Supply	Cisco PWR-IE50W- AC	N/A
CCTV Pan-Tilt-Zoom Camera	CohuHD Costar 4260HD RISE 4260 Series Positioner	latest
CCTV Automatic Incident Detection Camera	Cohu 3430HD Series Fixed Barrel	latest
CCTV Pan-Tilt-Zoom Camera (VDOT)	CohuHD Costar 4220HD RISE 4260 Dome Positioner Series	latest
Microwave Vehicle Detection	Wavetronix Smart Sensor HD	latest
DMS Type 2	**Daktronics Vanguard VF-2420-64x192-20-RGB	latest
DMS Type 2A	**Daktronics Vanguard VF-2420-96x288-20-RGB	latest
Vertical Roadway Gate (Straight Arm Channel and Offset Arm)	B&B Roadway VW-4 Vertical Warning Gate	latest
Horizontal Roadway Gate	B&B Roadway HW-4 Horizontal Warning Gate	latest
Roadway Gate Controller	170E Controller with VDOT Firmware and 170 Ethernet Card	latest
Cabinet Power Strip	Digital Loggers Web Power Switch 7	latest
Uninterruptible Power Supply	ZincFive Ultra Power Stealth UPS with SNMP and 500W Battery	N/A
Traffic Cabinet Lock (VDOT)	Medeco XT Traffic Cabinet Lock	N/A

**Notes:**

Firmware version indicates Equipment Make and Model Numbers required for seamless integration into existing TTMS software

\*\*Indicates verification required based on project requirements



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Device	Equipment Make/Model	Firmware Version
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*DMS type and size shall be verified with the project requirements, design and specifications*

*Generator type and size shall be verified with the project requirements, design and specifications*

*Transurban Operations supplies gate firmware*

*Model numbers are subject to change based on product availability (successor model numbers shall be submitted to the Concessionaire for approval)*

**3.16.33 Maintenance of 95 Express Lanes Operating Systems**

- A. No shutdown of the 95 Express Lanes System shall be permitted during the installation and testing of the Opitz Project elements.
- B. For any temporary impacts or isolated shut-down of system elements, the Concessionaire shall coordinate directly with the Department regarding any Work within the 95 Express Lanes or Department assets, or Work impacting any 95 Express Lanes facilities or equipment.

**3.16.34 Not Used**

**3.16.35 Notification of Impact (NOI) to Department Equipment**

- A. As part of the overall construction of the Opitz Project, a process for controlling the Work that will impact Department traffic management system equipment is required. A significant portion of this work will depend on field conditions and the state of the system, neither of which can be determined during the design phase. The impact of construction on the Department equipment shall be coordinated by the Concessionaire by the Notification of Impact (NOI) to the Department.
- B. This NOI process shall apply to all Department traffic management system components (referred to herein as “the Equipment”) that are impacted by the Concessionaire’s construction activities resulting from the Opitz Project.
- C. The Work shall be governed by the general requirement that the impacted Department Equipment shall be maintained or returned to a condition equal to or better than the condition at the start of construction unless otherwise indicated in the plans or approved by the Department. This shall include both the functionality and maintainability of the Equipment.
- D. While this NOI process is intended to provide specific controls on work impacting Department Equipment, a number of factors both within and beyond the control of the Concessionaire may impact the Work. Specific elements of the proposed Work plan, such as schedule or means and methods of completing the Work, may require revisions that are not consistent with these provisions in order to safely and effectively complete the Work. As such, these provisions should be treated as a typical application and general framework for control of the Work. When deviations are required due to changing field conditions, no

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reasonable request for changes by the Concessionaire or the Department may be denied without good cause.

- E. Plans related to existing Department Equipment have been prepared using a combination of original design drawings, as-built drawings, supplemental information provided by the Department, and site visits. This NOI process recognizes that complete documentation of the existing Department system is unavailable, the ability to field verify conditions as part of design is limited, and that conditions can change between the time of design and the time of construction. As part of the design development process, it has been agreed that certain information and decisions will be made during construction at such time that the elements of the system can be verified as to precise location and operational status. The Department and the Concessionaire shall work together to identify and coordinate those items that could not be addressed during design.
- F. The Department and the Concessionaire shall regularly work together to coordinate work that may impact Department Equipment. This coordination shall include, but not be limited to, Department staff and representatives attending regularly scheduled construction coordination meetings held by the Concessionaire.
- G. "Impact" is defined as any Work that will interrupt the normal operation of the Department's Equipment.
- H. No Work that impacts Department Equipment identified in the plans shall commence without prior notification to the Department per the provisions of this NOI process.
- I. The Concessionaire shall take all measures to protect Department Equipment during the course of the Work and maintain operation of the equipment. The means and methods for protecting Department Equipment shall be determined on a case-by-case basis appropriate to the scope of the Work.
- J. The Department shall make staff available upon request to assist the Concessionaire in identifying existing system conflicts and operations; conducting Equipment inspections; carrying out maintenance transfers; and testing and acceptance of completed Work. The availability of Department staff shall be coordinated per the requirements of this NOI process. When unexpected conditions arise that requires the input of the Department, the Department shall make staff or authorized representatives available within forty-eight (48) hours of Department receipt of the Concessionaire's written request.
- K. The provisions of this NOI process shall apply to all Work impacting Department Equipment shown on the plans as well as to any Equipment impacted during the course of construction but not identified on the plans. When Equipment not identified on the plans are impacted, the Concessionaire

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shall follow the typical construction processes (such as RFI, FDC, and NDC) to identify and resolve the impact.

- L. The Department shall notify the Concessionaire of any impacts to operations that may be attributable to work at other sites that were not anticipated in the original notification. The Concessionaire and the Department shall coordinate as necessary for unanticipated impacts to operations.
- M. Unless specifically described on the plans or special provisions or directed by the Department in writing, means and methods for completing the Work related to impacted Equipment shall be at the discretion of the Concessionaire. Means and methods shall be consistent with the requirements of the Agreement and the Standards and Specifications.
- N. With the exception of the notification form, written correspondence may include e-mail to those parties listed as contacts in this NOI process or the notification form. Written correspondence shall reference the relevant notification ID number and phase of the process.
- O. Responsibility for maintenance of impacted Equipment shall transfer to the Concessionaire per the approved schedule for start of the Work unless otherwise noted on the notification form. Responsibility for maintenance will transfer back to the Department upon Final Completion of the Work as detailed in the notification process. During the period when maintenance of Department Equipment has been transferred to the Concessionaire, events outside the control of the Concessionaire that impact the condition of the Equipment shall be addressed by the Department including warranty claims and at-fault third parties. The Department shall be notified immediately of any damage to existing Equipment.
- P. The Concessionaire shall be required to submit an amended NOI if work described in initial notification is performed at least forty-eight (48) hours after date stated in the NOI form.
- Q. The Concessionaire shall document all changes to Department infrastructure as a result of work in the NOI in the Opitz Project As-Built Plans according to these Technical Requirements. The as-built plan will be required for all impacted Department Equipment even if such Equipment is not shown on Opitz Project design plans.
- R. Notification Procedure
  - 1. First Notification: 21 Days Prior to Work Start

The Concessionaire shall submit a complete Notification of Impact to Department TMS Asset form to the Department. The form shall be provided a minimum of twenty-one (21) calendar days prior to the proposed start of the Work impacting the Equipment.

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### 2. Notification Review: 18 Days Prior to Work Start

The Department shall review the form for conformance with the plans and the Agreement. Within 3 days of receipt, the Department shall respond to the submitted form. The Department shall provide one of three responses:

**Approved** – The form is found to be in conformance with all documented requirements and is approved as submitted. The process moves to the Inspection phase.

**Revise and Resubmit** – The form is conditionally approved with minor corrections or clarifications required as noted in the Department's response. The process moves to the Inspection phase and the Concessionaire revises the form as needed for resubmittal prior to the second notification. Besides information gathering, no work shall commence unless otherwise indicated.

**Rejected** – The form has significant elements that are not in conformance with the plans or the Agreement. The Department notes the specific elements of the form not in conformance and cites the controlling Agreement requirements not met. The Concessionaire shall submit the form again beginning at the first notification.

### 3. Inspection: 14 Days Prior to Work Start

Following approval or conditional approval of the notification form, the Department and the Concessionaire shall conduct a joint field meeting at the Equipment to be impacted. The Department shall provide the Concessionaire access to the equipment and Equipment to be impacted for general inspection and demonstrate the operational status of the equipment. If the proposed impact is not limited to a single site (e.g., impact to power or communications connecting multiple devices), the Department shall also demonstrate operation at a remote location to establish the existing condition of all elements to be impacted by the Work. The Concessionaire shall document the condition of the site through field notes and photos as needed. The Concessionaire shall provide written notification to the Department of any site deficiencies within twenty-four (24) hours of the inspection. The Department shall assess deficiencies and provide a response to the Concessionaire within forty-eight (48) hours of receipt of the Concessionaire's report. The response shall include one of the following:

**Department Repair/Replace** – The Department shall repair or replace deficient equipment prior to the start of the Work. A second inspection shall be scheduled to document the existing condition of the Equipment prior to the start of the Work.

**Proceed per Plan** – The Department shall instruct the Concessionaire to carry out the Work as shown in the plans and proposed on the notification

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form accepting the condition of the Equipment as is. The Concessionaire shall complete the Work as required by the Agreement and return the system to its existing condition at the time of the inspection, accounting for the deficiencies of the system noted in their report. For example, the Department may instruct the Concessionaire to relocate a camera as called for in the plans even if the camera is inoperative at the time of inspection. The Concessionaire will relocate the camera noting that it was inoperative prior to start and maintaining its current condition.

Request for Change – The Department shall request a change to the plans to address the deficient conditions. This may include requesting the Concessionaire to carry out repair or replacement or removal and disposal/salvage of the impacted Equipment. This process shall follow the typical process for changes to the Agreement, accounting for any impacts to schedule and scope.

#### 4. Second Notification: 10 Days Prior to Work Start

The Concessionaire shall provide a second notification to the Department for the start of the Work. If the notification form was required to be revised and resubmitted as part of a conditional approval, the Concessionaire shall provide the revised form with this notification. The Concessionaire may propose changes to the original request as part of the second notification. This may include minor changes to the schedule of the Work or revisions to the construction work plan. If no updates to the first notification are required, the Concessionaire shall provide only a written reaffirmation of the original notification.

The Department shall approve or reject the updated form within forty-eight (48) hours of its receipt and provide a written response per the requirements of the first notification.

#### 5. Confirming Notification: 24 Hours Prior to Work Start

The Concessionaire shall provide written confirmation of the planned Work a minimum of twenty-four (24) hours prior to the scheduled start of the Work. Minor deviations of the written notification form shall be allowed (such as minor changes in the specific start time and updated contact information )

#### 6. Final Notification: 15 Minutes Prior to Work Start

The Concessionaire shall provide final notification fifteen (15) minutes prior to the start of the Work, if required by the Department as noted on the approved notification form. This notification shall be made for Equipment identified by the Department as being of significant operational value. An Asset of “significant operational value” is one which must remain in operation until an unscheduled Incident or condition is

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resolved. The Department shall identify these Equipment on the notification form. The Concessionaire shall provide this final notification to Department staff as identified by the Department in the notification process.

### 7. Work: Start of Work

The Concessionaire shall carry out the Work in accordance with the Agreement and approved notification form. The Concessionaire should provide daily updates to the Department on the progress of the Work or as required on the notification form. The Concessionaire shall notify the Department of any events or issues that arise during the course of the Work that may impact the scheduled completion of the Work. The Concessionaire shall provide a plan for recovery of schedule as needed.

### 8. Notification of Completion: Completion of Work

The Concessionaire shall notify the Department immediately upon completing the Work. The Department shall verify the operation of the Asset as needed to ensure the basic scope of the Work is completed. The Department shall notify the Concessionaire immediately of any impact to normal operation of the Asset following completion of the Work.

### 9. Return of Maintenance: 48 Hours After Completion of Work

The Concessionaire and the Department shall conduct a return of maintenance inspection within forty-eight (48) hours of completion of the Work. The Department shall inspect the Work on site and provide a written punch list or acceptance as appropriate. Maintenance of the Equipment shall transfer back to the Department upon completion of any punch list items and issuance of the written acceptance. Written acceptance shall be provided no less than forty-eight (48) hours following the final inspection

## **3.17 Maintenance During Construction**

- A. The Concessionaire shall prosecute the Work so as to avoid obstructions to traffic to the greatest extent practicable. The Concessionaire shall provide for the safety and convenience of the general public and residents along the roadway and the protection of persons and property.
- B. The Concessionaire shall maintain the Work from the beginning of construction operations until Final Completion.
- C. The Concessionaire shall keep the portions of the road being used by the public free from irregularities and obstructions that could present a hazard or annoyance to traffic.

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- D. Existing Department Transportation Management System (TMS) devices in the general purpose lanes shall remain operational during construction unless otherwise approved by the Department. These TMS devices include, but are not limited to: (i) closed-circuit television (CCTV) cameras; (ii) dynamic message signs (DMS); (iii) ramp metering; (iv) detection; (v) mile markers; (vi) the reversible gate system; (vii) roadway lighting; and (viii) weather stations.
- E. Existing detection (traffic sensors) shall remain in place during construction activities unless written approval is provided by the Department. Replacement detection shall be installed, operational, integrated, and collecting data before taking existing detection out of service.
- F. The existing continuous count stations shall remain in place and fully operational.
- G. The Department will maintain all roadways and structures used by public, pedestrian and vehicular traffic at its expense, until such time as the paved surface and roadside appurtenances in the active construction work area are significantly impacted by the Concessionaire's construction activities. (Significant impacts include pavement marking eradication, traffic lane shifts, surface paving, placement of temporary traffic barrier service, or similar activities). The highway trucks hauling material on the paved surface are not considered significant impacts. Once the Concessionaire significantly impacts the active construction work area, the Concessionaire shall be responsible for that active construction work area until its Final Completion. The Concessionaire shall be responsible for all maintenance in significant impacted active construction work areas including repairs to the roadway surfaces (fixing holes in the hard surface, patching the potholes and providing smooth surface).
- H. The Concessionaire shall be responsible for the maintenance of the significant impacted assets in accordance with standard Department maintenance requirements. Significant impacted assets for which the owning authority is other than the Department shall be maintained by the Concessionaire until such time as they are no longer impacted by construction and accepted back by the owning authority.
- I. Where traffic will operate on surfaces other than final surface or final alignment, the Concessionaire shall be responsible for maintenance of these roadways, including repair of any damage caused by its operations or use by public traffic.
- J. The existing drainage system will be maintained by the Department until the Concessionaire or any of the Concessionaire's contractors start impacting the drainage system, at which time all drainage assets within the impacted drainage system will become the Concessionaire's responsibility.

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- K. At no time shall the lights in GP Lanes and other roadways be put out of service, unless mutually agreed between the Parties for the purposes of cutover, testing or integration into the ETTM System or NRO PSTOC ATMS.
- L. The existing signal, lighting, and ITS systems will be maintained by the Department until the Concessionaire or any of the Concessionaire's subcontractors begin impacting these assets, at which time impacted signal, lighting and impacted ITS assets within the Opitz Project limits will become the Concessionaire's responsibility. If there is an existing asset the Concessionaire desires to tie in or connect to, but is prevented from doing so because of physical damage to such existing asset the Concessionaire may perform the repair work at its sole cost and expense. Once the Concessionaire has completed the work, and the work is accepted by the Department, the maintenance activities will revert to the Department's responsibility.
- M. The Department will perform snow and ice removal on all travel ways.
- N. The Concessionaire's maintenance of the active construction work area shall be to the level of quality condition existing in the relevant active construction work area at the time Concessionaire takes control of the active construction work area.

### **3.18 As-Built Documents**

- A. As a condition to Final Completion, the Concessionaire shall provide to the Department, the as-built record drawings and documents (As-Built Plans) of the Opitz Project in accordance with these Technical Requirements, the standards and specifications set forth in the VDOT CADD Manual, the VDOT Road Design Manual, and the VDOT Post Construction Manual.
- B. The As-Built Plans shall be prepared by a Professional Engineer licensed in the Commonwealth. A certification statement (with signature and date) shall be provided by the Professional Engineer on all applicable sheets indicating that to the best of his/her knowledge, the As-Built Plans show all adjustments and revisions to the approved construction plans made during construction and serve as a permanent record of the actual location of all constructed elements. The As-Built Plans will show all adjustments and revisions to the Construction Plans made during construction (including NDC's, FDC's and NCR's) and serve as a permanent record of the actual location of all constructed elements. The As-Built Plans shall be in the same format as the construction plans. The As-Built Plans shall be certified by the Concessionaire to reflect the actual condition of the Opitz Project at the end of the Work period and organized and indexed to facilitate easy retrieval of information. Where appropriate, overlapping work packages shall be combined in the As-Built Plans.
- C. Tolling and Traffic Management System



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1. The As-Built Plans shall have Global Positioning System (GPS) location data of all installed ETTM System field devices, including but not limited to; junction boxes (electrical and communication), splice cabinets, CCTV and AID cameras, Dynamic Message Sign (DMS), Microwave Vehicle Detectors, gates, Lane Use Management System (LUMS), pole and ground mounted cabinets, roadway lighting and electrical service panel. A detailed list or spreadsheet of all installed or modified TTMS field devices, including at least the device location, model number, serial number, and test acceptance date shall be part of the As-Built Plans.
2. The As-Built Plans shall provide fiber optic splicing diagrams at every splice point (cabinet or underground) detailing all cable splices, terminations, equipment port assignments, and optical circuits within the communication network. Document the sequential cable length markings at each splice box and pull box wall that the cable passes through, and include the information with the As-Built Plans.
3. The As-Built Plans shall provide splicing details for all existing Department cabinets that have had splicing altered. Splicing details shall include specific fiber numbers.
4. The As-Built Plans shall provide complete details of all bores (successful and failed) on completing the work. Ensure that the plans are dimensionally correct copies of the Construction Documentation and include roadway plan and profile, cross-section, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations referenced to a permanent Department feature (such as mast arm foundation, manhole inlet cover, or head wall). Plans must be same scale in black ink on white paper, of the same size and weight as the Construction Documentation. Specific As-Built Plans content requirements include but may not be limited to the following:
  - i. The construction plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.
  - ii. As directed by the Department, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy of within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway, show stationing of the crossing on the Construction Documentation. On the profile plans for the bore paths

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paralleling the roadway, show the Construction Documentation stationing. If the profile plan for the bore path is not made on a copy of one of the construction profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

- iii. If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as "Failed Bore Path - Taken Out of Service". Also show the name of the Utility Owner, location and length of the drill head and any drill stems not removed from the bore path.
  - iv. Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.
  - v. Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipes placed within the casing as part of the Agreement.
5. The As-built Plans shall show field surveyed locations of all junction boxes and roadside equipment and a coordinate table showing both the Project coordinates and latitudes/longitudes for each. These plans shall also show the field verified cabinet numbers, service panel numbers and roadway lighting pole electrical identification numbers.

### D. Drainage

1. Upon completion of the installation of any major drainage structure, the Concessionaire shall prepare a final As-built survey of the major drainage structure and related upstream and downstream appurtenances and provide such survey to the Department. The As-built survey shall include the horizontal location and vertical elevations of the constructed major drainage structure in sufficient detail to confirm pre-construction hydraulic performance. A post construction As-built Hydrologic and Hydraulic Analysis (H&HA) and report shall be developed based on the As-built survey and submitted to the Department for review and acceptance. The post

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construction H&HA shall demonstrate that the anticipated post construction hydraulic performance of the major drainage structure matches or betters that of the pre-construction H&HA. If the post construction analysis shows an impact greater than the pre-construction H&HA or exceeds the construction tolerances established with the pre-construction H&HA, then the Concessionaire shall be responsible for mitigating the adverse impacts of the post construction condition at no additional cost to the Department.

2. The Concessionaire is to insure proper ingress and egress to any storm water management facility and that any specific proprietary facilities have proper maintenance details included in the As-Built Plans.
3. The As-Built Plans shall include the following information:
  - i. Discharge structures – structure identification number, type, locations, dimensions and elevations of all weirs, bleeders, orifices, gates, pumps, pipes, and oil and grease skimmers;
  - ii. Side bank and underdrain filters, or exfiltration trenches – locations, dimensions, and elevations, including clean-outs, pipes, connections to control structures and points of discharge to receiving waters;
  - iii. Storage areas for treatment and attenuation – storage area identification number, dimensions, elevations, contours or cross-sections of all, sufficient to determine stage-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems;
  - iv. System grading – dimensions, elevations, contours, final grades or cross-sections to determine contributing drainage areas, flow directions and conveyance of runoff to the system discharge point(s);
  - v. Conveyance – dimensions, elevations, contours, final grades or crosssections of systems utilized to divert off-site runoff around or through the new system;
  - vi. Water levels – existing water elevation(s) and the date determined;
  - vii. Benchmark(s) – location and description (minimum of one per major water control structure); and

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- viii. Wetland mitigation or restoration areas (if any) – Show the plan view of all areas, depicting a spatial distribution of plantings conducted by zone (if plantings are required by permit), with a list showing all species planted in each zone, numbers of each species, sizes, date(s) planted and identification of source of material; also provide the dimensions, elevations, contours and representative cross-sections depicting the construction.
  4. If Concessionaire prefers to abandon in place any existing drainage structures or Culverts, approval must first be obtained from the Department. All abandoned drainage structures and Culverts shall be depicted on the As-built Plans.
  5. The Concessionaire shall provide As-Built Plans of all storm water management facilities. The As-Built Plans shall show the actual finished ground contours, outlet structure dimensions and elevations and other requirements as they exist at the completion of the Opitz Project. These drawings shall be signed and sealed by a Licensed Professional Engineer or Land Surveyor licensed in the Commonwealth.
  6. The Concessionaire shall provide certification from an independent source that the proposed BMP facilities were constructed in accordance with applicable and current industry standards, and the manufacturer's specifications.
- E. Utilities
1. The Concessionaire shall accurately show the final location of all utilities on the As-Built Plans for the Opitz Project. The Concessionaire will ensure the Utility companies submit As-built drawings upon completion of their relocation or adjustments. The Department shall issue an As-built permit to the Utility companies after receipt of permit application and As-built drawings.
- F. Signing Roll Plans
1. The signing roll plans referenced in Section 3.9.3 of these Technical Requirements shall be updated to reflect final sign locations and submitted as part of the As-Built Plans for the Opitz Project.

### **3.19 Surveys**

- A. The Concessionaire shall preserve all survey control monuments established by the Department and will notify the Department as soon as it is known that a monument is in a position that will interfere with new construction or with Concessionaire activities. If a monument is disturbed, or cannot be preserved

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in place, the Concessionaire shall set the new monument in accordance with the standards referenced set forth in Attachment 1.5a.

- B. All surveying work during the Construction Period shall be performed by the Concessionaire in accordance with the Department's Survey Manual.
- C. The Concessionaire shall be fully responsible for examination and verification of any data made available by the Department.
- D. Immediately after or within 7 calendar days from receiving the Department's request notice, provided the information exists, the Concessionaire shall make available to the Department electronic files of all survey data, for existing and new conditions and infrastructure, which at a minimum include:
  - 1. Survey control data
  - 2. **Digital Terrain Model (DTM) and Construction Cross-Sections:** Compatible to the Department's current DTM format.
  - 3. **Borrow Pits:** All borrow pit DTM's or cross-sections, originals and finals.
  - 4. **Horizontal and Vertical Control for Bridges:** Certified plats, field notes, coordinates, and computations shall be furnished by the Concessionaire prior to the Concessionaire beginning work on these structures.
  - 5. **Pipes, Culverts, Ditches and Related Appurtenances:** Existing, newly installed control and as-built survey data for existing and new pipes, culverts and ditches which at a minimum include horizontal and vertical controls, type, size, materials and inlet/outlet control, catch basins and manhole and other related infrastructure.
  - 6. **Road Right of Way:** Existing, newly constructed/installed control and As-built survey data for right-of-way cross section showing roads, lane configuration, shoulders, access and egress ramps and connections, embankments, utilities, drainage and all infrastructure within the road right of way, and for areas where connecting roads and infrastructure are impacted by the work. The survey interval shall not be farther than 100-foot intervals. The data prepared by the Concessionaire shall include coordinates, type, size, material and references.
- E. The Opitz Project Right of Way shall be staked by the Concessionaire in areas where work shall occur between the GP Lanes and the limits of the Opitz Project Right of Way if no limited access fence is present prior to the start of the work. Right of Way stakes shall be placed at a minimum of 100-foot intervals on each side of the roadway or as directed by the Department and the

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stakes shall be marked with both the station and offset back to centerline. All final boundary stakeouts shall be performed by the Concessionaire.

- F. Final right of way monumentation shall be performed by the Concessionaire in accordance with the following:
  - 1. RM-1: The Concessionaire shall furnish and install RM-1 right-of-way monuments in accordance with the Road and Bridge Standards.
  - 2. RM-2: The Concessionaire shall furnish and install RM-2 right-of-way monuments and optional locator posts, including the required caps, in accordance with the Road and Bridge Standards.
- G. The Department shall determine if an alternative form of permanent monumentation shall be used if RM-1 or RM-2 monuments are unsuitable for marking the right-of-way at various locations.
- H. The Concessionaire shall indicate this alternative monument usage on the final As-built Plans in accordance with the Department's Survey Manual. Electronic data files along with paper sketches and drawings shall be furnished by the Concessionaire. All electronic data files furnished by the Concessionaire shall be in the format of the Department's current computer hardware and software.
- I. Additional surveying work and supplemental layout work shall be performed by the Concessionaire as needed to successfully complete the Work. The Concessionaire shall provide and protect all construction benchmarks within the construction limits. Construction benchmarks shall be located not farther than 500 feet apart for the total length of the Opitz Project. Construction benchmarks that are disturbed during construction operations shall be reestablished by the Concessionaire. All drawings, field notes, and computations from such survey work performed by the Concessionaire shall be submitted to the Department.
- J. The Concessionaire shall field-verify all dimensions of the existing noise barriers within the Opitz Project corridor for the modeling of the existing noise barriers assumptions necessary for the final noise study.

### **3.20 Security**

#### **3.20.1 General Requirements**

- A. Subject to the requirements of the Agreement, the Concessionaire shall adhere to the intent of the Department policy on critical infrastructure information and sensitive security information (CII/SSI) to the extent such information is directly related to the Concessionaire's performance of its obligations under the Agreement. The Concessionaire shall ensure that relevant CII/SSI is protected and not disclosed to unauthorized persons. The Concessionaire shall ensure that all personnel having access to CII/SSI for the Concessionaire and

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all subcontractors have met the requirements of IIM-LD-236 Critical Infrastructure (CII) / Sensitive Security Information (SSI).

- B. The Concessionaire shall comply with requirements of the Security Management Systems (SMS) and protocols for the Express Operations Center as described in Attachment 1.10 of these Technical Requirements.
- C. The Department may request fingerprint-based criminal history background checks on contractors working on specific structures or functions.
- D. The Concessionaire shall review with the Department any information that should be designated as CII/SSI as specific design details become available. Any requirements for security review or other inspections will be mutually agreed to with the Department.

**3.20.2 Concessionaire's Responsibility During Suspension of Construction**

- A. In case of suspension of construction Work, the Concessionaire shall take such precautions as may be necessary to prevent damage to the Work, provide for erosion control and drainage, and erect any temporary structures, signs, or other facilities necessary or appropriate for the protection of the Work and the public. During the suspension of the Work, the Concessionaire shall properly and continuously maintain in acceptable growing condition all living material in newly established plantings, seeding, and soddings furnished under the Agreement and shall take adequate precautions to protect vegetation against damage.

**3.21 Not Used**