DESIGN-BUILD CONTRACT

Route 895 Connector

Dated as of June 3, 1998

by and between

VIRGINIA DEPARTMENT OF TRANSPORTATION,
a department of the Commonwealth of Virginia

and

FD/MK LIMITED LIABILITY COMPANY,
a Delaware limited liability company

TABLE OF CONTENTS

Page

ARTICLE 1. DEFINITIONS; CONTRACT DOCUMENTS; ACCEPTANCE OF PRELIMINARY DESIGN AND PROJECT SITE 1

1.1 CERTAIN DEFINITIONS 1
1.2 RECITALS 1
1.3 ORDER OF PRECEDENCE 2
1.4 ACCEPTANCE OF PRELIMINARY ENGINEERING AND SITE CONDITIONS 2

ARTICLE 2. CONTRACTOR'S DESIGN, PROCUREMENT AND CONSTRUCTION RESPONSIBILITIES 3

2.1 DESIGN AND CONSTRUCTION 3
2.2 CONTRACTOR OBLIGATIONS 3
2.3 ETTM SYSTEM 4

ARTICLE 3. PLANS AND SPECIFICATIONS 5

3.1 COMMENCEMENT OF DESIGN WORK 5
3.2 IN-PROGRESS REVIEW 5
3.3 DESIGN APPROVAL 5
3.4 REVIEW DEADLINES 5
3.5 STATUS OF DESIGN AT COMMENCEMENT OF WORK 6
3.6 PRELIMINARY ENGINEERING 6
3.7 EXCEPTIONS AND DEVIATIONS FROM DEPARTMENT STANDARDS 6

ARTICLE 4. CONSTRUCTION WORK 8

4.1 CONDITIONS PRECEDENT TO COMMENCEMENT OF CONSTRUCTION WORK 8
4.2 CONDITIONS PRECEDENT TO CONSTRUCTION OF PORTION OF PROJECT 8
4.3 CONDITIONS PRECEDENT FOR DEPARTMENT'S BENEFIT 8

ARTICLE 5. PROJECT MANAGEMENT 10

5.1 SUPERVISION AND CONSTRUCTION PROCEDURES 10
5.1.1 Responsibility 10
5.1.2 Safety Program 10
5.1.3 Security 10
5.1.4 Adjoining Property 10
5.1.5 Differing Site Conditions 10
5.1.5.1 Notification to Department; Work Stoppage 10
5.1.5.2 Assumption of Risk 11
5.2 DEPARTMENT OVERSIGHT 11
5.2.1 Effect of Reviews, Inspections, Tests and Approvals 11
5.2.2 Inspection and Testing 11
5.2.3 Oversight Budget 12

ARTICLE 6. PROJECT RIGHT OF WAY ACQUISITION 13

6.1 PROJECT RIGHT OF WAY ACQUISITION REQUIREMENTS 13
6.2 RIGHT OF WAY PLANS 14

6.3 ACQUISITION BY CONDEMNATION 14
6.4 ACQUISITIONS BY NEGOTIATION AND CONVEYANCES TO DEPARTMENT 15
6.5 HAZARDOUS SUBSTANCE INVESTIGATIONS AND REMEDIATION 15
6.6 ACQUISITION COSTS 16
6.7 CHANGES IN PROJECT RIGHT OF WAY LIMITS 17
6.8 RESIDUE PARCELS 17
6.9 RECORD DOCUMENTS 17

ARTICLE 7. UTILITIES 18

7.1 COMMENCEMENT OF UTILITY WORK 18
7.2 CONTRACTOR'S UTILITY RELOCATIONS OBLIGATIONS 18
7.2.1 Identification of Utilities 18
7.2.2 Avoiding Utility Relocations 18
7.2.3 Relocation Plan 19
7.2.4 Agreements with Utility Owners 19
7.2.5 Coordination of Work 19
7.3 PAYMENT FOR UTILITY WORK 19
7.4 OBLIGATIONS OF DEPARTMENT 20

ARTICLE 8. NOT USED 21

ARTICLE 9. TRAFFIC CONTROL AND RESTRICTIONS 22

9.1 CONSTRUCTION TRAFFIC MANAGEMENT PLAN 22
9.2 TRAFFIC CONTROL 22

ARTICLE 10. APPLICABLE LAW AND REGULATORY APPROVALS 23

10.1 OBLIGATION TO COMPLY WITH LAWS, REGULATIONS AND ORDINANCES AND REGULATORY APPROVALS 23
10.2 OBLIGATION TO OBTAIN REGULATORY APPROVALS 23
10.3 PAYMENT FOR REGULATORY APPROVALS 23
10.4 ACKNOWLEDGMENT REGARDING EIS 24

ARTICLE 11. WARRANTIES 25

11.1 WARRANTIES 25
11.2 EXTENSION OF WARRANTIES 25
11.3 SUBCONTRACTOR AND PASS-THROUGH EQUIPMENT WARRANTIES 26
11.4 ASSIGNMENT OF WARRANTIES 26
11.5 DAMAGES FOR BREACH OF WARRANTY 27
11.6 EXCLUSIVE REMEDY 27
11.7 HABITAT AND LANDSCAPING MAINTENANCE 27

ARTICLE 12. RECORDS AND INTELLECTUAL PROPERTY 28

12.1 MAINTENANCE OF, ACCESS TO AND AUDIT OF RECORDS 28
12.2 RETENTION OF RECORDS 28
12.3 PUBLIC RECORDS 29
12.4 REPORTING REQUIREMENTS 29
12.5 CONTRACTOR PRICING DOCUMENTS 30
12.6 SUBCONTRACTOR PRICING DOCUMENTS 30

12.7 INTELLECTUAL PROPERTY 30
12.8 TITLE TO WORK PRODUCT 32
12.9 INTELLECTUAL PROPERTY ESCROW 32
12.10 EQUIPMENT WARRANTIES 33

ARTICLE 13. CRITICAL PATH METHOD SCHEDULE 34

13.1 CPM/PAYMENT SCHEDULE 34
13.2 ALLOCATION OF CONTRACT PRICE 34
13.3 INITIAL CPM/PAYMENT SCHEDULE; MONTHLY UPDATES 34
13.4 CPM/PAYMENT SCHEDULE REQUIREMENTS 34

ARTICLE 14. COMPENSATION 35

14.1 CONTRACT PRICE 35
14.1.1 Contract Amount 35
14.1.2 ROW/Utility Allowance 35
14.1.3 Bridge Foundation Account 36
14.1.4 Items Included in Contract Price 37
14.2 PAYMENTS 37
14.2.1 Not Used 37
14.2.2 Delivery of Draw Request and Certificate 37
14.2.3 Not Used 37
14.2.4 Payment 37
14.2.5 Continued Performance During Disputes 38
14.2.6 Retainage 38
14.2.7 Not Used 39
14.2.8 Unincorporated Materials 39
14.2.8.7.1 Structural Units 40
14.2.8.7.2 Other Materials 40
14.2.8.7.3 Excluded Items 40
14.2.8.7.4 Storage 41
14.2.9 Equipment 41
14.2.10 Payment for Work Scheduled to be Performed After Final Acceptance 41
14.3 CONTINGENCY 41
14.4 OFFSET; REDUCTION; WAIVER 42
14.5 INCENTIVE PAYMENT 42
14.6 REIMBURSABLE SITE WORK 43
14.6.1 Before Completion of the Bridge Foundation Work 43
14.6.2 Upon Completion of the Bridge Foundation Work 43
14.6.3 After Completion of the Bridge Foundation Work 43

ARTICLE 15. FORCE MAJEURE 44

ARTICLE 16. QUALITY ASSURANCE AND QUALITY CONTROL 45

ARTICLE 17. TIME FOR COMPLETION; SUBSTANTIAL COMPLETION 46

17.1 TIME OF ESSENCE 46
17.2 GUARANTEED COMPLETION 46
17.2.1 Deadlines for Substantial Completion and Final Acceptance 46

17.2.2 No Time Extensions 46
17.3 SUBSTANTIAL COMPLETION 46

ARTICLE 18. ACCEPTANCE OF OVERCROSSINGS AND UNDERCROSSINGS; FINAL ACCEPTANCE 48

18.1 ACCEPTANCE OF OVERCROSSINGS AND UNDERCROSSINGS 48
18.2 FINAL ACCEPTANCE 48
18.3 ASSIGNMENT OF CAUSES OF ACTION 49
18.4 SPECIAL PROVISIONS REGARDING OUTSTANDING UTILITY AND PROJECT RIGHT OF WAY ISSUES 49

ARTICLE 19. CHANGES IN THE WORK 51

19.1 ACKNOWLEDGMENT AND WAIVER; MATTERS NOT ELIGIBLE FOR CHANGE ORDERS 51
19.1.1 Acknowledgment and Waiver 51
19.1.2 Matters Not Eligible for Change Orders 51
19.2 RIGHT TO RECEIVE ADDITIONAL PAYMENT AND EXTENSION OF TIME 52
19.3 DEPARTMENT DIRECTED CHANGES AND PROCEDURES 52
19.3.1 Directive Letter 52
19.3.2 Notice of Proposed Change/Direction 53
19.3.3 Payment for Directed Changes 54
19.3.4 Extension of Scheduled Completion Date 54
19.4 ELIGIBLE CONTRACTOR-INITIATED CHANGE ORDERS AND PROCEDURES 54
19.4.1 Eligible Changes 54
19.4.2 Procedures 55
19.4.2.1 RFC Notice 56
19.4.2.2 Delivery of Request for Change Order 57
19.4.2.2.1 Information Regarding Effect of Change 57
19.4.2.2.2 Justification 57
19.4.2.2.3 Contractor Representation 57
19.4.2.2.4 Cost Proposal 57
19.4.2.2.5 Structural or Capacity Reductions as a Result of a Discretionary Directed Change 58
19.4.2.3 Incomplete Requests for Change Orders 58
19.4.2.4 Importance of Timely Response 58
19.4.2.5 Review of Subcontractor Claims 59
19.5 PRICING 59
19.5.1 Limitations 59
19.5.1.1 Limitation on Contract Price Increases 59
19.5.1.2 Limitation on Delay Costs 59
19.5.2 Pricing Methodologies 60
19.6 LIMITATION ON TIME EXTENSIONS 61
19.7 CHANGE ORDER RECORDS 61
19.7.1 Daily Work Reports and Data Collection 61
19.7.2 Supplier's Invoices 62
19.7.3 Execution of Reports 62
19.8 DISPUTES 62

ARTICLE 20. SUSPENSION OF ALL OR PART OF WORK 63

20.1 SUSPENSION FOR CONVENIENCE 63
20.2 SUSPENSION UNDER SECTION 25.4 63

20.3 SUSPENSION FOR OTHER REASONS 63
20.4 PROJECT SAFETY 63

ARTICLE 21. INDEMNITY; HAZARDOUS SUBSTANCE LIABILITY; INDEMNIFICATION PROCEDURES 64

21.1 INDEMNIFICATIONS BY CONTRACTOR 64
21.2 NO INDEMNITY REGARDING PRE-EXISTING HAZARDOUS SUBSTANCES 65
21.3 DEFENSE AND INDEMNIFICATION PROCEDURES 65

ARTICLE 22. INSURANCE AND BONDING 67

22.1 GENERAL AND AUTO LIABILITY INSURANCE 67
22.2 PROFESSIONAL LIABILITY INSURANCE 67
22.3 PROPERTY INSURANCE 67
22.4 WORKER'S COMPENSATION INSURANCE 68
22.5. OTHER INSURANCE COVENANTS 69
22.6 PERFORMANCE AND PAYMENT BONDS 70
22.7 COMPLETION GUARANTY 71

ARTICLE 23. CONTRACTING PRACTICES 72

23.1 OBLIGATION TO REFRAIN FROM DISCRIMINATION 72
23.2 DISADVANTAGED BUSINESS ENTERPRISES 72
23.3 MINORITY EMPLOYMENT AND CONTRACTING PROCEDURES 72
23.4 SUBCONTRACTS 72

ARTICLE 24. REPRESENTATIVES 74

24.1 DESIGNATION OF REPRESENTATIVES; COOPERATION WITH REPRESENTATIVES 74

ARTICLE 25. DEFAULT 75

25.1 DEFAULT OF CONTRACTOR 75
25.2 REMEDIES FOR CONTRACTOR EVENT OF DEFAULT 76
25.3 CERTAIN LIMITATIONS ON DEPARTMENT REMEDIES 77
25.4 FAILURE TO DELIVER PAYMENT; UNAVAILABILITY OF FUNDS 77
25.5 LIMITATION ON CONTRACTOR REMEDIES 78
25.6 LIQUIDATED DAMAGES 78
25.6.1 Amount 78
25.6.2 Payment Terms 79
25.7 LIMITATION ON CONSEQUENTIAL DAMAGES 79

ARTICLE 26. TERMINATION FOR CONVENIENCE 80

26.1 NOTICE OF TERMINATION 80
26.2 CONTRACTOR'S RESPONSIBILITIES AFTER RECEIPT OF NOTICE OF TERMINATION 80
26.3 INVENTORY 81
26.4 SETTLEMENT PROPOSAL 81
26.5 AMOUNT OF TERMINATION SETTLEMENT 81
26.6 NO AGREEMENT AS TO AMOUNT OF CLAIM 82
26.7 REDUCTION IN AMOUNT OF CLAIM 82
26.8 PAYMENT 82
26.9 INCLUSION IN SUBCONTRACTS 83

26.10 No Consequential Damages 83
26.11 No Waiver 83
26.12 Dispute Resolution 83

ARTICLE 27. DISPUTE RESOLUTION 84

ARTICLE 28. MISCELLANEOUS PROVISIONS 85

28.1 Incorporation of Miscellaneous Provisions in Comprehensive Agreement 85
28.2 Entire Agreement; Amendment 86
28.3 Explanations; Omissions, Misdescriptions, Inclusions without Limitation 86
28.4 Computation of Periods 87
28.5 Approvals 87
28.6 Payment of Tolls 87
28.7 Correspondence 87
28.8 Standard Specifications 87

APPENDICES

Appendix 1 - Definitions
Appendix 2 - Bridge Foundation Work – Unit Prices
Appendix 3 - Form of Draw Request and Certificate
Appendix 4 - Form of Payment Bond
Appendix 5 - Form of Performance Bond
Appendix 6 - Scope of Work
Appendix 7 - Minority Business Enterprise Subcontracting Plan
Appendix 8 - Designation of Initial Representatives
Appendix 9 - Division 1, Standard Specifications

DESIGN-BUILD CONTRACT

This DESIGN-BUILD CONTRACT ("Contract") is made and entered into as of June 3, 1998, by and between the Virginia Department of Transportation, a department of the Commonwealth of Virginia ("Department"), and FD/MK Limited Liability Company, a Delaware limited liability company ("Contractor"), with reference to the following facts:

RECITALS

A. Concurrently herewith, Department and Contractor have entered into a Comprehensive Agreement concerning the design, construction, operation and maintenance of the Route 895 Connector as a limited access highway (the "Comprehensive Agreement"). This Contract is entered into pursuant to the Comprehensive Agreement.

B. The parties intend for this Contract to be a lump sum design-build contract obligating Contractor to perform all Work necessary to obtain completion of the Project by the deadlines specified herein, for the Contract Price, subject only to certain specified exceptions set forth herein. Department has determined, and Contractor has acknowledged, that this approach is necessary due to the fact that limited funds are available for the Project.

C. If Contractor fails to complete the Project in accordance with the time limitations set forth in the Contract Documents, then Department and Association will suffer losses and damages which are extremely difficult, if not impossible, to ascertain. This Contract Agreement thus provides that Contractor shall be liable for Liquidated Damages in the event such completion is delayed.

D. Department has provided Preliminary Engineering to Contractor which is to be the basis for the design to be furnished by Contractor. It is intended that Contractor will assume full responsibility and liability with respect to design of the Project, including the obligation to ensure that the Plans and Specifications are free from any errors, omissions, inconsistencies or other defects which may have been contained in the Preliminary Engineering.

NOW, THEREFORE, in consideration of the foregoing premises and the covenants and agreements set forth herein, the parties hereby agree as follows:

ARTICLE 1. DEFINITIONS; CONTRACT DOCUMENTS; ACCEPTANCE OF PRELIMINARY DESIGN AND PROJECT SITE

1.1 Certain Definitions

Appendix 1 contains the meaning of certain terms used in the Contract Documents. Division 1 of the Standard Specifications, attached hereto as Appendix 9, contains the meaning of certain technical terms.

1.2 Recitals

Recitals A through D are hereby incorporated by reference herein.

1.3 Order of Precedence

Each of the Contract Documents is an essential part of this Contract, and a requirement occurring in one is as binding as though occurring in all. The Contract Documents are intended to be complementary and to describe and provide for a complete contract. In the event of any conflict among the Contract Documents, this Contract and all Change Orders shall in all events control. With respect to the other Contract Documents the order of precedence shall be as set forth below.

(a) For design Work:

1. Scope of Work
2. Standard Specifications
3. Preliminary Engineering

(b) For all other matters:

1. Plans and Specifications, excluding any deviations from requirements of the other Contract Documents contained therein which have not been approved in writing as such by Department
2. Scope of Work
3. Standard Specifications

Unless otherwise specified by Department any reference in the Contract Documents to a described publication affecting any portion of the Project shall be deemed to mean the latest edition or revision thereof and amendments and supplements thereto in effect on the Agreement Date. Referenced standards and Regulatory Approvals obtained by Department which constitute Contract requirements shall have the same order of precedence as the Contract Document which references them.

1.4 Acceptance of Preliminary Engineering and Site Conditions

1.4.1 Contractor has reviewed the Preliminary Engineering and the Scope of Work and carefully evaluated the feasibility of performing the Work within the deadlines specified herein and for the Contract Price, without relying on any matter other than the Contract Documents, and has reasonable grounds for believing and does affirmatively believe that such performance (including achievement of Substantial Completion by the Guaranteed Completion Date for the Contract Price) is feasible and practicable.

1.4.2 Contractor has, prior to the Agreement Date, reviewed the preliminary geotechnical, hydrology and environmental reports included in the Scope of Work, inspected and examined the Site and surrounding locations and undertaken other appropriate activities sufficient to familiarize itself with surface conditions and subsurface conditions discernible from the surface affecting the Project to the extent Contractor deemed necessary or advisable for pricing the Project, and as a result of such review, inspection, examination and other activities Contractor is familiar with and accepts the physical requirements of the Work. Contractor further acknowledges and agrees that changes in conditions at the Site may occur after the Agreement Date, and that Contractor shall not be entitled to any Change Order in connection therewith except as specifically permitted under Article 19.

ARTICLE 2. CONTRACTOR'S DESIGN, PROCUREMENT AND CONSTRUCTION RESPONSIBILITIES

2.1 Design and Construction

Contractor shall furnish the design of the Project, shall construct the Project as designed, and shall furnish a fully operational ETTM System, in accordance with all professional engineering principles and construction practices generally accepted as standards of the industry in the State, in a good and workmanlike manner, free from Defects and in accordance with the terms and conditions set forth in the Contract Documents. Except as otherwise specifically provided in this Contract, Contractor shall be solely responsible for providing all equipment, materials, labor, services and efforts necessary to achieve Substantial Completion and Final Acceptance on or before the deadlines set forth herein; and, subject only to the terms of Article 19, the cost of all such equipment, materials, labor, services and efforts is included in the Contract Price.

2.2 Contractor Obligations

Contractor hereby covenants as follows:

2.2.1 Contractor shall furnish all design and other services, provide all materials, equipment and labor and undertake all efforts necessary or appropriate (excluding only those materials, equipment, labor, services and efforts which this Contract specifies will be undertaken by other Persons) to construct the Project in accordance with the requirements of the Contract Documents, the Reference Documents, the CPM/Payment Schedule, all Regulatory Approvals, the approved Quality Assurance and Control Inspection Program, the approved Safety Program, the approved Construction Traffic Management Plan and all other applicable safety, environmental and other requirements, taking into account the Project Right of Way limits and other physical limits resulting from constraints affecting the Project, so as to achieve Substantial Completion and Final Acceptance by the deadlines specified herein, and otherwise to do in a timely manner everything required by and in accordance with the Contract Documents.

2.2.2 All design and engineering Work shall be performed by or under the supervision of Persons licensed to practice architecture, engineering or surveying (as applicable) in the State, by personnel with demonstrated competence, integrity, responsibility and professional qualifications necessary for the satisfactory performance of the Work in accordance with the Contract Documents. Such Persons shall assume professional responsibility for the accuracy and completeness of the Construction Documents prepared by them and shall exercise their skill, ability and judgment reasonably for Department's benefit.

2.2.3 Contractor shall at all times provide a Project Manager approved by Department who will have responsibility for the prosecution of the Work and who will act as a single point of contact in all matters on behalf of Contractor. Contractor shall not change the Project Manager without the prior written approval of Department.

2.2.4 Contractor shall obtain and pay the cost of obtaining all Regulatory Approvals required in connection with the Project (except as provided otherwise in Section 10.3).

2.2.5 Until the Transition Date, Contractor shall undertake and properly perform all actions required by and all actions necessary to maintain in full force and effect all Regulatory Approvals, including performance of all environmental mitigation measures required by the Contract Documents.

2.2.6 Contractor shall cooperate with Department and local agencies in all matters relating to the Project, including review of the design of the Project and conducting inspections during the construction of the Project.

2.2.7 Contractor shall supervise and be responsible to Department for acts and omissions of Contractor's employees, agents, officers and Subcontractors and other Persons performing portions of the Work, as though all such Persons were directly employed by Contractor.

2.2.8 Contractor waives any right to file or enforce any mechanics liens. Contractor acknowledges that consideration for such waiver is reflected in the Contract Price. Contractor shall require each Subcontractor to waive its right to file or enforce any mechanics liens.

2.2.9 Contractor shall design and perform the Bridge Foundation Work, to the extent practicable, to avoid exacerbating the migration of the Pre-Existing Hazardous Substances.

2.3 ETTM System

2.3.1 Contractor will competitively price the ETTM System after the Plans and Specifications have been approved by Department's Chief Engineer. If the total cost of the ETTM System Work (including all such Work performed prior to approval of the Plans and Specifications) exceeds $3,437,978, the difference, up to a maximum of $542,101, will be payable from the Contingency, to the extent available. In no event shall Contractor be entitled to reimbursement for the cost of the ETTM System Work in excess of $3,980,079.

2.3.2 Each Subcontractor and vendor related to the ETTM System shall be subject to Department's prior written approval.

ARTICLE 3. PLANS AND SPECIFICATIONS

3.1 Commencement of Design Work

Contractor shall commence performance of design and other non-construction Work, and shall ensure that performance of such Work is commenced by its Subcontractors, promptly following the Financial Closing Date. Contractor may commence performance of such Work prior to the Financial Closing Date "at risk," with the right to be paid contingent on the occurrence of the Financial Closing Date and compliance with the other applicable provisions set forth herein. Notwithstanding the foregoing, Department agrees that an amount not to exceed $1,500,000 will be made available prior to the Financial Closing Date to pay for such Work, provided that Department has pre-approved the scope of such Work and the amount of the Contract Price allocated to the Work activities. Contractor shall in no event be entitled to payment prior to the Financial Closing Date for any appraisals or title work.

3.2 In-Progress Review

Contractor shall provide Department with the opportunity to perform continuous review and overview of the design through a series of design reviews incorporated into an agreed upon schedule. Contractor shall furnish a schedule for provision and review of design submittals which shall be subject to approval by Department. Contractor shall cause all design submittals to be produced and delivered to Department, the State Architect, local agencies and any other Persons whose approval is required, in compliance with the requirements of the Scope of Work, within the time periods set forth in the submittal schedule.

3.3 Design Approval

Department shall have the right to review and comment on all Draft Plans and Specifications for compliance with the requirements of the Contract Documents and Reference Documents. Contractor acknowledges that it is responsible for satisfying all such requirements and that Department will have the right to disapprove any design approach that is not consistent with the Preliminary Engineering or that is not in compliance with the requirements of the Contract Documents and Reference Documents unless said approach was previously approved in writing by Department. Provided that Department has the opportunity to perform continuous review and overview of the design as provided in Section 3.2, Department's Chief Engineer's review of the completed Draft Plans and Specifications shall be conducted within 15 Business Days after receipt thereof. Contractor shall revise and modify all such documents or materials so as to fully reflect all comments and shall deliver to Department the revised submittal for review and comment. Department's right to review and comment, and Contractor's responsibility to comply with the requirements of the Contract Documents and Reference Documents, shall be subject to the provisions of Section 13.1 of the Comprehensive Agreement.

3.4 Review Deadlines

Department shall use reasonable efforts to accommodate requests by Contractor for a quick turnaround of specific design submittals. Contractor acknowledges that expediting the review of prioritized submittals may result in a delay in review of lower priority submittals. Department and Contractor shall work cooperatively to prioritize the different submittals and achieve an acceptable review schedule. Contractor shall bear full responsibility for obtaining approvals from the State Architect, local agencies and others, provided that Department will use reasonable efforts to expedite critical approvals from such entities, if and as requested by Contractor.

3.5 Status of Design at Commencement of Work

Contractor shall have no right to rely on any of the documentation or information provided by Department or other Persons, other than the Contract Documents. Contractor shall have full responsibility for the design of the Project. Contractor represents that it has independently determined that the Preliminary Engineering present a feasible concept for the Project which can and shall be used as the basis for the design to be furnished by Contractor, and agrees that it shall have no right to seek additional compensation or a time extension, except as specifically permitted by Article 19.

NO REPRESENTATION OR WARRANTY IS MADE TO ANY CONTRACTOR PARTY, ASSOCIATION, TRUSTEE OR ANY BOND OWNER BY DEPARTMENT OR ANY OTHER PERSON THAT THE INFORMATION CONTAINED IN THE PRELIMINARY ENGINEERING OR REFERENCE DOCUMENTS IS CORRECT, SUFFICIENT, COMPLETE OR ACCURATE OR THAT SUCH INFORMATION IS IN CONFORMITY WITH THE REQUIREMENTS OF THE EIS OR THE OTHER CONTRACT DOCUMENTS, NOTWITHSTANDING THE FACT THAT DEPARTMENT'S CHIEF ENGINEER SIGNED THE PRELIMINARY ENGINEERING. SUCH SIGNATURE IS SOLELY FOR THE PURPOSE OF INDICATING THAT DEPARTMENT HAS COMPLETED ITS REVIEW OF THE PRELIMINARY ENGINEERING AND REQUIRES NO CHANGES THERETO. WITH RESPECT TO THE PRELIMINARY ENGINEERING AND REFERENCE DOCUMENTS DEPARTMENT SHALL HAVE THE FULL BENEFIT OF SECTION 13.1 OF THE COMPREHENSIVE AGREEMENT.

3.6 Preliminary Engineering

Contractor understands and agrees that Department shall not be responsible or liable in any respect for any loss, damage, injury, liability, cost, expense or cause of action whatsoever suffered by Contractor, its employees, agents, officers or Subcontractors or any other Persons for whom Contractor may be legally or contractually responsible, by reason of any use of any information contained in the Preliminary Engineering or any action or forbearance in reliance thereon, except to the extent that Article 19 provides for an increase in the Contract Price and/or extension of the Guaranteed Completion Date with respect to such matter. Contractor further acknowledges and agrees that Contractor is capable of conducting and is obligated hereunder to conduct any and all studies, analyses and investigations as it deems advisable to verify or supplement said information, and that any use of said information is entirely at Contractor's own risk and at its own discretion.

3.7 Exceptions and Deviations from Department Standards

3.7.1 Department will reasonably consider Contractor's requests for exceptions to the Department Standards, in addition to the modifications already reflected in Appendix 9, as they relate to means and methods of construction that are not necessary or appropriate for design-build implementation.

3.7.2 Contractor may apply for deviations from applicable Department Standards. All applications shall be in writing and shall include justification for the request, addressing safety and cost considerations. Department shall consider in good faith, but has no obligation to approve, any such application, and Contractor shall bear the burden of persuading Department that the deviation sought constitutes sound and safe engineering and achieves or substantially achieves Department's applicable safety standards and criteria. No deviation shall exist or be effective unless and until stated in writing signed by Department. Department's failure to issue a written approval of a requested deviation within 21 Days after Contractor applies therefor in writing shall be deemed an approval of such application.

Department's determination regarding Contractor's application for a deviation shall be final and shall not be subject to dispute resolution hereunder.

3.7.3 Contractor may apply for approvals from Department of interpretive engineering decisions concerning the meaning, scope, interpretation and application of the Department Standards. All applications for such approvals shall be in writing. Department may issue a written approval of Contractor's proposed interpretive engineering decision (if any), may issue its own interpretive engineering decision or may disapprove any interpretive engineering decision Contractor proposes. Department's failure to issue a written approval or of Contractor's own interpretive engineering decision within 21 Days after Department received Contractor's written application shall be deemed an approval of such application. Department's determination regarding Contractor's application for an interpretive engineering decision shall be final but subject to dispute resolution hereunder.

3.7.4 In the event that Department reverses a written deviation or interpretive engineering decision previously given under Section 3.7.2 or 3.7.3, such reversal shall constitute a Directed Change.

ARTICLE 4. CONSTRUCTION WORK

4.1 Conditions Precedent to Commencement of Construction Work

Except as provided otherwise in Section 7.1, Contractor shall have no right to commence construction Work unless and until the following conditions, in addition to the conditions set forth in Section 4.2, are satisfied or unless Department, in its sole discretion, waives any such condition in writing:

4.1.1 the Financial Closing Date shall have occurred;

4.1.2 Department shall have approved in writing the initial designation of Construction Segments;

4.1.3 Department shall have approved the CPM/Payment Schedule, Quality Assurance and Control Inspection Program, Safety Program and Construction Traffic Management Plan;

4.1.4 Contractor shall not then be in breach of any material requirement of the Contract Documents or the other Project Agreements to which it is a party, including requirements regarding non-discrimination, minority employment and disadvantaged business enterprises;

4.1.5 all required insurance policies and bonds shall have been received by Department; and

4.1.6 there exists no court order which restrains, enjoins, challenges or delays performance of the Work or the granting or renewal of any Regulatory Approval.

4.2 Conditions Precedent to Construction of Portion of Project

Contractor shall have no right to commence construction of any portion of the Project unless and until all of the following conditions, in addition to the conditions set forth in Section 4.1, are satisfied or unless Department in its sole discretion waives any such condition in writing, and Contractor shall commence such construction promptly following satisfaction of all such conditions and the conditions set forth in Section 4.1:

4.2.1 Department's Chief Engineer shall have approved in writing the Plans and Specifications for such portion of the Project;

4.2.2 all Regulatory Approvals necessary for construction of the applicable portion of the Project shall have been obtained and all conditions of such Regulatory Approvals which are a legal prerequisite to commencement of such construction shall have been satisfied; and

4.2.3 all necessary rights of access shall have been obtained for such portion of the Project.

4.3 Conditions Precedent for Department's Benefit

All the conditions precedent set forth in this Article 4 are for the sole benefit of Department. Any condition precedent may be waived by Department; provided, however, that no person or entity shall be entitled to assume that Department will waive or refuse to waive any condition precedent in the absence of strict compliance therewith. No waiver of any condition precedent shall be enforceable unless in writing signed by Department. Unless Department waives a condition precedent which requires action

by Contractor to be satisfied, Contractor shall remain bound to use diligent efforts to satisfy the condition precedent.

ARTICLE 5. PROJECT MANAGEMENT

5.1 Supervision and Construction Procedures

5.1.1 Responsibility

Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures and Site safety and for coordinating all portions of the Work under the Contract Documents, subject, however, to all requirements contained in the Contract Documents.

5.1.2 Safety Program

Contractor shall have full responsibility for jobsite safety, including provision of and compliance with a Safety Program satisfactory to Department. Department will advise Contractor of situations which Department deems unsafe and shall have the right to require Work to be stopped as specified in Section 20.3. Contractor shall take all reasonable precautions and be responsible for the safety of, and shall provide protection to prevent damage, injury or loss to: (a) all employees of Contractor and its Subcontractors performing the Work and other persons (including employees of Department) who are on Site or would reasonably be expected to be affected by the Work; (b) the Work and materials and equipment to be incorporated therein; and (c) other property at or adjacent to the Site.

5.1.3 Security

Until the Final Acceptance Date, Contractor shall provide full-time security for the Site.

5.1.4 Adjoining Property

Contractor shall ensure that all of its activities and the activities of its employees, agents, officers and Subcontractors and all other Persons for whom Contractor may be legally or contractually responsible are undertaken in a manner that will reasonably minimize the effect on surrounding property and the public.

5.1.5 Differing Site Conditions

The procedures set forth in this Section 5.1.5 shall apply in the event of Contractor's discovery of any Differing Site Conditions.

5.1.5.1 Notification to Department; Work Stoppage

In the event of any such discovery, Contractor shall, within the close of the second Business Day following such discovery, notify Department thereof telephonically or in person, to be followed immediately by written notification. Contractor shall immediately stop Work in and secure the affected area. In such event, Department shall have the right, but not the obligation, to view the location. Following the close of the second Business Day following written notice to Department, Contractor may proceed with the Work, provided it can do so in compliance with all applicable requirements of the Contract Documents and Reference Documents. Contractor shall keep Department apprised regarding actions which it is taking to assure compliance with all such requirements. The notification and work stoppage described above constitute a condition precedent to Contractor's right to file a Request for Change Order.

5.1.5.2 Assumption of Risk

Contractor acknowledges and agrees that it shall not be entitled to any increase in the Contract Price for additional costs of performing the Work associated with any of the above-described conditions, except to the extent of any Change Order issued under Article 19. Contractor acknowledges and agrees that Contractor's right to obtain a time extension with respect to delays caused by such conditions is subject to the limitations and conditions contained in Article 19.

5.2 Department Oversight

5.2.1 Effect of Reviews, Inspections, Tests and Approvals

Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents by reviews, tests, inspections or approvals performed by any Persons, or by any failure of any Person to take such action. Subject to Section 3.7.4, the reviews, inspections, tests and approvals conducted by Department, Trustee, Governmental Persons and others do not constitute acceptance of the materials or Work reviewed, tested or inspected, and Department may reject or accept any Work or materials, request changes and/or identify additional Work which must be done at any time prior to the Final Acceptance Date, whether or not previous reviews, inspections, tests or approvals were conducted by any such Persons.

5.2.2 Inspection and Testing

5.2.2.1 Contractor shall perform whatever inspection, sampling and testing Contractor deems appropriate in order to comply with its obligations under the Contract Documents.

5.2.2.2 The QA Manager shall be responsible for inspecting and testing in accordance with the Quality Assurance and Control Inspection Program.

5.2.2.3 During the construction of the Project and until the Final Acceptance Date, Department shall designate two qualified staff engineers to perform Oversight Services and to provide necessary coordination with Contractor. Such Department representatives shall have full and complete access to the Project, the Work in progress, the "daily diaries," and to other technical documents and Project records associated with quality control, materials verification, materials installation and testing. Contractor shall give such Department representatives not less than two Business Days prior notice of and opportunity to participate in any meetings described in the Quality Assurance and Control Inspection Program attached to the Scope of Work.

5.2.2.4 All materials and each part or detail of the Work shall also be subject to inspection and testing by Department and Trustee. Contractor shall not be entitled to any additional compensation or time so long as any such inspection and testing reasonably conforms to the CPM/Payment Schedule. Such inspection does not make such Person a party to this Contract nor will it change the rights of the parties hereto. Contractor hereby consents to such inspection and testing. Upon request from Department, Contractor shall furnish information to such persons as are designated in such request and shall permit such persons access to all parts of the Work.

5.2.2.5 At all times before Final Acceptance, Contractor shall remove or uncover such portions of the finished construction Work as directed by Department. After examination by any Persons designated by Department, Contractor shall restore the Work to the standard required by the Contract Documents. If the Work exposed or examined is not in conformance with the requirements of the

Contract Documents, then uncovering, removing and restoring the Work and recovery of any delay to any Critical Path occasioned thereby shall be at Contractor's cost. Furthermore, any Work done or materials used without adequate notice to and opportunity for prior inspection by Department may be ordered uncovered, removed or restored at Contractor's cost, even if the Work proves acceptable after uncovering. Except with respect to Work done or materials used as described in the foregoing sentence, if Work exposed or examined under this Section 5.2.2.5 is in conformance with the requirements of the Contract Documents, then any delay in any Critical Path from uncovering, removing and restoring Work shall be considered a Department-Caused Delay, and Contractor shall be entitled to a Change Order for the cost of such efforts and recovery of any delay to any Critical Path occasioned thereby.

5.2.3 Oversight Budget

The Project budget includes a budget for all of Department's Oversight Services described in Section 10.2(c) of the Comprehensive Agreement in the amount of $630,000 (the "Oversight Budget"). Department shall be paid for such Oversight Services from the Oversight Budget, provided that any Oversight Budget overruns will automatically be paid from the Contingency, to the extent available. Upon receipt of a written invoice for any such costs from Department, Contractor shall submit such costs with its next Draw Request and Certificate to Trustee under Section 14.2.2 for payment directly to Department.

ARTICLE 6. PROJECT RIGHT OF WAY ACQUISITION

Contractor shall be responsible for acquiring the Project Right of Way as specified in this Article 6.

6.1 Project Right of Way Acquisition Requirements

6.1.1 Prior to commencement of any Project Right of Way acquisitions, Contractor shall prepare and obtain Department's approval of the Right of Way Acquisition Plan.

6.1.2 Contractor shall comply with all laws, rules, regulations, and ordinances applicable to right of way acquisitions by Department, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended, 42 U.S.C. Section 4651 et seq. and any amendments thereto, as supplemented by the regulations of 49 C.F.R. Part 24, and Title 25, Chapter 6, Section 25-235 et seq., Code of Virginia. Contractor's activities shall also be in substantial conformity with Department's Right of Way Manual of Instructions as modified by the Right of Way Acquisition Plan approved by Department.

6.1.3 All real property interests Contractor acquires for the Project shall be as specified on the Right of Way Plans approved by Department as part of the Preliminary Engineering, which will generally be fee simple title or other type of real property interest acceptable to Department, conveyed by a general warranty deed, subject only to conditions of title that may be acceptable to Department in its sole discretion. Permanent easements for drainage or slopes, utility easements, limited access rights, and temporary construction easements shall be included as part of the same transfer document or be transferred by separate instrument, when so indicated in the Right of Way Acquisition Plan.

6.1.4 All persons or firms Contractor intends to use in performing any portion of the acquisitions shall meet Department's Consultant Prequalification Guidelines.

6.1.5 Contractor shall exercise reasonable care in determining whether there is reason to believe that property to be acquired for the Project Right of Way may contain concealed or hidden wastes or other materials or hazards requiring remediation or treatment, and shall take the steps specified in Section 6.5 to investigate such possibilities where they are reasonably determined to exist. Contractor shall notify Department of any concerns regarding such materials on property to be acquired for the Project Right of Way to allow Department to consider whether and in what form it wishes title to be acquired.

6.1.6 Contractor shall cause all persons performing acquisition activities by or on behalf of Contractor to maintain a complete, legible diary of each contact. The diary shall include the time, place, amount of offer, to whom any offer is made, all parties present, and the response of the owner or its representative. The diary is to be retained for permanent records and made available to Department upon request. In addition, Contractor shall furnish to Department, upon request, miscellaneous correspondence and written recommendations regarding future negotiations.

6.1.7 All persons performing acquisition activities by or on behalf of Contractor shall be available for consultation and testimony (including discussion of diary notes and acquisition events) with Department representatives during and after completion of acquisitions.

6.1.8 Except for disclosures to Department or to attorneys designated and appointed by the State Attorney General and other disclosures Department first approves in writing, Contractor shall keep

strictly confidential and not disclose any diaries, notes, correspondence, documents, agreements, appraisals or other information pertaining to or arising out of Contractor's acquisition work and activities.

6.2 Right of Way Plans

6.2.1 Department has approved the acquisition of parcels as shown in the Right of Way Plans.

6.2.2 In the event that Contractor desires to obtain any parcels not covered by the approved Right of Way Plans, Contractor shall submit a revision to the plans to Department and shall obtain Department's approval thereof, prior to undertaking any negotiations or other work with respect to any new parcels required to be obtained.

6.3 Acquisition by Condemnation

6.3.1 Contractor may request Department to institute eminent domain proceedings only after complying with the requirements for negotiations and the approved Right of Way Acquisition Plan. Contractor shall initiate such process by submittal of a complete set of the documents identified in Section 6.3.2 to Department.

6.3.2 The following documents are required to be included in the condemnation package:

(a) A request for initiation of condemnation proceedings signed by an authorized representative of Contractor, identifying the parcel and certifying that the requirements for negotiations and the approved Right of Way Acquisition Plan have been satisfied;

(b) A copy of Contractor's written offer to the property owner;

(c) A legal description of the parcel;

(d) A fair market value appraisal and review appraisal;

(e) A 60-year title examination (including copies of documents identified in all exceptions listed therein and a plot of all easements identified therein);

(f) The studies and analyses required by Section 6.5, including, in the event that the studies and analyses show any Hazardous Substances within the real property interests to be conveyed, a copy of any remediation or containment plan approved by the Department of Environmental Quality or the United States Environmental Protection Agency as described in Section 6.5.3; and

(g) A certified check in the amount of the fair market value payable to the Clerk of the Court or as otherwise directed by Department.

6.3.3 Department shall make a determination whether the proposed condemnation will serve the public purpose of the Legislation within 15 Business Days of receiving a complete condemnation package from Contractor. Within 2 Business Days after making such determination, Department shall execute and deliver to Contractor a Certificate of Take pursuant to Title 33, Chapter 1, Article 7, Code of Virginia. Contractor shall promptly file the Certificate of Take thereafter. Eminent domain proceedings shall be prosecuted by the Office of the Attorney General through a designated appointed attorney.

Department shall consult with Contractor regarding the settlement of any proceeding, provided that all decisions regarding the settlement of any proceeding shall solely rest with Department.

6.3.4 In any proceeding brought pursuant to its condemnation power, Department shall, upon Contractor's request, reasonably consider any and all theories of valuation Contractor seeks to employ supported by a fair market value appraisal.

6.4 Acquisitions by Negotiation and Conveyances to Department

6.4.1 Department shall accept title to property as shown on the Right of Way Plans upon presentation of the following documents by Contractor:

(a) A copy of the conveyance and other closing documents;

(b) An approved fair market value appraisal and review appraisal meeting Department's requirements and showing a value which supports the acquisition price;

(c) For all parcels where fee simple title is being acquired or where the consideration is greater than $10,000 for any other type of property rights being acquired other than temporary construction easements, an A.L.T.A. extended coverage owner's policy of title insurance (1992 or 1970 form) issued by a title insurance company acceptable to Department (including copies of documents identified in all exceptions listed therein and a plot of all easements identified therein); and

(d) The studies and analyses required by Section 6.5, including, in the event that the studies and analyses show any Hazardous Substances within the real property interests to be conveyed, a copy of any remediation or containment plan approved by the Department of Environmental Quality or the United States Environmental Protection Agency as described in Section 6.5.3.

6.4.2 Department will pre-approve forms to be used for purchase agreements and conveyance documents so that only the business terms and any revisions to the pre-approved forms will require approval by Department.

6.4.3 Contractor shall be responsible for tracking the funds and for ensuring that the conveyance documents are recorded and that Department receives a complete set of closing documents within 30 Days following the closing.

6.5 Hazardous Substance Investigations and Remediation

6.5.1 Contractor shall cause studies and analyses to be performed on all properties to be acquired by a qualified independent environmental consultant and in accordance with good commercial and customary practice for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response Compensation and Liability Act and petroleum products. Such studies and analyses shall constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial and customary practice" as defined in 42 U.S.C. section 9601(35)(B). Contractor shall submit the results of such studies to Department for a determination whether Department will require further studies and analyses. In the event Department requires further studies and analyses, Contractor and Department shall jointly develop the minimum standards for such further studies and analyses. Contractor shall submit the results of any further studies and analyses to Department.

6.5.1.1 Notwithstanding anything herein to the contrary, because of the existence of studies previously performed by Department, the preceding requirements shall not apply to (and only to) acquisition of the properties located directionally west of the James River owned by the following parties: County of Chesterfield (Falling Creek Sewage Treatment Plant), E.I. Dupont de Nemours, Star Enterprise, Ryder Truck Rental Co., and CSX Railroad Co.

6.5.1.2 The requirements of this Section 6.5.1, including the exception provided in Section 6.5.1.1, shall not relieve Contractor from performing additional investigation of any properties necessary to ensure proper management of contaminated construction residuals and providing worker and environmental protection from hazardous conditions during the course of construction, or from otherwise complying with all applicable Laws, Regulations and Ordinances.

6.5.2 In the event that such studies and reports indicate the presence of Hazardous Substances on the property, Department's Chief Engineer or his or her designated representative shall determine whether Department is willing to consider an acquisition notwithstanding the presence of such Hazardous Substances.

6.5.3 If Department is willing to consider the acquisition, Contractor shall obtain approval of any containment or remediation plans from the Department of Environmental Quality or the United States Environmental Protection Agency, or otherwise coordinate its activities through these agencies.

6.5.4 If Department determines that it is not willing to proceed with the acquisition or that the requirements associated with containment or remediation are unacceptable, Contractor shall be responsible for identifying alternative property acceptable to Department.

6.5.5 Contractor shall not knowingly transfer or cause to be transferred to Department any contaminated property without a containment or remediation plan approved by, or otherwise coordinated through, the Department of Environmental Quality or the United States Environmental Protection Agency.

6.5.6 Contractor will bear the cost of implementing any containment or remediation plan at its own expense, without any entitlement to reimbursement for its additional expenses associated therewith or a time extension, unless and to the extent provided otherwise in Article 19. In the event that Department is unwilling to acquire any contaminated property, Contractor will bear the cost of redesign and working around the contaminated site at its own expense, without any entitlement to reimbursement for its additional expenses associated therewith or a time extension, unless and to the extent provided otherwise in Article 19.

6.6 Acquisition Costs

6.6.1 Contractor's Project Right of Way acquisition costs are subject to reimbursement solely from the ROW/Utility Allowance or the Contingency, as set forth in Sections 14.1.2 and 14.3, except as provided otherwise in Section 6.5.6, and provided that Contractor shall be responsible, at its own cost and expense, without any entitlement to reimbursement, for acquisition of any property or temporary easements or other property rights outside of the Project Right of Way limits which Contractor determines is necessary to accommodate its construction methods, or to facilitate temporary Utility Relocations. Payment for Project Right of Way acquisition costs shall be limited to the eligible expenses stated in Section 14.1.2.3.

6.6.2 Department shall be entitled to full reimbursement for its costs (incurred both before and after the Financial Closing Date) in connection with the Project Right of Way acquisition, as more particularly described in Section 10.2(b) of the Comprehensive Agreement. Such reimbursement shall be paid first from the ROW/Utility Allowance, to the extent available, and second from the Contingency, to the extent available. Upon receipt of a written invoice for any such costs from Department, Contractor shall submit such costs with its next Draw Request and Certificate to Trustee under Section 14.2.2 for payment directly to Department.

6.6.3 If not previously paid by Contractor, funds for acquisition purchase prices and condemnation awards shall be paid by Trustee directly to the escrow respecting the purchase or to the court respecting the condemnation first from the ROW/Utility Allowance, to the extent available, and second from the Contingency, to the extent available. Contractor shall identify each such recipient as the payee in the Draw Request and Certificate under Section 14.2.2 which requests funds for such purpose.

6.7 Changes in Project Right of Way Limits

Department's Chief Engineer's prior written consent is required for any changes in the Project Right of Way limits shown on the Preliminary Engineering.

6.8 Residue Parcels

Whenever indicated on the approved Right of Way Plans or when determined by Contractor during negotiations, uneconomic residue parcels, to the extent possible by law, shall be acquired as part of the acquisition. All residue parcels acquired in connection with the Project shall be conveyed to Department for management and disposal. All monetary proceeds received from the management or disposal of these residue parcels prior to the Final Acceptance Date shall be deposited into the Contingency. All proceeds received from the management or disposal of these residue parcels after the Final Acceptance Date shall be the sole property of Department.

6.9 Record Documents

Contractor shall provide to Department a complete set of right of way conveyance documents indicating the date and recordation data for each tract or parcel, along with an annotated set of the approved Right of Way Plans.

ARTICLE 7. UTILITIES

This Article 7 sets forth provisions relating to utility facilities affected by the Project (that is, public, private, cooperative, municipal and/or government utility facilities used for the carriage, transmission and/or distribution of cable television, electric power, telephone, telegraph, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage and similar utility lines). A preliminary survey of utilities likely to be impacted by the Project has been performed and the results are shown in the Preliminary Engineering. Contractor bears full responsibility for ascertaining the existence and exact location and size of all affected facilities.

7.1 Commencement of Utility Work

Contractor shall commence Work relating to Utility Relocations promptly after the Financial Closing Date. Contractor may commence performance of such Work prior to the Financial Closing Date "at risk," with the right to be paid contingent on the occurrence of the Financial Closing Date and compliance with the other applicable provisions set forth herein.

7.2 Contractor's Utility Relocations Obligations

Contractor is responsible for causing all necessary Utility Relocations to occur in a timely fashion, including Utility Relocations which were not identified or indicated with reasonable accuracy in the Preliminary Engineering. Contractor shall comply with Title 56, Chapter 22, Section 56-570, Code of Virginia, in such efforts. Contractor shall obtain and process for payment final billings for any utility protection, adjustment, or relocation within 120 Days after the utility work has been completed. Contractor shall certify to Department that all eligible costs have been paid and there are no outstanding claims pending with a utility owner. Contractor shall perform the Utility Relocations (including the design of both horizontal and vertical alignments) to be consistent with the Ultimate Design (as defined in the Scope of Work), such that the construction of the Ultimate Design shall not require any further removal or relocation of such utilities, or any further installation of permanent protection structures therefor.

7.2.1 Identification of Utilities

Contractor shall be responsible for identifying all utilities affected by the proposed construction and shall establish if the utility has reimbursable rights, as outlined in Volume II of the Right of Way Manual of Instructions. Subject to Section 7.4.1, any necessary protection, adjustment or relocation required shall be ascertained and paid by Contractor.

7.2.2 Avoiding Utility Relocations

The location of utility facilities and potential impact of Utility Relocations of such facilities shall be considered in accordance with Department's Utility Accommodation Policy in finalizing the design of the Project, with the following goals with respect to both the Project and the Ultimate Design (as defined in the Scope of Work): (a) avoiding Utility Relocations to the extent practicable; (b) if a Utility Relocation is not reasonably avoidable, protecting the facility in place to the extent practicable; and (c) otherwise minimizing the potential costs and delays relating to Utility Relocations to the extent practicable.

7.2.3 Relocation Plan

Contractor shall be responsible for preparing and implementing a relocation plan for all affected utilities. Such plan shall comply with all requirements contained in Title 56, Chapter 22, Section 56-570, Code of Virginia and shall be submitted to and approved by Department before commencement of construction work for affected utilities.

7.2.4 Agreements with Utility Owners

Contractor shall enter into a written agreement with each affected utility (see Volume II, Right of Way Manual of Instructions, for examples) providing for the appropriate protection, adjustment, or relocation of the utility facilities and setting forth the terms and conditions under which said work will be performed, the cost responsibility, and payments to be made therefor, provided that Department shall enter into any such agreement with an affected utility upon Contractor's request if it would result in a Project cost savings and the form of agreement is acceptable to Department. Department will assist in negotiations with utility owners as reasonably requested by Contractor. Contractor shall have no right to enter into any agreement with a utility owner which purports to bind Department to its terms. In no event shall Department be required to make any payment to any utility owner, except pursuant to a direct agreement between Department and a utility owner. In no event shall any agreement with a utility owner be deemed to modify the terms of this Contract, and in the event of any conflict between the terms of any such agreement and the terms of the Contract Documents, the Contract Documents shall prevail as between Department and Contractor.

7.2.5 Coordination of Work

Contractor shall be responsible for coordinating the work of its Subcontractors and the various utilities. The resolution of any conflicts between utilities and the construction of the Project shall be the responsibility of Contractor.

7.3 Payment for Utility Work

7.3.1 All efforts necessary in order to cause Utility Relocations to occur are included in the Work. Costs of undertaking such efforts are subject to reimbursement solely from first, the ROW/Utility Allowance, to the extent available, and second, the Contingency, to the extent available. Payment for Utility Relocations costs shall be limited to the eligible expenses stated in Section 14.1.2.2.

7.3.2 Department shall be entitled to full reimbursement for its costs in connection with the Utility Relocations, as more particularly described in Section 10.2(b) of the Comprehensive Agreement. Such reimbursement shall be paid first from the ROW/Utility Allowance, to the extent available, and second from the Contingency, to the extent available. Upon receipt of a written invoice for any such costs from Department, Contractor shall submit such costs with its next Draw Request and Certificate to Trustee under Section 14.2.2 for payment directly to Department.

7.3.3 If not previously paid by Contractor, funds to pay utility owners in connection with Utility Relocations shall be paid by Trustee directly to the utility owner respecting the Utility Relocation first from the ROW/Utility Allowance, to the extent available, and second from the Contingency, to the extent available. Contractor shall identify each such recipient as the payee in the Draw Request and Certificate under Section 14.2.2 which requests funds for such purpose.

7.4 Obligations of Department

7.4.1 To the maximum extent available, Department shall provide to Contractor the benefit of any provisions in permits, easements and franchises affecting the Project which require the holders thereof to relocate at their expense.

7.4.2 Department shall, at Contractor's sole cost, issue land use permits for utilities needing to cross the Project Right of Way and shall ensure that the installations are in compliance with Department's Land Use Permit Manual.

ARTICLE 8. NOT USED

ARTICLE 9. TRAFFIC CONTROL AND RESTRICTIONS

9.1 Construction Traffic Management Plan

9.1.1 Contractor shall prepare and provide to Department a Construction Traffic Management Plan approved by Department as a condition precedent to commencing construction Work. The Construction Traffic Management Plan shall be prepared and implemented to promote safe and efficient operation of adjacent public transportation facilities and State Highways at all times during the course of construction of the Project.

9.1.2 The Construction Traffic Management Plan shall comply with all applicable Contract Documents and Reference Documents, including the Section of the Scope of Work entitled "Maintenance of Traffic" and Sections 104.4, 107.7 and 107.10 of the Standard Specifications.

9.2 Traffic Control

Subject to Department oversight, Contractor shall provide or cause to be provided traffic management and operations services in compliance with and to the extent required of Contractor by the approved Construction Traffic Management Plan.

ARTICLE 10. APPLICABLE LAW AND REGULATORY APPROVALS

10.1 Obligation to Comply with Laws, Regulations and Ordinances and Regulatory Approvals

Contractor acknowledges and agrees that it has familiarized itself with the requirements of any and all applicable Laws, Regulations and Ordinances and the conditions of all Regulatory Approvals prior to entering into this Contract. Contractor shall comply with, and shall ensure that all Subcontractors comply with, all applicable Laws, Regulations and Ordinances and the conditions and requirements of all Regulatory Approvals, including survey work, wetland and other impact mitigation, water and air quality analyses and any applicable Section 7 consultation and commitments required by the Endangered Species Act of 1973, 16 U.S.C. Section 1531 et seq.

10.2 Obligation to Obtain Regulatory Approvals

10.2.1 Contractor has no reason to believe that any Regulatory Approval required to be obtained by Contractor will not be granted in due course and thereafter remain in effect so as to enable the Work to proceed in accordance with the Contract Documents. Prior to performing any construction, equipping or installation of the Project or any portion thereof, Contractor shall obtain all Regulatory Approvals required in connection therewith; provided, however, that Department shall not prohibit commencement of any such activity where Contractor has satisfied all other requirements and conditions set forth in this Contract, and either:

(a) Contractor lacks a Regulatory Approval (other than from Department and other than the lead agency under NEPA, if applicable) but instead is contesting diligently and in good faith the validity, applicability or terms of such Regulatory Approval through appropriate proceedings, has posted any bonds or other undertaking which may be lawfully required to commence and proceed with such activity without such Regulatory Approval and certifies in writing to Department that it will obtain and abide by such Regulatory Approval if and when it is upheld; or

(b) a Regulatory Approval not yet obtained is not necessary in order to commence such activity and can be expected to be issued in due course during construction.

10.2.2 In the event that any Regulatory Approvals required to be obtained by Contractor under Section 10.2.1 must formally be issued in the name of Department, Contractor shall undertake all efforts to obtain such approvals subject to Department's reasonable cooperation with Contractor, including execution and delivery of appropriate applications and other documentation in form approved by Department.

10.2.3 Prior to Substantial Completion, Contractor shall obtain all Regulatory Approvals required to open the Project for normal use and operation. Contractor shall obtain all such Regulatory Approvals in the name of Department and Association, provided that if doing so is impossible or impracticable, then Contractor shall obtain a transferable Regulatory Approval and transfer and assign the same in writing to Department and Association prior to the Transition Date. Contractor shall deliver to Department, promptly after Contractor's receipt, the original of each such Regulatory Approval.

10.3 Payment for Regulatory Approvals

Contractor shall pay all charges and fees and shall not be entitled to any time extension incident to obtaining any modifications to Regulatory Approvals and all new Regulatory Approvals and for any

changes in the Work arising therefrom, provided that in the event a modification to a Regulatory Approval or a new Regulatory Approval is necessitated by a Directed Change, a Force Majeure event or Differing Site Condition, Contractor shall receive compensation and/or a time extension for obtaining such modification or new Regulatory Approval and for any changes in the Work resulting therefrom pursuant to the Change Order covering the Directed Change, Force Majeure event or Differing Site Condition (but only to the extent eligible under Section 19.4.1), as appropriate.

10.4 Acknowledgment Regarding EIS

Contractor acknowledges and agrees that constraints established by the EIS were (and will be) based on certain assumptions regarding the alignment of the Project, and agrees that the Project can be designed and constructed within the constraints identified in the Contract Documents.

ARTICLE 11. WARRANTIES

11.1 Warranties

11.1.1 Contractor warrants to Department that (a) all design Work performed pursuant to the Contract Documents shall conform to all professional engineering principles generally accepted as standards of the industry in the State, (b) the Project shall be free of Defects, (c) the ETTM System and ETTM Facilities shall be fit for use for the intended function, (d) materials and equipment furnished under the Contract Documents shall be of good quality and new, and (e) the Work shall meet all of the requirements of the Contract Documents. The Warranties shall not include routine maintenance items such as periodic rework of bridge joints, restriping and other like work required as a result of normal wear and tear. In addition, subject to Section 11.3.3, the Warranties shall not apply to equipment purchased from vendors and installed in or serving the interior of toll booths and the administration building, including air conditioning units, heating units and appliances (the "Pass-Through Equipment").

11.1.2 The Warranties shall commence on the first to occur of the Opening Date or the Final Acceptance Date, or with respect to any overcrossings or undercrossings put into service prior to the Opening Date in accordance with Section 18.1, the date of acceptance of such portions. The Warranties shall remain in effect for a five-year period, provided that the Warranties with respect to the ETTM System shall remain in effect for a two-year period. If any of the Work fails to meet the standards set forth in Section 11.1.1 at any time within the applicable warranty period, then Contractor shall correct such Work to meet the standards of Section 11.1.1, and repair (to such standards) any damage to the Project or other property of Department caused by the failure of the Work to meet the standards set forth in Section 11.1.1, even if the performance of such corrective work or repairs extends beyond the stated warranty period.

11.1.3 Within seven Days of receipt by Contractor of notice specifying a failure of any of the Work to satisfy Contractor's Warranties, Department will consult with Contractor to determine when and how Contractor shall remedy such violation; provided, however, that in case of an emergency requiring immediate curative action, Contractor shall implement such action as it deems necessary and shall notify Department of the urgency of an expedited decision by the close of the following Business Day. Contractor and Department shall agree on such remedy as soon as reasonably practicable. If Contractor does not use diligent efforts to proceed promptly to effectuate such remedy within the agreed time, or should no such agreement be reached within such seven-day period (or immediately, in the case of emergency conditions), Department, after notice to Contractor, shall have the right to perform or have performed by third parties the necessary remedy, and the costs thereof shall be borne by Contractor.

11.1.4 Contractor shall be responsible for obtaining any required encroachment permit from Department in connection with any such corrective or repair Work. Contractor shall bear all costs of correcting any rejected or defective Work, including additional testing and inspections, and shall reimburse Department or pay Department's direct expenses of regulating traffic and protecting the public and third party expenses made necessary thereby within 30 Days after Contractor's receipt of invoices therefor.

11.2 Extension of Warranties

Contractor's Warranties shall apply to all Work re-done pursuant to the terms of this Contract. The Warranties shall last as to each re-done element of the Work until the later of (a) one year after

acceptance by Department of any re-done Work or (b) expiration of the applicable Warranty period as set forth in Section 11.1.2.

11.3 Subcontractor and Pass-Through Equipment Warranties

11.3.1 Without in any way derogating from Contractor's own representations and warranties (including the Warranties) and other obligations with respect to all of the Work, Contractor shall obtain from all Subcontractors and cause to be extended to Department appropriate representations, warranties (for periods at least co-extensive in duration with Contractor's Warranties for such Work), guarantees and obligations with respect to design, materials, workmanship, equipment, tools and supplies furnished by such Subcontractors. All representations, warranties, guarantees and obligations of Subcontractors (a) shall be written so as to survive all inspections, tests and approvals hereunder, and (b) shall run directly to and be jointly and severally enforceable by Contractor, Department and/or Association and their respective successors and assigns. Contractor hereby assigns to Department all of Contractor's rights and interest in all extended warranties for periods exceeding the applicable Warranty period which are received by Contractor from any of its Subcontractors.

11.3.2 Upon receipt from Department of notice of a failure of any of the Work to satisfy any Subcontractor warranty, representation, covenant, guarantee or obligation, Contractor shall be responsible for enforcing in the name of and on behalf of Department, if so directed, or performing any such representation, warranty, covenant, guarantee or obligation, in addition to Contractor's other obligations hereunder. Department's rights under this Section 11.3.2 shall commence at the time such representation, warranty, guarantee or obligation is furnished and shall continue until the expiration of Contractor's Warranty (including extensions for redone Work). Until such expiration, the cost of any equipment, material, labor (including re-engineering) or shipping shall be for the account of Contractor if such cost is covered by such a Warranty and Contractor shall be required to replace or repair defective or damaged equipment, material or workmanship furnished by Subcontractors.

11.3.3 Contractor shall require each vendor of Pass-Through Equipment (as defined in Section 11.1.1) to provide warranties for such equipment for the express benefit of Department that equal or exceed industry standards in the State (a "required warranty"), provided that if Contractor fails to obtain a required warranty or if a vendor of Pass-Through Equipment becomes bankrupt or insolvent during the term of its required warranty, such warranty shall be deemed to be given by Contractor. Upon receipt from Department of notice of a failure of any of the Pass-Through Equipment to satisfy any required warranty during the term of such required warranty, Contractor shall be responsible for enforcing such required warranty in the name of and on behalf of Department, if so directed by Department. Contractor's liability with respect to required warranties for the Pass-Through Equipment shall be limited to obtaining such required warranties and, except if a vendor fails to provide the required warranty or a vendor becomes bankrupt or insolvent during the term of its required warranty, assisting Department in the enforcement of same short of litigation with the respective vendor.

11.4 Assignment of Warranties

Contractor's Warranties (including warranties for re-done Work) and all Subcontractor and Pass-Through Equipment (as defined in Section 11.1.1) warranties shall be assignable by Department without approval by Contractor or any Subcontractor or vendor, which assignment shall be effective upon delivery of notice to Contractor of the assignment.

11.5 Damages for Breach of Warranty

Contractor's liability to Department for damages resulting from any breach of an express warranty (including warranties made by Subcontractors) shall be limited to all those costs reasonably incurred by Department in effecting the remedy described in Section 11.1.2 itself or through a third party, including the costs described in Section 11.1.4. This limitation of liability shall not apply to liabilities incurred by Contractor arising out of its obligation to indemnify, defend and hold each State Indemnitee and Association Indemnitee harmless from third party Claims under Section 21.1 or to the extent covered by insurance required hereunder.

11.6 Exclusive Remedy

This Article 11 and Section 14.4 set forth Department's exclusive remedies against Contractor, and Department hereby waives all other remedies, regarding defects or deficiencies in the Work, whether patent or latent or arising in contract, tort (including negligence) or pursuant to other legal theory, except (a) Contractor's obligation to indemnify, defend and hold each State Indemnitee and Association Indemnitee harmless from third party Claims under Section 21.1 and (b) defects and deficiencies in the Work resulting from the fraud or deceit of any Contractor Party (excluding Subcontractors). Contractor makes no other warranties, express or implied, relating to the quality of the Work.

11.7 Habitat and Landscaping Maintenance

Contractor shall maintain in a growing condition all newly established plantings, seedings and soddings furnished under the Contract Documents and shall protect new tree growth and other vegetative growth against injury, replacing all dead plants requiring replacement in accordance with the Standard Specifications throughout an establishment period that shall commence at initial planting and shall end one year after the planting date.

ARTICLE 12. RECORDS AND INTELLECTUAL PROPERTY

12.1 Maintenance of, Access to and Audit of Records

Contractor shall maintain a complete set of all books and records prepared or employed by Contractor in its management, scheduling, cost accounting and otherwise with respect to the Project. Contractor shall grant to Department and/or Trustee such audit rights and allow Department such access to and the right to copy such books and records as Department and/or Trustee may request in connection with Work to be performed on a reimbursable cost basis, issuance of Change Orders, the resolution of disputes and such other matters as Department and/or Trustee reasonably deem necessary for purposes of verifying compliance with this Contract and applicable law.

12.1.1 Where the payment method for any Work is on a unit-priced basis, such examination and audit rights shall include all books, records and other data of Contractor for the purpose of evaluating the accuracy of Contractor's designations of quantities.

12.1.2 Where the payment method for any Work is on a time and materials basis, such examination and audit rights shall include all books, records, documents and other evidence and accounting principles and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of such Work. If audit indicates Contractor has been over-credited under a previous progress report or progress payment, that over-credit will be credited against current progress reports or payments.

12.1.3 For cost and pricing data submitted in connection with pricing Change Orders, unless such pricing is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the public, or prices set by law or regulation, Department and its representatives have the right to examine all books, records, documents and other data of Contractor related to the negotiation of or performance of Work under such Change Orders for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data submitted. The right of examination shall extend to all documents deemed necessary by such Persons to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

12.1.4 Nothing contained in this Contract shall in any way limit the constitutional and statutory powers, duties and rights of elected state officials, including the independent rights of the State Auditor of Public Accounts, in carrying out his or her legal authority.

12.1.5 No audit rights shall extend to the make-up of any lump sum amount or unit price once the parties have agreed upon such amount or price.

12.1.6 Contractor shall require each Subcontractor to comply with the requirements applicable to Contractor set forth in this Section 12.1.

12.2 Retention of Records

Contractor shall maintain all records and documents relating to this Contract (including copies of all original documents delivered to Department) for five years after the Final Acceptance Date or termination date, as applicable, and shall notify Department where such records and documents are kept. Notwithstanding the foregoing, all records which relate to Contractor Claims being processed or actions

brought under the dispute resolution provisions hereof shall be retained and made available until such actions and Contractor Claims have been finally resolved and Contractor shall maintain all documents relating to acquisition of the Project Rights of Way no less than three years after any negotiated conveyance or after issuance of a final judgment with respect to any property acquired by condemnation. Records to be retained include all books and other evidence bearing on Contractor's costs and expenses under the Contract Documents. Contractor shall make these records and documents available for audit and inspection to Department and Trustee, at Contractor's office, at all reasonable times, without charge, and shall allow such Persons to make copies of such documents (at no expense to Contractor). If approved by Department, photographs, microphotographs or other authentic reproductions may be maintained instead of original records and documents.

12.3 Public Records

Requirements relating to public records are set forth in Section 18.2 of the Comprehensive Agreement.

12.4 Reporting Requirements

12.4.1 Not later than 30 Days after the end of each calendar quarter, Contractor shall prepare and deliver to Department the following reports, in a form reasonably satisfactory to Department:

(a) a written narrative report on the progress of design, permitting, acquisition, Utility Relocations and construction of the Project and Project Right of Way since the immediately preceding report, or, if there was no preceding report, from the inception by Contractor of such Work, describing in reasonable detail all significant activities concerning design, Regulatory Approvals, new contracts and subcontracts with contractors, subcontractors, vendors and suppliers identifying the parties, scope and, for Work thereunder to be paid on a time and materials basis, amount, construction and construction progress and discovery and correction of defects. Such report shall include a discussion of the CPM/Payment Schedule and Contractor's compliance therewith, of any new or continuing delays, material matters which may affect the future performance of Contractor's obligations under the Contract Documents, and the causes thereof and a summary of all new changes to the Plans and Specifications. Such report also shall describe any damage or destruction and restoration work and revenue information (such as but not limited to insurance awards) relating to any such occurrence; and

(b) a written narrative report of any disputes with Contractor or claims, actions or assertions against Contractor, the Project or Project Right of Way by any Governmental Person, any general contractor, any architect or engineer, any subcontractors, vendors or suppliers or any other Person, or of Lien claims or stop notices filed or threatened to be filed by any Person. Such report shall include but not be limited to a description of the nature of the dispute, claim, action, assertion, Lien or notice, the amount in dispute or claimed, copies of any Lien notice, stop notice, complaint, demand or other pertinent documents which Department requires, availability of insurance and insurance defense, and actions taken and contemplated to defend against, settle or remove the dispute, claim, action, assertion, Lien or notice.

12.4.2 Contractor shall report to Department (a) not later than 24 hours after the occurrence thereof, any significant damage or destruction to the Project, and (b) at least 48 hours before commencement thereof, any planned work (other than emergency repairs) to repair or remedy such damage or destruction.

12.4.3 Contractor shall obtain Department's prior written approval of all proposed press releases and other statements concerning the Project before they are made available generally by Contractor to the public or media.

12.4.4 Contractor shall furnish or cause to be furnished to Department copies of all financial audit reports distributed by Contractor other than those limited to internal distribution within Contractor or its members.

12.4.5 Contractor shall furnish or cause to be furnished to Department such other documents, reports and information relating to the Project as Department may reasonably request from time to time.

12.5 Contractor Pricing Documents

Prior to execution of this Contract, Contractor has delivered to Department certain pricing documents. Contractor represents and warrants that the pricing documents (a) were personally examined prior to delivery by an authorized officer of Contractor, (b) clearly detail how the Contract Price has been determined and is adequate to enable a complete understanding and interpretation of how Contractor arrived at the Contract Price, including the unit prices for the Bridge Foundation Work, and (c) includes all assumptions, detailed quantity takeoffs, rates of production and progress calculations, cost estimates and quotes from Subcontractors and suppliers used by Contractor to arrive at the Contract Price.

12.6 Subcontractor Pricing Documents

Contractor shall require each Subcontractor whose Subcontract price equals or exceeds $5,000,000 to submit to Department a copy of all documentary information used in determining the Subcontract price immediately prior to executing the Subcontract or change orders or amendments thereto. Each such Subcontract shall include a representation and warranty from the Subcontractor stating that the submitted documentary information constitutes all the documentary information used in the determination of its price. Each Subcontract with a Subcontractor whose Subcontract price is less than $5,000,000 shall require the Subcontractor to preserve all documentary information used in determination of its price and to provide such documentation to Contractor and/or Department in connection with any claim exceeding $250,000 made by such Subcontractor.

12.7 Intellectual Property

(a) Contractor shall purchase, or obtain licenses as described in this Section for, all Intellectual Property necessary to manage, maintain and operate the ETTM Equipment, ETTM Facilities and other components and systems of the Project. In addition, Contractor shall obtain and deliver to Department all manuals, handbooks, maintenance libraries and other documentation, whether provided in printed form or electronically, related to operation, use or maintenance of Software Contractor incorporates into the Project.

(b) Contractor shall require each supplier or vendor of Software to or for use in the Project to warrant and represent in writing for the same duration as the Warranties with respect to the ETTM System the following for the express benefit of Department:

(i) that such Software is free from programming errors and from defects in workmanship and materials;

(ii) that such Software shall operate in conformity with the performance capabilities, specifications, functions and other descriptions and standards applicable thereto and shall conform to the standards generally observed in the industry for similar Software;

(iii) that such Software shall be compatible with the equipment and electronic hardware used for traffic management on State Highways and with the ETTM Equipment, as appropriate; and

(iv) that the Software is fit for its intended purpose.

If Contractor fails to obtain the warranties and representations required by this subsection (b), such warranties and representations shall be deemed to be given by Contractor.

(c) The following requirements shall apply to all Software licenses pertaining to the Project:

(i) For Custom Software:

(A) All subcontracts for Custom Software development shall provide that such Custom Software is being developed for and shall be owned by Department and shall be considered a trade secret of Department, and that the Custom Software supplier shall have no rights in and to the Custom Software and shall not use, duplicate, modify, publish or distribute any such Custom Software except for and as permitted by Department. All copyright, patent and trade secret rights in and to such Custom Software shall be transferred to Department and the Custom Software supplier shall provide Department with all necessary assignments and registrations to vest in Department all right, title, and interest in and to such Custom Software, its copyrights, patents and trade secrets, without additional payment and with full right to license, transfer or sell the Custom Software, in whole or in part, to others in any manner and for any purpose whatsoever.

(B) Contractor shall obtain the Source Code and Source Code Documentation for the Custom Software and shall provide the same to Department.

(ii) For Proprietary Software:

(A) Contractor shall obtain for and in the name of Department nonexclusive, transferable to any operator of the Project, irrevocable, fully paid-up licenses to all Proprietary Software supplied to or for use in the Project.

(B) Contractor shall cause the Source Code and Source Code Documentation for Proprietary Software to be provided to a trustee under a trust agreement among Department, the Proprietary Software supplier and the trustee; provided that Contractor shall be excused from this obligation if (I) the supplier, as a general corporate policy, prohibits or refuses to escrow or place in trust its Source Code and Source Code Documentation and (II) Contractor is unable, despite diligent efforts, to purchase the necessary Proprietary Software from an alternate supplier which is willing to escrow or place in trust its Source Code and Source Code Documentation. The trust agreement shall include the basic terms set forth in Section 12.9.

(d) The following provisions shall be included in all subcontracts between Contractor and its equipment and Software suppliers concerning infringement of Intellectual Property rights:

(i) Suppliers shall represent and warrant for the express benefit of all Department Indemnitees and Association Indemnitees that the materials, equipment, devices and Software to be used on or incorporated in the Project shall be free of any rightful Claim of any third party for infringement of any patent, copyright, trademark, trade secret, or other intellectual property or proprietary right ("Infringement Claims").

(ii) The supplier shall, upon written demand of Department or Association, defend at its expense and with counsel acceptable to Department, any Infringement Claims against State Indemnitees or Association Indemnitees, and the supplier shall pay all damages and costs awarded therein against the State Indemnitees and Association Indemnitees or any of them. The supplier may settle any such Infringement Claim, subject to the approval of Department, provided such settlement shall not result in the loss of Department's or Association's right to use the Software as contemplated unless such supplier shall indemnify and hold Department and Association harmless from and against all loss, cost and expense incurred in replacing such infringing Software.

(iii) The supplier shall report to the State Indemnitees and Association Indemnitees promptly and in reasonable written detail each Infringement Claim of which the supplier has knowledge, except those involving suppliers of retail "shrink wrap" Software.

(iv) In the event of any Infringement Claim against any State Indemnitee or Association Indemnitee, the supplier shall cooperate fully with the State Indemnitees and Association Indemnitees in their response to and defense against such Infringement Claim and shall furnish at its sole cost and expense all evidence and information in the possession of the supplier pertaining to such Infringement Claim.

(e) With respect to items purchased directly or indirectly from third party equipment and software vendors, Contractor shall have no liability with respect to infringement of Intellectual Property rights beyond obtaining the warranties and indemnities described above, for the joint express benefit of Contractor and Department, and assisting Department in the enforcement of same, provided that if Contractor fails to obtain any such third party warranty or indemnity from such vendors, such warranty or indemnity shall be deemed to be given by Contractor.

12.8 Title to Work Product

Provided Department has made payment to Contractor therefor to the extent required by this Contract, all Work Product shall become the property of Department upon Contractor's preparation or receipt thereof and Contractor shall promptly deliver possession thereof to Department; provided that rights to and ownership of Intellectual Property are governed by Section 12.9.

12.9 Intellectual Property Escrow

Department and Contractor acknowledge that certain technical data, including Source Code and Source Code Documentation, constitute information concerning the design of the ETTM System or other Project equipment or components which, if subject to public disclosure, would deprive Proprietary Software suppliers of commercial value, but to which Department must be ensured access in the event the Proprietary Software supplier is the subject of a voluntary or involuntary petition in bankruptcy. Accordingly, except where the Proprietary Software supplier, as a general corporate policy, prohibits or refuses to escrow or place in trust its Source Code and Source Code Documentation and Contractor is unable, despite diligent efforts, to use an alternate supplier willing to escrow or place in trust its Source Code and Source Code Documentation, Contractor shall cause each Proprietary Software supplier to

provide all Escrow Material to a trustee (other than Trustee) under a trust agreement among Department, the Proprietary Software supplier and the trustee, the basic terms of which shall be as follows:

(a) the trustee shall be a trust company qualified to do business in the State or a bank authorized to engage in a trust business in the State, which bank or trust company shall be mutually acceptable to Department and the Proprietary Software supplier;

(b) the Escrow Material shall be placed with such trustee for safekeeping in a county in the State mutually agreeable to the parties;

(c) upon each major Software release, revision or upgrade after the Agreement Date, the Proprietary Software supplier shall deposit with such trustee, at the Proprietary Software supplier's sole cost and expense, the Escrow Material and within seven Days after any such deposit, the trustee shall given written notice of receipt to Department;

(d) upon reasonable written notice to each party to an escrow, Department or its contractor may conduct, at Department's sole cost and expense, reasonable tests of the Escrow Material, under the Proprietary Software supplier's supervision, to confirm the condition of the Escrow Material;

(e) title to any designs, copyrights, patents, trade secrets or other Intellectual Property divulged in the Proprietary Software shall remain with the supplier thereof, subject to the rights and licenses granted to Department in accordance with Section 12.7;

(f) in the event that (i) the Proprietary Software supplier enters into a voluntary or involuntary receivership arrangement or other bankruptcy or insolvency proceedings, ceases to engage in business or is dissolved or (ii) the Proprietary Software supplier fails to provide updates and maintenance releases for the Software, such trustee, upon receipt of written notice from Department, shall turn over to Department the Escrow Material or such portion thereof as to which the release triggering event has occurred at the end of the third Day following receipt of notice;

(g) from and after the time the Escrow Material is turned over to Department by the trustee, Department shall have the right and license to use the Escrow Material for the Project as permitted herein; provided, however, that the Proprietary Software supplier shall retain such rights in the Software as they may have had immediately prior to delivery of the Escrow Material to Department; and

(h) prior to the occurrence of one of the release triggering events identified in subsection (f) above, Department shall have no right of access to the Escrow Material.

12.10 Equipment Warranties

Contractor shall procure ETTM Equipment and equipment for traffic management functions and systems under vendor contracts which do not impair, qualify, limit or disclaim in any manner the implied warranties of merchantability and fitness for the particular purpose intended. Contractor shall make such implied warranties available for the benefit of Department. Contractor shall not itself be liable to Department for any such implied warranties (provided that this limitation shall in no way affect the scope of any of Contractor's warranties hereunder).

ARTICLE 13. CRITICAL PATH METHOD SCHEDULE

13.1 CPM/Payment Schedule

Contractor shall prepare and maintain a CPM/Payment Schedule using the critical path method of scheduling on a system reasonably acceptable to Department. This schedule shall be used to manage the design and construction of the Project and as the basis for determining the amount of monthly progress payments to be made to Contractor and shall be in sufficient detail to determine progress, to monitor construction activity and to identify and avoid delays.

13.2 Allocation of Contract Price

Contractor shall allocate the total Contract Price among the activities scheduled on the CPM/Payment Schedule so that each activity has a price which accurately shows the amount payable to Contractor for such activity. The price for each activity shall account for any limitations relating to payment for specific activities contained herein. For Work which is the subject of a Change Order, the schedule shall be updated to reflect the approved Change Order. The sum of the prices of all activities in the CPM/Payment Schedule shall equal the total Contract Price. Once the initial CPM/Payment Schedule has been approved, no changes to any allocated amount may be made without Department approval.

13.3 Initial CPM/Payment Schedule; Monthly Updates

Contractor shall provide Department with a copy of an initial CPM/Payment Schedule on or before the Financial Closing Date. Contractor shall thereafter update the schedule on a monthly basis. The term "CPM/Payment Schedule" as used herein shall mean the most recent schedule provided hereunder that has been approved by Department.

13.4 CPM/Payment Schedule Requirements

Each CPM/Payment Schedule shall be in a paper and/or electronic medium accompanied by a management level summary, as may be requested by Department. Periodic construction meetings shall be held by Contractor with its consultants and subcontractors to coordinate the Work, update the CPM/Payment Schedule, provide information and resolve potential conflicts. The CPM/Payment Schedule shall, among other things, provide that Substantial Completion shall be achieved by the Guaranteed Completion Date, include a designation of any Construction Segments and be subject to Department's reasonable approval. In the event of any delay in excess of one month, Contractor shall prepare and provide to Department a recovery plan and revised schedule.

ARTICLE 14. COMPENSATION

14.1 Contract Price

14.1.1 Contract Amount

As full compensation for the Work and all other obligations to be performed by Contractor under the Contract Documents, and subject to the limitations contained herein, Contractor shall be paid the sum of $302,108,661 (such amount, as it may be adjusted from time to time as provided herein, is referred to herein as the "Contract Price"). The Contract Price is made up of the following items:

$251,809,520	Fixed Price Amount
36,299,141	Bridge Foundation Account
14,000,000	ROW/Utility Allowance
$302,108,661	Contract Price

The Contract Price shall be paid in accordance with Section 14.2. The Contract Price shall be increased only in accordance with Article 19 and decreased only in accordance with Sections 14.1.2 and 14.1.3 and Article 19. The Project budget includes, separate and apart from the Contract Price, an Oversight Budget for the benefit of Department as described in Section 5.2.3 and a Contingency for the benefit of Contractor and Department to cover unanticipated costs as described in Section 14.3.

14.1.2 ROW/Utility Allowance

14.1.2.1 The Contract Price includes the ROW/Utility Allowance in the amount of $14,000,000 for (a) Project Right of Way Work under Article 6 and (b) Utility Relocations Work under Article 7.

14.1.2.2 Contractor's costs for Utility Relocations Work will be reimbursed from the ROW/Utility Allowance, until the ROW/Utility Allowance has been exhausted. Such costs shall substantially conform with the reimbursement provision of 23 C.F.R. 645 and shall not include any upgrade, Betterment, or other improvement of the utility facilities, nor shall they include overhead allocation, profit, or other mark-up by Contractor (except for certain overhead and direct costs permitted under Section 14.3.4). Department shall also be entitled to reimbursement from the ROW/Utility Allowance for its costs in connection with the Utility Relocations Work.

14.1.2.3 Contractor's costs for Project Right of Way acquisition Work will be reimbursed from the ROW/Utility Allowance, until the ROW/Utility Allowance has been exhausted. Reimbursable costs shall be limited to: (i) direct payments for ownership or other property rights; (ii) direct payments for eligible relocation expenses as provided for under the Uniform Act; (iii) the expense of appraisers, land agents, title searches, and right of way agents; (iv) attorneys' fees, expert witness fees, filing fees, and deposition costs and expenses arising from condemnation proceedings; and (v) expenses incurred to cure or avoid damages proximately related to the acquisition of the rights of way. Contractor shall not be entitled to payment for overhead allocations, profit, or other mark-up by Contractor on the cost of such Work. Department shall also be entitled to reimbursement from the ROW/Utility Allowance for its costs in connection with the Project Right of Way acquisition Work.

14.1.2.4 If a positive balance remains in the ROW/Utility Allowance upon achievement of Final Acceptance, resolution of all Contractor Claims, all claims, Liens and stop notices of Subcontractors and laborers and all claims by third parties, including utility owners, reconciliation of all outstanding eminent domain cases and final determination of the amount owing to the utility owners, the balance will be deducted from the Contract Price and paid to a special account with Trustee to be used in any manner related to the Project that Department directs.

14.1.2.5 If the ROW/Utility Allowance is depleted, any amounts otherwise payable from the ROW/Utility Allowance will automatically be paid from the Contingency, to the extent available.

14.1.3 Bridge Foundation Account

14.1.3.1 The Contract Price includes the Bridge Foundation Account for the uses set forth in this Section 14.1.3 in the amount of $36,299,141.

14.1.3.2 Contractor's costs for the Bridge Foundation Work will be reimbursed from the Bridge Foundation Account until the Bridge Foundation Account has been exhausted. Payment for the Bridge Foundation Work will be made by applying the unit prices set forth in Appendix 2 hereto unless the reimbursement is pursuant to a Change Order, in which case payments will be made in accordance with Article 19.

14.1.3.2.1 The unit prices shall be deemed to include all activities and items necessary to perform the Bridge Foundation Work, regardless of whether or not any such activity or item is specifically assigned a unit price. Measurement of quantities will be in accordance with Section 109.01 of the Standard Specifications. Unit prices shall not be subject to change solely by reason of any change in the estimated quantities.

14.1.3.2.2 Except to the extent provided otherwise in Article 19, Contractor shall not be entitled to reimbursement or a time extension for any Bridge Foundation Work in excess of the Bridge Foundation Account.

14.1.3.3 The Bridge Foundation Account amounts in excess of the costs of the Bridge Foundation Work shall also be available for the payment of Reimbursable Site Work as described in Section 14.6.

14.1.3.4 Subject to possible repayment in accordance with Section 14.6.3, if a positive balance remains in the Bridge Foundation Account upon completion of the Bridge Foundation Work, one-half of the balance will be advanced to Contractor (the "Bridge Foundation Advance") in accordance with the procedure set forth in Section 14.2. If a positive balance remains in the Bridge Foundation Account and the Bridge Foundation Advance upon achievement of Final Acceptance, resolution of all Contractor Claims, all claims, Liens and stop notices of Subcontractors and laborers and all claims by third parties, including utility owners, the balance of the Bridge Foundation Account will be deducted from the Contract Price and paid to a special account with Trustee to be used in any manner related to the Project that Department directs and Contractor shall be entitled to retain the remaining balance of the Bridge Foundation Advance.

14.1.4 Items Included in Contract Price

Contractor acknowledges and agrees that, subject only to Contractor's rights under Article 19, the Contract Price includes (a) all designs, equipment, materials, labor, insurance and bond premiums, home office, jobsite and all other overhead, profit and services relating to Contractor's performance of its obligations under the Contract Documents (including all Work, equipment, materials, labor and services provided by Subcontractors and all Intellectual Property rights necessary to perform the Work); (b) performance of each and every portion of the Work; (c) the cost of obtaining all Regulatory Approvals (except as provided otherwise in Section 10.3); and (d) payment of any duties, permit and other fees and/or royalties imposed with respect to the Work and any equipment, materials, labor or services included therein. Contractor further acknowledges and agrees that all such costs are payable out of the Fixed Price Amount portion of the Contract Price unless expressly provided otherwise.

14.2 Payments

Payment to Contractor of the Contract Price shall be made as follows:

14.2.1 Not Used

14.2.2 Delivery of Draw Request and Certificate

On or about the 15th Day of each month, Contractor shall submit to Department five copies of a Draw Request and Certificate (the "Request") in the form attached hereto as Appendix 3 (and as Exhibit 1 to the Indenture), with no additions or deletions other than those approved by Department. Each Request shall be executed by a designated representative of Contractor appointed by Contractor to have such authority in accordance with Section 24.1. No Request shall be considered complete unless it (a) describes the status of completion as it relates to the CPM/Payment Schedule, (b) sets forth the related payments which are then due in accordance with the CPM/Payment Schedule, as of the end of the 10th day of the month, (c) includes the required attachments thereto in form approved by Department, (d) includes a written certificate from Contractor and each Subcontractor to be paid pursuant to the subject Request that all prior invoices have been paid in full except for Retainage and amounts in dispute, (e) in the case of amounts to be paid on a unit price basis, includes invoices, receipts or other evidence establishing the number of units delivered and (f) in the case of amounts invoiced on a time and materials basis, includes all supporting documentation described in Section 19.7. Within ten Days after Department's receipt of the Request, Department will review the Request and all attachments thereto for conformity with all requirements of the Contract Documents, and shall notify Contractor of the amount approved for payment and the reason for disapproval of any remaining invoiced amounts or of any other information set forth in the Request. Contractor may include such disapproved amounts in the next month's Request after correction of the deficiencies noted by Department (all such disapproved amounts shall be deemed in dispute unless otherwise agreed). Subject to Department's right to suspend payment under Section 25.2, Department shall forward approved Requests and the approved amounts to Trustee for payment in accordance with the Indenture.

14.2.3 Not Used

14.2.4 Payment

Contractor acknowledges and agrees that it shall have no right to collect payment directly from Department except for up to $1.5 million as set forth in Section 3.1 and Discretionary Directed Changes. All payments will be made by Trustee and will be subject to the conditions to payment specified in the

Indenture. In no event shall Contractor be entitled to (a) payment for any activity eligible for payment from the Fixed Price Amount portion of the Contract Price in excess of the demonstrated percentage of completion of such activity, (b) payment for the Bridge Foundation Work in excess of the Bridge Foundation Account (except per Change Order) or (c) payment for Project Right of Way Work or Utility Relocations Work in excess of the amounts allowed under Section 14.1.2.

14.2.5 Continued Performance During Disputes

Subject to Contractor's right to suspend performing Work to the extent permitted under Section 25.4, failure of Department to authorize payment of or Trustee to pay any disputed amounts shall not postpone, alleviate, diminish or modify in any respect Contractor's obligation to perform under the Contract Documents, including Contractor's obligation to achieve Final Acceptance and perform all Work in accordance with the Contract Documents, and Contractor shall not cease or slow down its performance under the Contract Documents on account of any such amount. Any dispute between Contractor and Department regarding such payment shall be resolved pursuant to Article 27.

14.2.6 Retainage

14.2.6.1 Except as provided below, Department shall withhold or direct Trustee to withhold funds (the "Retainage") from each payment to be made to Contractor as described in Section 14.2.4. The Retainage shall initially be an amount equal to 5% of the invoiced amount for all Work except Project Right of Way Work and Utility Relocations Work. After 50% of the total Contract value has been completed and 5% has been retained on this amount (other than Project Right of Way Work and Utility Relocations Work), Department shall cease withholding Retainage from future payments owing to Contractor hereunder, provided that (a) Retainage previously withheld will not be released on future payments and (b) if Contractor's progress is more than 10% behind the CPM/Payment Schedule, the progress will be considered unsatisfactory and Department shall resume withholding 5% of each invoiced amount from future payments for each month Contractor is behind the CPM/Payment Schedule by more than 10%. The term "total Contract value" shall mean the original Contract Price except when the Contract Price is increased or decreased by more than 20%, in which case the term "total Contract value" shall mean the adjusted Contract Price.

14.2.6.2 The Retainage shall be held by Trustee until all events described in Section 14.2.6.3 have occurred, but at least until 30 Days after the Final Acceptance Date. At such time Contractor's requisition to Trustee under Section 14.2.2 may include draw of all Retainage (including earnings thereon) other than amounts applied to the payment of any Liquidated Damages and other amounts owing by Contractor or which Department deems advisable, in its reasonable discretion, to retain to cover any existing or threatened claims, Liens and stop notices relating to the Project, reconciliation of all eminent domain cases, any amounts due Department under Section 11.1.4, or the cost of any uncompleted Work. Final payment of such Retainage (including earnings thereon) not applied to Liquidated Damages, or to any amounts due Department under Section 11.1.4 shall be made upon (a) Contractor's showing, to Department's reasonable satisfaction, that all such matters have been resolved, including delivery to Department of a certification that there are no outstanding existing or threatened claims, Liens or stop notices of any Subcontractor, Supplier or laborer or claims by third parties, including utility owners, with respect to the Work and all eminent domain cases have been reconciled or (b) Contractor's showing, to Department's satisfaction in Department's sole discretion, that Department is adequately protected from any such unresolved matters.

14.2.6.3 No portion of the Retainage shall be released unless and until all of the following conditions have been met: (a) Liquidated Damages shall not then be payable to Trustee or to

Department; (b) Contractor shall have established to Department's reasonable satisfaction that Liquidated Damages are not anticipated to be payable to Trustee or to Department; (c) Contractor shall have applied in writing for such release; and (d) such release shall have been approved in writing by Department and the Surety.

14.2.6.4 The Retainage will be held in the Contractor Retainage Account and be invested by Trustee as provided in Sections 503.4 and 603 of the Master Indenture.

14.2.7 Not Used

14.2.8 Unincorporated Materials

Department will approve payment for material not yet incorporated in the Work only under the following circumstances:

14.2.8.1 Department will give consideration to requests for payment for materials and equipment stored off-Site on a case-by-case basis, subject to the following conditions precedent:

(a) Contractor shall provide Department with at least 40 Days prior notice of Contractor's plan to request payment for off-Site stored materials and equipment. Such request shall include a certified description of the off-Site location; a listing of all materials and equipment covered by the request, the individual value of the materials and equipment, the status of the fabrications of the material and/or equipment and the required dates of delivery at the Site. The statement shall be submitted on forms furnished by Department and shall be accompanied by invoices or other documents that will verify the material's cost. Following the initial submission, Contractor shall submit to Department a monthly certified update of the itemized inventory statement. The updated inventory statement shall show additional materials received and stored with invoices or other documents and shall list materials removed from storage since the last certified inventory statement, with appropriate cost data reflecting the change in the inventory. If Contractor fails to submit the monthly certified update within the specified time frame, Department will deduct the full amount of the previous statement from the invoice. At the conclusion of the Project, the cost of material remaining in storage for which payment allowance has been made will be deducted from the progress estimate.

(b) Evidence of insurance coverage of the stored material and equipment and related transit, including a loss-payable clause endorsement to Contractor's insurance policy providing payment to Department in the event of loss of the specified stored materials and equipment.

(c) A written statement from the Surety consenting to payment for materials and equipment stored off-Site.

(d) Such other documentation satisfactory to Department to establish Department's title to such material and equipment or otherwise protect Department's interest.

14.2.8.2 Department will review the documentation for completeness and accuracy. If the documentation presented does not satisfy the aforementioned conditions precedent, or if for any other reason Department is not satisfied, in its sole discretion, that Department's interest is fully protected, the request for payment for stored materials shall be denied.

14.2.8.3 Department specifically reserves the right to discontinue payment for material or equipment stored off-Site at any time for any reason during the course of the Work.

14.2.8.4 Contractor shall bear all costs of Department associated with inspection of off-Site materials stored outside of Henrico or Chesterfield County or the City of Richmond.

14.2.8.5 Following payment therefor, all such materials so accepted shall become the property of Department. Contractor at its own expense shall promptly execute, acknowledge and deliver to Department proper bills of sale or other instruments in writing in a form acceptable to Department conveying and assuring to Department title to such material included in any invoice, free and clear of all Liens. Contractor at its own expense shall conspicuously mark or paint such material as the property of Department, shall not permit such materials to become commingled with non-Department-owned property and shall take such other steps, if any, as Department may require or regard as necessary to vest title to such material in Department free and clear of Liens.

14.2.8.6 Payment for material furnished and delivered as indicated in this Section 14.2.8 will not exceed the amount paid by Contractor as evidenced by a bill of sale supported by paid invoice.

14.2.8.7 Payment for material furnished and delivered as indicated in this Section 14.2.8 shall be in accordance with the following terms and conditions:

14.2.8.7.1 Structural Units

An allowance of 100% of the cost to Contractor for structural steel materials for fabrication not to exceed 60% of the Contract Price may be made when such material is delivered to the fabricator and has been adequately identified for exclusive use on the Project. An allowance of 100% of the cost to Contractor for superstructure units, not to exceed 90% of the Contract Price, may be made when they have been fabricated. Prior to the granting of such allowances, the structural steel materials and fabricated units shall have been tested or certified and found acceptable to the QA Manager and shall have been stored in accordance with the requirements specified herein. Allowances will be based on invoices, bills, or the estimated value as approved by Department and will be subject to the Retainage requirements of Section 14.2.6.

14.2.8.7.2 Other Materials

For reinforcing steel, aggregate, pipe, guardrail, signs and sign assemblies, and other nonperishable material, an allowance of 100% of the cost to Contractor for materials, not to exceed 90% of the Contract Price, may be made when such material is delivered and stockpiled or stored in accordance with the requirements specified herein. However, no allowance will be made for cement, seed, plants, fertilizer, and other perishable material. Prior to the granting of such allowances, the material shall have been tested and found acceptable to the QA Manager. Allowances will be based on invoices, bills, or the estimated value of the material as approved by Department and will be subject to the Retainage provisions of Section 14.2.6.

14.2.8.7.3 Excluded Items

No allowance will be made for fuels, form lumber, falsework, temporary structures, or other work that will not become an integral part of the finished construction.

14.2.8.7.4 Storage

Material for which payment allowance is requested shall be stored in an approved manner in areas where damage is not likely to occur. If any of the stored materials are lost or become damaged, Contractor shall repair or replace them. Material included in an invoice but which is subsequently lost, as determined by Contractor, or which is damaged or unsatisfactory, as determined by Department, shall be deducted from succeeding invoices.

When it is determined to be impractical to store materials within the limits of the Project, Contractor may obtain approval for storage on private property or, for structural units, on the manufacturer's or fabricator's yard. Requests for payment allowance for such material shall be accompanied by a release from the owner or tenant of such property or yard agreeing to permit the removal of the materials from the property without cost to the State.

14.2.9 Equipment

Department shall not pay for direct costs of equipment used in constructing the Project. Payment for such equipment, whether new, used or rented, shall be allocated to and paid for as part of the activities with which the equipment is associated, in a manner which is consistent with the requirement of Section 19.5.2.1(c).

14.2.10 Payment for Work Scheduled to be Performed After Final Acceptance

Payment for habitat and landscape establishment and other Work scheduled to be performed after the Final Acceptance Date shall be made based on progress and shall not be subject to Retainage.

14.3 Contingency

14.3.1 The Project budget includes a Contingency of $15,000,000. Such amount is available for payment of certain expenses incurred by Department and Contractor under Sections 2.3, 5.2.3, 14.1.2.5, 14.3.4, 14.6, 19.3.3.1, 19.4.1.2(c) and 19.4.1.2(d).

14.3.2 If the Contingency does not contain sufficient funds to pay all eligible expenses, funds will automatically be transferred, to the extent needed and available, from the Fixed Price Amount portion of the budget into the Contingency portion of the budget. If the Contingency does not contain sufficient funds after such automatic transfers, each party may suspend those portions of its obligations under this Contract payable from the Contingency as provided in Section 25.4.2.

14.3.3 If at any time it becomes apparent to Contractor that the Contingency does not contain sufficient funds to pay all eligible expenses, Contractor shall immediately notify Association and Department thereof. If Association is unable to obtain additional funds through issuance of Completion Bonds in accordance with the Indenture, Department may, but shall have no obligation to (notwithstanding any approvals of items eligible for reimbursement), deposit its own funds into the Construction Fund in order to increase, as necessary, the Contingency.

14.3.4 If upon achievement of Final Acceptance, resolution of all Contractor Claims, all claims, Liens and stop notices of Subcontractors and laborers and all claims by third parties, including utility owners, reconciliation of all outstanding eminent domain cases and final determination of the amount owing to the utility owners, funds remain available in the Contingency, then such funds shall be paid in the following priority:

(a) first, to reimburse Contractor for its overhead and direct costs resulting from any unreasonable delay by a utility owner in connection with a Utility Relocation;

(b) second, to reimburse Contractor for its costs related to strikes which are not particular to a Contractor Party or the Project; and

(c) third, to the Department Capital Cost Savings Account to be used in any manner related to the Project that Department directs.

14.3.5 In the event of any dispute involving a Claim against the Contingency in accordance with Article 27, 100% of the amount of such Claim shall be reserved from the Contingency until final resolution thereof.

14.4 Offset; Reduction; Waiver

14.4.1 Department shall have the right to deduct any amount owed by Contractor to Department, Trustee or Association under the express terms of the Contract Documents, including Liquidated Damages and any amounts owing under Sections 11.1.3, 14.2.8.7.4 and 14.6.3 and Article 25, from any amounts owed by Department to Contractor including any progress payments payable under Section 14.2, any payment of one-half of the balance of the Bridge Foundation Account under Section 14.1.3.4, Retainage (including earnings thereon) which may be payable by Department to Contractor pursuant to Section 14.2.6 and any incentive payment payable to Contractor under Section 14.5.

14.4.2 The failure by Department or Trustee to deduct any sums owing by Contractor to Department, Association or Trustee from any amount owing by Department to Contractor shall not constitute a waiver of the right to recover such sums or to deduct such funds from future amounts owing by Department to Contractor. Permitting or requiring Contractor to continue and finish the Work or any part thereof after the Guaranteed Completion Date shall not act as a waiver of Department's or Association's right to receive Liquidated Damages hereunder or any rights or remedies otherwise available to Department.

14.5 Incentive Payment

14.5.1 If Contractor achieves Substantial Completion prior to 42 months after the Financial Closing Date, as such date may be extended under Section 19.3.4 (the "Scheduled Completion Date"), then subject to any restrictions contained in the Indenture, Contractor shall be entitled to receive 70% of the excess, if any, of Toll Revenues earned over Current Expenses incurred during a period which (a) is equal in length to the period between the date of Substantial Completion and the Scheduled Completion Date and (b) begins on the date tolling of traffic on the Project commences.

14.5.2 Within 60 Days after the end of each month during which Department collects Toll Revenues to which Section 14.5.1 is applicable, Department shall deliver to Association an accounting of such Toll Revenues and its Current Expenses, and Association shall deliver to Department, Trustee and Contractor an accounting of such Toll Revenues and the Current Expenses together with a request to Trustee to pay to Contractor from the Revenue Fund the amount, if any, owing according to such accounting, subject, however, to Department's right to offset as set forth in Section 14.4.

14.6 Reimbursable Site Work

Contractor shall be entitled to reimbursement for Reimbursable Site Work as follows:

14.6.1 Before Completion of the Bridge Foundation Work

Before completion of the Bridge Foundation Work, Contractor shall be entitled to reimbursement for 70% of any Reimbursable Site Work from the Contingency, to the extent available, and shall be entitled to reimbursement for the remaining 30% after the Bridge Foundation Work is complete in accordance with Section 14.6.2.

14.6.2 Upon Completion of the Bridge Foundation Work

Upon completion of the Bridge Foundation Work, Contractor shall be entitled to any deferred reimbursement under Section 14.6.1, first from the Bridge Foundation Account, to the extent available, and second from the Contingency, to the extent available. To the extent available, the Bridge Foundation Account will also replenish the Contingency for any amounts paid from the Contingency for Reimbursable Site Work under Section 14.6.1.

14.6.3 After Completion of the Bridge Foundation Work

After completion of the Bridge Foundation Work, Contractor shall be entitled to reimbursement for 100% of any subsequent Reimbursable Site Work as follows:

(a) first one-half of such amount shall be payable from the Bridge Foundation Account, to the extent available, and one-half of such amount shall be charged against any Bridge Foundation Advance (as defined in Section 14.1.3.4), to the extent available (and will be subject to offset against other amounts owing to Contractor under Section 14.4); and

(b) second such amount will be payable from the Contingency, to the extent available.

ARTICLE 15. FORCE MAJEURE

Funds in the Contingency shall be available to compensate Contractor for its additional costs directly attributable to Force Majeure events to the extent provided in Article 19.

ARTICLE 16. QUALITY ASSURANCE AND QUALITY CONTROL

Contractor shall have full responsibility for quality assurance and quality control for the Project, including provision of and compliance with a Quality Assurance and Control Inspection Program meeting all requirements contained in Appendix C attached to the Scope of Work.

ARTICLE 17. TIME FOR COMPLETION; SUBSTANTIAL COMPLETION

17.1 Time of Essence

Time is of the essence of this Contract.

17.2 Guaranteed Completion

17.2.1 Deadlines for Substantial Completion and Final Acceptance

Contractor shall achieve Substantial Completion on or before the date which is 45 months after the Financial Closing Date (which date for Substantial Completion, as it may be extended by Change Order, is referred to herein as the "Guaranteed Completion Date"). Contractor shall achieve Final Acceptance within 90 Days after Substantial Completion, provided that the required date for Final Acceptance shall be extended by one day for each day prior to the Guaranteed Completion Date that Contractor achieves Substantial Completion, up to a maximum of 30 Days (provided that in no event will the required date for Final Acceptance exceed 120 Days after Substantial Completion). Failure to achieve Substantial Completion by the Guaranteed Completion Date or Final Acceptance by the required date for Final Acceptance will result in the application of Liquidated Damages in accordance with Section 25.6.

17.2.2 No Time Extensions

Except as otherwise specifically provided in Article 19, Department shall have no obligation to extend the Guaranteed Completion Date or the Scheduled Completion Date and Contractor shall not be relieved of its obligation to achieve Substantial Completion by the Guaranteed Completion Date and Final Acceptance by the required date for Final Acceptance for any reason.

17.3 Substantial Completion

17.3.1 Contractor shall provide a written notice of anticipated Substantial Completion to Department when all of the following conditions to Substantial Completion have occurred:

(a) Contractor has completed the Project (except for Punch List items, other items included in the requirements for Final Acceptance and final cleanup);

(b) all construction associated with the Project has been performed in accordance with the requirements of the Contract Documents;

(c) the administration building has been certified for occupancy by the State Architect;

(d) the ETTM Facilities have been completed and are fully furnished and in move-in condition;

(e) the ETTM System (i) has been fully installed, including all spare parts, components and equipment and (ii) has passed the field check-out tests and performance tests described in Appendix E attached to the Scope of Work;

(f) the ETTM System and the Project are ready for revenue operation and the personnel who will operate the ETTM System have been properly trained and stand ready to commence operations;

(g) the Project may be operated without damage to the Project or any other property on or off the Site, and without injury to any Person;

(h) all trust arrangements for Escrow Materials have been established in accordance with Section 12.9; and

(i) Contractor shall have obtained all Regulatory Approvals required to open the Project for normal use and operation in accordance with Section 10.2.3.

17.3.2 As promptly as is practicable after receipt of the notice of anticipated Substantial Completion pursuant to Section 17.3.1, Department shall advise Contractor in writing of any of the following of which Department then has knowledge: (a) Defects in the Project, and/or (b) deficiencies in the Project relating to any of the items described in Section 17.3.1(a) through (i), and/or (c) deviations of any installed equipment, materials and workmanship from the requirements of the Contract Documents. Contractor shall, at its own cost and expense, correct such Defects, deficiencies and deviations. "Substantial Completion" will be deemed to have occurred once such corrections have been made and either (i) Department's Chief Engineer has issued a "Certification of Substantial Completion" to Contractor or (ii) each of the following has occurred: (A) Department's Chief Engineer receives a first notice from Contractor certifying that all conditions to Substantial Completion have occurred, stating that Substantial Completion may be deemed to occur if Department takes no further action and referencing this Section 17.3.2; (B) Department's Chief Engineer receives a second notice from Contractor on or after 21 Days after Department's Chief Engineer's receipt of Contractor's first notice of Substantial Completion stating that Substantial Completion will be deemed to occur after 9 Days from the date of the second notice if Department takes no further action and referencing this Section 17.3.2; and (C) Department has not given notice of any Defects, deficiencies or deviations within such period.

ARTICLE 18. ACCEPTANCE OF OVERCROSSINGS AND UNDERCROSSINGS; FINAL ACCEPTANCE

18.1 Acceptance of Overcrossings and Undercrossings

18.1.1 Contractor may request that Department inspect and accept a completed overcrossing or undercrossing subject to timely completion of punchlist work related thereto prior to completion of the rest of the Project. After receipt of such notices that an overcrossing or undercrossing is ready for inspection and acceptance, Department and Contractor shall conduct a joint inspection to confirm that the crossing has been completed in accordance with the approved drawings and specifications. The time for completion of each such inspection will be identified in the CPM/Payment Schedule. Department shall conduct its inspection within one week of receipt of notification from Contractor that an overcrossing or undercrossing is ready for inspection.

18.1.2 If Department finds, upon inspection, that the crossing has been completed in conformity with the Plans and Specifications, it shall issue its written acceptance thereof within five Days of completing the inspection. If a Department inspection reveals that work has not been performed in accordance with the Plans and Specifications, Department shall give Contractor a detailed description of any deficiencies. Contractor shall correct such deficiencies so the work conforms to the standards of this Contract and the corrected work shall be subject to inspection as provided herein.

18.2 Final Acceptance

18.2.1 Promptly after Substantial Completion, Contractor shall perform all Punch List items and all Work, if any, which was waived for purposes of Substantial Completion, and shall satisfy all of its other obligations under the Contract Documents, including ensuring that the Project has been completed and all components have been properly adjusted and tested. Final Acceptance of the Project shall be deemed to have occurred when all of the following have occurred:

(a) all requirements for Substantial Completion shall have been fully satisfied;

(b) Department shall have received all Working Drawings, Shop Drawings, as-built drawings of the Project, manufacturers' data, catalogues, and all maintenance manuals for all equipment throughout the Project, right of way record maps, surveys, test data and other deliverables required under the Contract Documents;

(c) all special tools purchased by Contractor as provided in the Contract Documents shall have been delivered to Department and all replacement spare parts shall have been purchased and delivered to Department free and clear of Liens;

(d) all of Contractor's and Subcontractors' personnel, supplies, equipment, waste materials, rubbish and temporary facilities shall have been removed from the Site;

(e) Contractor shall have delivered to Department satisfactory evidence that there are no outstanding Contractor Claims or claims, Liens or stop notices of any Subcontractor, laborer or third party, including utility owners, with respect to the Work, other than any previously submitted unresolved Contractor Claims and any claims, Liens or stop notices of a Subcontractor, laborer or third party, being contested by Contractor (in which event Contractor shall provide a certification listing all such matters with such detail as is requested by Department and, with respect to all Subcontractor and laborer claims,

Liens and stop notices and claims of third parties, shall include a representation of Contractor that it is diligently and in good faith contesting such matters by appropriate legal proceedings which shall operate to prevent the enforcement or collection of the same). For purposes of such certificate, the term "claim" shall include all matters or facts which may give rise to a claim;

(f) the Punch List items shall have been completed to the satisfaction of Department;

(g) all of Contractor's other obligations under the Contract Documents (other than obligations which by their nature are required to be performed after Final Acceptance) shall have been satisfied in full or waived; and

(h) Department's Chief Engineer shall have delivered to Contractor a "Certification of Final Acceptance." Such certification shall state that the Work has been constructed in accordance with the Plans and Specifications, subject only to the exceptions noted in said certification and set forth in the as-built drawings.

18.2.2 Neither the occurrence of the Final Acceptance Date nor delivery of the Certification of Final Acceptance shall relieve Contractor, any Subcontractor, the Surety or any Guarantor from any continuing obligations under the Contract Documents, including the warranty obligations under Article 11.

18.3 Assignment of Causes of Action

Contractor hereby offers and agrees to assign to Department all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 U.S.C. Sec. 15), arising from purchases of goods, services or materials pursuant to this Contract. This assignment shall be deemed made and shall become effective at the time final payment is tendered to Contractor, without further acknowledgment by the parties.

18.4 Special Provisions Regarding Outstanding Utility and Project Right of Way Issues

Contractor and Department acknowledge and agree that it is likely certain costs relating to Utility Relocations and eminent domain Project Right of Way acquisitions will not be finally established as of the Final Acceptance Date. Department shall have the right to withhold sufficient funds from payments otherwise owing to Contractor from the ROW/Utility Allowance and the Contingency to ensure that said costs will be paid once they have been finally determined.

18.4.1 Contractor shall use all reasonable efforts to obtain final invoices from utility owners prior to the Final Acceptance Date. In the event that any invoices have not yet been received as of such date, Contractor shall provide Department with sufficient information to determine the amount to withhold from the ROW/Utility Allowance and/or Contingency pending receipt of such invoices, and, subject to approval by Department, such amount shall be retained by Trustee as a separate account and shall not be applied as provided in Section 14.1.2.4 and/or Section 14.3.4.

18.4.2 In the event that any eminent domain cases have not been finally reconciled as of the Final Acceptance Date, an amount from the ROW/Utility Allowance and, if necessary, the Contingency deemed sufficient by Department to pay all awards and other amounts arising out of such cases shall be retained by Trustee as a separate account and shall not be applied as provided in Section 14.1.2.4 or Section 14.3.4.

18.4.3 If the ROW/Utility Allowance and Contingency contain insufficient funds to cover anticipated Utility Relocation expenses and anticipated eminent domain costs, the provisions of Sections 14.3.2 and 14.3.3 shall apply.

18.4.4 Department shall request that Trustee release the withheld ROW/Utility Allowance funds and the Contingency funds upon the later to occur of final reconciliation of all eminent domain cases or final determination of the amount owing to the utility owners.

ARTICLE 19. CHANGES IN THE WORK

19.1 Acknowledgment and Waiver; Matters Not Eligible for Change Orders

19.1.1 Acknowledgment and Waiver

This Article 19 sets forth the requirements for obtaining all Change Orders under this Contract. Contractor hereby acknowledges and agrees that the Contract Price constitutes full compensation for performance of all of the Work, subject only to those exceptions specified in this Article 19 and Section 14.1.2.5, and that Department is subject to financing constraints which have resulted in strict limitations on its ability to increase the Contract Price or extend the Guaranteed Completion Date. **Contractor hereby waives the right to make any Contractor Claim for a time extension or for any monetary compensation in addition to the Contract Price and other compensation specified in this Contract for any reason whatever, except as specifically set forth in this Article 19 and Section 14.1.2.5.**

19.1.2 Matters Not Eligible for Change Orders

Matters which are Contractor's exclusive responsibility include the following:

(a) errors, omissions, inconsistencies or other defects in the Construction Documents;

(b) any design changes requested in accordance with this Contract by Department as part of the process of approving the Draft Plans and Specifications for consistency with the requirements of the Contract Documents, including any design changes relating to Project safety (except to the extent that they arise from a change in Laws, Regulations and Ordinances that constitutes a Force Majeure event);

(c) defective or incorrect schedules of Work or changes in the planned sequence of performance of the Work (unless changes in the planned sequence of performance of the Work arise from causes which otherwise give rise to a right to a Change Order);

(d) the action or inaction of Subcontractors (unless arising from causes which otherwise give rise to a right to a Change Order);

(e) correction of nonconforming Work and review and acceptance thereof by Department (including design submittals rejected in accordance with this Contract);

(f) obtaining all Regulatory Approvals (except as provided otherwise in Section 10.3) and compliance with the terms and conditions of all Regulatory Approvals;

(g) failure by Contractor to comply with this Contract;

(h) time extensions for delays not on a Critical Path;

(i) price increases for delays not on a Critical Path (unless arising from causes which otherwise give rise to a right to a Change Order);

(j) delays in issuance of any permit or approval by any entity with jurisdiction over the subject matter of such permit or approval that is required to be obtained by Contractor;

(k) costs covered by proceeds of insurance required hereunder and insurance deductibles, except as provided otherwise with respect to the windstorm deductible under Section 19.4.1.2(d); and

(l) delays or failure in satisfying the conditions precedent to commencement of construction Work (other than Department-Caused Delays).

Contractor hereby assumes responsibility and accepts the allocated, sole risk for all matters described in this Section 19.1.2, and acknowledges and agrees that assumption and acceptance by Contractor of responsibility and allocation for all such risks, costs, expenses and delays, and the consequences and costs and expenses resulting therefrom, is reasonable under the circumstances of this Contract.

19.2 Right to Receive Additional Payment and Extension of Time

19.2.1 Before starting to work on any item which Contractor considers to be outside of the Work required by the Contract Documents, as a condition precedent to its right to receive additional payment therefor or an extension of the Guaranteed Completion Date in connection therewith, one of the following shall have occurred:

(a) Contractor shall have received a Directive Letter from Department stating that it is issued pursuant to Section 19.3.1;

(b) Contractor shall have received a Change Order for such work signed by Department issued pursuant to Section 19.3 or Section 19.4;

(c) a Directed Change directly attributable to delays caused by bad faith actions, active interference, gross negligence or comparable tortious conduct by Department, regardless of whether a Directive Letter is issued, has occurred; or

(d) Contractor shall have requested a Change Order for such work in accordance with this Article 19 that was disputed by Department, to the extent permitted in accordance with the dispute resolution process set forth in Article 27.

19.2.2 In addition, to the extent that Contractor undertakes any work that is not part of the Work without one of the preceding, Department may require Contractor to remove or otherwise undo any such work, at Contractor's sole cost and expense.

19.3 Department Directed Changes and Procedures

Department may, at any time and from time to time, without notice to any Surety, authorize and/or require changes in the Work within the general scope of this Contract pursuant to a Directive Letter or a Change Order.

19.3.1 Directive Letter

19.3.1.1 Department may at any time issue a Directive Letter to Contractor in the event of any desired change in the Work or in the event of any dispute regarding the Work required by the Contract Documents. The Directive Letter will state that it is issued under this Section 19.3.1 and will describe the work in question. Contractor will proceed with the work as and when directed, pending the

execution of a formal Change Order (or, if the letter states that the work is within the Work required by the Contract Documents, Contractor will proceed with the work as directed but shall have the right, pursuant to Section 19.4, to request that Department issue a Change Order with respect thereto). In the event that Department refuses to issue a Change Order based on Contractor's request, Contractor shall nevertheless perform all work as and when specified by Directive Letter, and shall have the right to submit the issue to dispute resolution hereunder.

19.3.1.2 The fact that a Directive Letter was issued by Department in and of itself shall not be considered evidence that in fact a Directed Change occurred, provided that the contents of a Directive Letter may be used as evidence by either party as appropriate.

19.3.2 Notice of Proposed Change/Direction

19.3.2.1 If Department desires to issue a Change Order or a Directive Letter or to evaluate whether to initiate such a change or direction, then Department may, at its discretion, issue a Notice of Proposed Change/Direction. Within 5 Business Days after Contractor's receipt of a Notice of Proposed Change/Direction, Department and Contractor shall arrange an initial consultation (at no charge to Department) to define the proposed scope of work. Within 5 Business Days following the initial consultation, Department and Contractor shall consult concerning the estimated cost and time impacts and the availability of the Contingency with respect thereto. Contractor shall provide to Department such data regarding the estimated cost and time impacts prepared by Contractor if requested by Department.

19.3.2.2 Within a reasonable time following the initial consultation and provision of data as described in Section 19.3.2.1, Department shall notify Contractor whether Department (a) wishes to issue a Change Order or Directive Letter, or (b) no longer wishes to issue a Change Order or Directive Letter.

19.3.2.3 If Department wishes to issue a Change Order or Directive Letter, Contractor shall, within a reasonable time after receipt of the notification described in Section 19.3.2.2, prepare and submit to Department the scope, price and schedule impact, if any, of the requested change or direction, incorporating and fully reflecting all requests made by Department. The cost of developing the requested data shall be included in the Change Order as reimbursable items and will be reimbursed regardless of whether such Change Order is ever finalized or performed. Contractor represents and warrants that such data will (a) personally be examined prior to delivery by an authorized officer of Contractor, (b) clearly detail how the total price and individual components of that price were determined, and (c) include all assumptions, detailed quantity takeoffs, rates of production and progress calculations, cost estimates and quotes from Subcontractors and suppliers used by Contractor to arrive at the price.

19.3.2.4 In the event that the parties agree that a change in the requirements relating to the Work has occurred but disagree as to whether the change justifies additional compensation or time or disagree as to the amount of any increase to be made to the Contract Price or extension of the Guaranteed Completion Date to be made, Department may, in its sole discretion, order Contractor to proceed with the performance of the Work in question notwithstanding such disagreement, by issuing a Directive Letter under Section 19.3.1.

19.3.2.5 Whenever Department issues a Change Order or Directive Letter respecting a Safety Directed Change, Department shall cause Department's Chief Engineer to state in the Change Order or Directive Letter that the same constitutes a Safety Directed Change. In the absence of such statement, a Directed Change shall be deemed to be a Discretionary Directed Change.

19.3.3 Payment for Directed Changes

19.3.3.1 Safety Directed Changes shall be paid from the Contingency, to the extent available.

19.3.3.2 Department shall be obligated to pay Contractor's cost of Discretionary Directed Changes from Department's own funds, based on requisitions for payment prepared and approved pursuant to Section 14.2.2, except to the extent provided in Section 9.2(a) of the Comprehensive Agreement.

19.3.3.3 In addition to costs of Discretionary Directed Changes owing to Contractor, Department shall owe to Association, and pay directly to Trustee on behalf of Association, the accrued, unpaid amounts which will be owing on the Senior Bonds and First Tier Subordinate Bonds for a period, beginning when Project revenue operations commence, equal in length to the period, if any, that the Guaranteed Completion Date is extended by the Discretionary Directed Changes; provided, however, that Department shall not be obligated to pay any such costs for Discretionary Directed Changes that extend the Guaranteed Completion Date up to the lesser of (a) two months cumulatively or (b) the remaining time, if any, between the Guaranteed Completion Date (as may be previously extended) and 49 months after the Financial Closing Date.

19.3.4 Extension of Scheduled Completion Date

If the Guaranteed Completion Date is extended as a result of a Discretionary Directed Change, the Scheduled Completion Date shall also be extended, if appropriate, up to the lesser of (a) the amount that the Guaranteed Completion Date is extended or (b) the remaining time, if any, between the Scheduled Completion Date (as may be previously extended) and 49 months after the Financial Closing Date.

19.4 Eligible Contractor-Initiated Change Orders and Procedures

19.4.1 Eligible Changes

19.4.1.1 Contractor may request a Change Order to extend the Guaranteed Completion Date only for the following excusable delays changing the duration of a Critical Path so as to delay Substantial Completion beyond the Guaranteed Completion Date:

(a) Department-Caused Delays;

(b) delays which are proximately attributable to Force Majeure events; and

(c) delays which are directly attributable to any Differing Site Condition which causes an increase in the cost of performing the Work of more than $1,000,000.

19.4.1.2 Contractor may request a Change Order to increase the Contract Price, subject to strict compliance with the requirements of this Section 19.4 and subject to certain limitations as specified in Section 19.5, and with respect to subsections (c), (d) and (e) below, subject to Section 14.3, only for increased costs directly attributable to:

(a) Work in response to a Notice of Proposed Change/Direction;

(b) Work resulting from Directed Changes for which Department has submitted a Directive Letter;

(c) Department-Caused Delays (excluding any delays from Directed Changes, which shall be reimbursable as part of the Change Orders for such Directed Changes);

(d) Force Majeure events (excluding insurance deductibles (provided that if Contractor's windstorm insurance deductible is higher than Contractor's other property insurance deductibles, Contractor's windstorm insurance deductible will be excluded only up to the amount of Contractor's other property insurance deductible amounts) and provided that in the event of (i) strikes which are not particular to a Contractor Party or the Project and (ii) Contractor's internal costs and Subcontractor costs (not including utility owner direct costs) arising from unreasonable delay by a utility owner in connection with a Utility Relocation, a price increase shall only be available to the extent that funds remain in the Contingency at Final Acceptance as set forth in Section 14.3.4); and

(e) certain Differing Site Conditions, in accordance with the following:

i. if as a result of the Differing Site Condition, the cost of performing the Work increases by $1,000,000 or less, Contractor shall absorb all such cost and receive no additional compensation;

ii. if as a result of the Differing Site Condition, the cost of performing the Work increases by more than $1,000,000, Contractor shall absorb 50% of the total cost increase up to a maximum of $1,000,000 to be absorbed by Contractor, and, subject to the reimbursement limitations set forth in Section 14.6, Contractor shall be entitled to recover any balance (referred to herein as "Reimbursable Site Work") under this Section 19.4.1.2;

iii. if two or more Differing Site Conditions affect the same location, then each Differing Site Condition shall individually be subject to the thresholds set forth in subsections (i) and (ii) above;[1] and

iv. Contractor acknowledges and agrees that 30% of any entitled reimbursement for Reimbursable Site Work shall be delayed until the Bridge Foundation Work is completed.

19.4.2 Procedures

Contractor must follow the procedure set forth in this Section 19.4.2.

1/ For example, if one location is affected by a geologic fault which is a Differing Site Condition that increases the cost of performing the Work by $800,000 and a rock formation which is a Differing Site Condition that increases the cost of performing the Work by $700,000, neither Differing Site Condition would result in any Reimbursable Site Work and Contractor shall absorb all such additional costs.

19.4.2.1 RFC Notice

Contractor shall deliver to Department written notice (an "RFC Notice") stating that an event or situation has occurred within the scope of Section 19.4.1.1 or 19.4.1.2 which Contractor believes is eligible for a Change Order. The first notice shall be labeled "RFC No. 1" and subsequent notices shall be numbered sequentially.

19.4.2.1.1 Each RFC Notice shall be delivered as promptly as possible after the occurrence of such event or situation. In the event that any RFC Notice is delivered later than ten Days after Contractor first discovered (or should have discovered in the exercise of reasonable prudence) the occurrence described therein, Contractor shall be deemed to have waived the right to collect any and all costs incurred during the period after ten Days after Contractor first discovered (or should have discovered in the exercise of reasonable prudence) the occurrence described in the RFC Notice and prior to the date of delivery of the written notice, and shall be deemed to have waived the right to seek an extension of the Guaranteed Completion Date with respect to any delay in any Critical Path which accrued during such period. Furthermore, in the event that any RFC Notice concerns any condition or material described in Section 5.1.5, Contractor shall be deemed to have waived the right to collect any and all costs incurred in connection therewith to the extent that Department is not afforded the opportunity to inspect such material or condition before it is disturbed. Contractor's failure to provide an RFC Notice within 30 Days after Contractor first discovered (or should have discovered in the exercise of reasonable prudence) the occurrence of a given event or situation shall preclude Contractor from any relief, unless Contractor can show that (a) Department was not materially prejudiced by the lack of notice, or (b) Department's designated representative specified in Section 24.1 had actual knowledge, prior to the expiration of the 30-Day period, of the event or situation and that Contractor believed it was entitled to a Change Order with respect thereto.

19.4.2.1.2 The RFC Notice shall: (a) state the facts underlying the Request for Change Order, the reasons why Contractor believes additional compensation or time will or may be due and the date of occurrence, (b) state the name, title, and activity of each Department representative knowledgeable of the facts underlying the Request for Change Order, (c) identify any documents and the substance of any oral communication involved in the facts underlying the Request for Change Order, (d) state the basis for a claim of necessary accelerated schedule performance, if applicable, (e) state the basis for a claim that the work is not required by this Contract, if applicable, (f) identify particular elements of Contract performance for which additional compensation may be sought under this Article 19 and (g) identify any potential Critical Path impacts.

19.4.2.1.3 The written notification described in Section 5.1.5.1 may also serve as a RFC Notice provided it meets the requirements for RFC Notices.

19.4.2.1.4 Within 30 Days after receipt of a RFC Notice, Department will respond in writing to Contractor to: (a) confirm that a change has occurred; (b) deny that a change has occurred; or (c) advise Contractor that the necessary information has not been submitted to decide which of the above alternatives applies, and indicate the needed information for further review.

19.4.2.1.5 Any adjustments made to this Contract shall not include increased costs or time extensions for delay resulting from Contractor's failure to timely provide requested additional information under this Section 19.4.2.1.

19.4.2.2 Delivery of Request for Change Order

Contractor shall deliver all Requests for Change Orders under this Section 19.4 to Department within 30 Days after delivery of the RFC Notice, or such longer period of time as may be allowed in writing by Department. Department may require design and construction costs to be covered by separate Requests for Change Order. If Contractor fails to deliver a Request for Change Order within the appropriate time period, Contractor shall be required to provide a new RFC Notice before it may submit a Request for Change Order.

19.4.2.2.1 Information Regarding Effect of Change

Each Request for Change Order shall include as attachments a detailed cost estimate relating thereto setting forth all consequences of the event, situation or proposed change giving rise to the proposed Change Order, and including (a) if Contractor claims that such event, situation or change requires a modification to the Work, the proposed modification of the Contract Price and payment allocations set forth in the CPM/Payment Schedule (if any) occasioned by such change and all facts justifying such modification in a format acceptable to Department, and (b) if Contractor claims that such event, situation or change affects a Critical Path, an impacted delay analysis indicating all activities represented or affected by the change, with activity numbers, durations, predecessor and successor activities, resources and cost, with a narrative report, in form satisfactory to Department, which compares the proposed new schedule to the current approved schedule.

19.4.2.2.2 Justification

Each Request for Change Order initiated by Contractor hereunder shall include an attachment containing a detailed narrative justification therefor, describing the circumstances underlying the proposed change, identifying the specific provision(s) of Article 19 which permit a Change Order to be issued, and describing the data and documents (including all data and reports required under Section 19.7.1.1) which establish the necessity and amount of such proposed change.

19.4.2.2.3 Contractor Representation

Each Request for Change Order shall contain a written representation by Contractor that the amount of time and/or compensation set forth therein includes all known and anticipated impacts or amounts, direct, indirect and consequential, which may be incurred as a result of the event or matter giving rise to such proposed change.

19.4.2.2.4 Cost Proposal

Each Request for Change Order shall include a detailed cost proposal identifying all categories of costs, supported by documentation satisfactory to Department (a) showing all impacts on the Contract from Work additions, deletions and modifications shown in the Change Order being priced and (b) setting out the proposed costs in such a way that a fair evaluation can be made. Contractor shall submit a detailed estimate of the cost of the change to Department. This estimate must include a breakdown for labor, materials, equipment, overhead (which includes all indirect costs), contingencies and profit. If the work is to be performed by Subcontractors and if the work is sufficiently defined to obtain Subcontractor quotes, Contractor shall obtain quotes (with breakdowns showing cost of labor, materials, equipment, overhead and profit) on the Subcontractor's stationery and shall include such quotes as back-up for Contractor's estimate. Contractor represents and warrants that the cost proposal will (a) personally be examined prior to delivery by an authorized officer of Contractor, (b) clearly detail

how the total price and individual components of that price were determined, and (c) include all assumptions, detailed quantity takeoffs, rates of production and progress calculations, cost estimates, and quotes from Subcontractors and suppliers used by Contractor to arrive at the price.

19.4.2.2.5 Structural or Capacity Reductions as a Result of a Discretionary Directed Change

Requests for Change Order proposing structural or capacity reductions as a result of a Discretionary Directed Change, but no other Requests for Change Order, may consider the effect on Contractor's ability to comply with its Warranties.

19.4.2.3 Incomplete Requests for Change Orders

19.4.2.3.1 If any requirements set forth in Section 19.4.2.2 cannot be met due to the nature of the occurrence, Contractor shall provide an incomplete Request for Change Order which fills in all information capable of being ascertained and which (a) includes a list of those Change Order requirements which are not fulfilled together with an explanation reasonably satisfactory to Department stating why such requirements cannot be met, (b) provides such information regarding projected impact on the Critical Path as is reasonably available, and (c) in all events includes sufficient detail to ascertain the basis for the proposed Change Order and for any ascertainable amounts with respect thereto.

19.4.2.3.2 Contractor shall furnish, when requested by Department, such further information and details as may be required to determine the facts or contentions involved. Contractor agrees that it shall give Department access to any and all of Contractor's books, records and other materials relating to the Work, and shall cause its Subcontractors to do the same, so that Department can investigate the basis for such proposed Change Order. Contractor shall provide Department with an update to each outstanding incomplete Request for Change Order if any change in the data (either singularly or cumulatively) causes a price or schedule change by more than 10% of such Request for Change Order, describing the status of all previously unfulfilled requirements and stating any changes in projections previously delivered to Department, excess time expenditures to date and excess time anticipated for completion of the activities for which the time extension is claimed. Department may reject the Request for Change Order at any point in the process. Once a complete Request for Change Order is provided, Department's failure to respond thereto within 21 Days of delivery of the request shall be deemed a rejection of such request. Although Department intends for Department to review incomplete Requests for Change Order for the purposes described in Section 19.4.2.4, Department shall have no obligation to review the back-up associated with any Request for Change Order until a complete Request for Change Order is provided.

19.4.2.4 Importance of Timely Response

Contractor acknowledges and agrees that, due to the limited availability of funds for the Project, timely delivery of notification of such events and situations and Requests for Change Order and updates thereto are of vital importance to Department. Department is relying on Contractor to evaluate promptly, upon the occurrence of any event or situation, whether the event or situation will affect the CPM/Payment Schedule and, if so, whether Contractor believes a time extension and/or claim on the Contingency is required hereunder. If an event or situation occurs which may affect the Contract Price or the Guaranteed Completion Date, Department will evaluate the situation and determine whether it wishes to make any changes to the definition of the Project so as to bring it within Department's funding and time restraints. The following matters (among others) shall be considered in determining whether Department has been prejudiced by Contractor's failure to provide notice in a timely fashion: the effect

of the delay on alternatives available to Department (that is, a comparison of alternatives which are available at the time notice was actually given and alternatives which would have been available had notice been given within ten Days after occurrence of the event or when such occurrence should have been discovered in the exercise of reasonable prudence) and the impact of the delay on Department's ability to obtain and review objective information contemporaneously with the event.

19.4.2.5 Review of Subcontractor Claims

Prior to submission by Contractor of any Request for Change Order which is based in whole or in part on any facts alleged in a submittal by any Subcontractor to Contractor, Contractor shall have reviewed all such Subcontractor claims and determined in good faith whether the claims are justified as to both entitlement and amount, and Contractor's Request for Change Order shall include only those items which Contractor has determined are so justified and which otherwise meet all requirements hereunder for Contractor-initiated Change Orders. Each Request for Change Order involving Subcontractor Work, and each update to an incomplete Change Order request involving such Work shall include a summary of Contractor's analysis of all Subcontractor claims components and shall include a certification signed by Contractor's Project Manager stating that Contractor has reviewed and approved any audit data included in the request. Any Request for Change Order involving Subcontractor Work which is not accompanied by such an analysis and certification shall be considered incomplete.

19.5 Pricing

19.5.1 Limitations

19.5.1.1 Limitation on Contract Price Increases

Any increase in the Contract Price allowed hereunder shall exclude: (a) costs caused by the breach of contract or fault or negligence, or act or failure to act of Contractor, its employees, agents, officers or Subcontractors or any other Persons for whom Contractor may be contractually or legally responsible; (b) costs which could reasonably be avoided by Contractor, including by resequencing, reallocating or redeploying its forces to other portions of the Work (including any additional costs reasonably incurred in connection with such reallocation or redeployment); and (c) costs for remediation of any nonconforming Work.

19.5.1.2 Limitation on Delay Costs

Any increase in the Contract Price due to delays eligible for Change Orders under Section 19.4.1.2 shall be limited to overhead costs arising from such delays and direct costs resulting from such delays, provided that if the delay does not impact a Critical Path activity, the increase in the Contract Price due to such delay shall be limited to the actual costs of the affected workers and equipment that cannot be mitigated. Before Contractor may obtain any increase in the Contract Price to compensate for additional or extended overhead or direct costs resulting from delay, Contractor shall be required to demonstrate to Department's satisfaction that (a) the change in the Work or other event or situation which is the subject of the Request for Change Order has caused or will result in an identifiable and measurable disruption of the Work, (b) the delay or cost was not due to any breach of contract or fault or negligence, or act or failure to act of Contractor, its employees, agents, officers or Subcontractors or any other Persons for whom Contractor may be contractually or legally responsible, and could not reasonably have been avoided by Contractor, including by resequencing, reallocating or redeploying its forces to other portions of the Work (including any additional costs reasonably incurred in connection with such reallocation or redeployment), (c) the delay for which compensation is sought is not

concurrently caused by a matter or circumstance for which Contractor is responsible and (d) Contractor has suffered or will suffer actual overhead and direct costs due to such delay, each of which overhead and direct costs shall be documented in a manner satisfactory to Department.

19.5.2 Pricing Methodologies

Department and Contractor (on its own behalf and on behalf of its Subcontractors) shall endeavor to negotiate a reasonable cost for each Change Order. If the parties agree that Contractor is entitled to additional compensation or additional time for the work which is the subject of a Change Order, but cannot agree as to the amount, then unless, given the nature of such change, Department and Contractor agree that a time and materials approach is not practicable, Contractor shall be entitled to receive payment as provided in Sections 19.5.2.1, 19.5.2.2 and 19.5.2.3, subject to Department's right to not issue a Change Order or to refuse to pay incurred costs which Department deems unreasonable. If the parties agree that a time and materials approach is not practicable, Department shall reduce the amount of the price increase or time extension as Department deems appropriate and Department shall execute and deliver a Change Order reflecting such reductions to Contractor, within a reasonable period after receipt of a request by Contractor to do so.

19.5.2.1 Subject to Sections 19.5.2.2 and 19.5.2.3, compensation for time and material Change Orders shall be limited to such of the following direct costs, whether incurred by Contractor or a first-tier construction Subcontractor, which are actually and reasonably incurred as a direct and sole result of the event or matter giving rise to the change and no others:

(a) the cost of labor, including social security, old age survivors and disability insurance, unemployment insurance, fringe benefits required by agreement or custom and workers' compensation insurance;

(b) the cost of materials, supplies and equipment, including the cost of transportation, taxes and duties, whether incorporated in the Project or consumed;

(c) rental or depreciation costs of plant, buildings, machinery, equipment and hand tools, whether Contractor owned or rented from others;

(d) permit fees and sales and use or similar taxes related to such changes; and

(e) costs directly attributable to the charges of consultants or lower tier Subcontractors directly attributable to performance of the change.

19.5.2.2 Direct costs allowable under Section 19.5.2.1 shall either be marked-up by 15% for overhead and profit in the event of non-subcontracted Work, or shall be marked up by 22.5% for cumulative overhead and profit of Contractor and Subcontractors in the event of subcontracted Work.

19.5.2.3 The following items are included in the Change Order mark-up for overhead and profit:

(a) Salary and expenses of executive officers, supervising officers or supervising employees and technical or engineering employees;

(b) Contractor's Project Manager;

(c) Clerical or stenographic employees;

(d) Drafting room accessories such as paper, tracing cloth, blue printing, etc.;

(e) Any and all field and home office overhead and operating expenses whatsoever;

(f) Subsistence and travel expenses for all personnel;

(g) All bond and insurance premiums;

(h) Attorneys' fees and costs;

(i) All other indirect costs;

(j) Costs of furnishing the reports described in Section 19.7; and

(k) Profit.

19.6 Limitation on Time Extensions

Any extension of the Guaranteed Completion Date allowed hereunder shall exclude any delay to the extent that it (a) was due to the fault or negligence, or act or failure to act of Contractor, its employees, agents, officers or Subcontractors or any other Persons for whom Contractor may be contractually or legally responsible, or (b) could reasonably have been avoided by Contractor, including by resequencing, reallocating or redeploying its forces to other portions of the Work. Contractor shall be required to demonstrate to Department's satisfaction that the change in the Work or other event or situation which is the subject of the Request for Change Order seeking a change in the Guaranteed Completion Date has caused or will result in an identifiable and measurable disruption of the Work so as to delay completion thereof and change the duration of a Critical Path which was not due to any such fault or negligence and could not reasonably have been avoided by Contractor, including by resequencing, reallocating or redeploying its forces to other portions of the Work.

19.7 Change Order Records

Contractor shall maintain its records in such a manner as to provide a clear distinction between the direct costs of Work for which it is entitled (or for which it believes it is entitled) to an increase in the Contract Price and the costs of other operations. Contractor shall contemporaneously collect, record in writing, segregate and preserve (a) all data necessary to determine the costs of all Work which is the subject of a Change Order or a requested Change Order, but specifically excluding negotiated and issued Change Orders, and (b) all data necessary to show the actual impact (if any) of the change on each Critical Path activity with respect to all Work which is the subject of a Change Order or a proposed Change Order, if the impact on the CPM/Payment Schedule is in dispute. Such data shall be provided to Department and any authorized representative of such Persons reviewing any Contractor Claim or dispute regarding compensation for such Work as provided in Section 12.1.

19.7.1 Daily Work Reports and Data Collection

19.7.1.1 Contractor shall collect and preserve concurrent time and materials data and records in written form for (a) all time and materials Work and (b) all Work performed which Contractor

believes constitutes extra work, pending issuance of a Change Order or resolution of any dispute in accordance with Article 27. At reasonable times as requested by Department, Contractor shall provide Department with a copy of each such item; provided, however, that the provision of such information shall not constitute a RFC Notice under Section 19.4.2.1.

19.7.1.2 From the records and data described in Section 19.7.1.1, Contractor shall furnish Department completed daily work reports for each day's Work to which Section 19.7.1.1 applies. The daily time and material Work reports shall be detailed as follows:

(a) Name, classification, date, daily hours, total hours, rate, and extension for each worker (including both construction and non-construction personnel) for whom direct reimbursement is requested.

(b) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(c) Quantities of materials, prices, and extensions.

(d) Transportation of materials.

(e) For construction labor, the cost of property damage, liability, and worker's compensation insurance premiums, unemployment insurance contributions, bonds, and social security tax.

Monthly, and at any time upon request by Trustee or Association, the reports shall also state the total costs to date for the time and materials Work.

19.7.2 Supplier's Invoices

Material charges shall be substantiated by valid copies of Supplier's invoices. Such invoices shall be submitted with the daily time and material Work reports, or if not available, they shall be submitted with subsequent daily time and material Work reports.

19.7.3 Execution of Reports

All time and materials reports shall be signed by Contractor's Project Manager.

19.8 Disputes

The failure of Department and Contractor to agree to any Change Order under this Article 19 (including agreement as to the amount of compensation allowed under Section 19.5.2 and any disputed amount of the increase in the Contract Price or extension of the Guaranteed Completion Date in connection with a Change Order) shall be a dispute to be resolved in accordance with Article 27. Except as otherwise specified in the Change Order, execution of a Change Order by both parties shall be deemed accord and satisfaction of all claims of any nature arising from or relating to the Work covered by the Change Order. If the courts of the State determine that Contractor is entitled to be paid for any work which is the subject of a dispute, the Contractor Claim and the award of the court shall be limited to the actual incremental costs incurred by Contractor with respect to the disputed matter (crediting Department for any corresponding reduction in Contractor's other costs).

ARTICLE 20. SUSPENSION OF ALL OR PART OF WORK

20.1 Suspension for Convenience

Department may order Contractor in writing to suspend, delay, or interrupt all or any part of the Work for a period of time not to exceed 24 hours, as Department may determine to be appropriate for the convenience of Department. Any suspension for convenience in excess of 24 hours shall require Department's signature and will be considered a Directed Change.

20.2 Suspension under Section 25.4

Contractor shall have the right to suspend the Work as the result of any failure or refusal by Trustee to provide funds in accordance with the Indenture as provided in Section 25.4.1; and Contractor and Department shall each have the right to suspend its obligations under this Contract as the result of the unavailability of funds under the Indenture as provided in Sections 25.4.2 and 25.4.3.

20.3 Suspension for Other Reasons

20.3.1 Department has the authority to suspend the Work wholly or in part, for such period as Department deems necessary because of the failure on the part of Contractor to carry out orders given, or to perform any requirements of the Contract Documents. Contractor shall promptly comply with the written order of Department to suspend the Work wholly or in part. The suspended Work shall be resumed when appropriate corrective action has been taken.

20.3.2 Contractor shall not be entitled to any increase in the Contract Price or extension of the Guaranteed Completion Date in connection with any suspension under this Section 20.3, including for the work described in Section 20.4.

20.4 Project Safety

In the event of a suspension of Work under this Article 20, Contractor shall undertake all work necessary to ensure Project safety, including providing a safe, smooth, and unobstructed passageway through the construction area for use by public traffic during the period of such suspension.

ARTICLE 21. INDEMNITY; HAZARDOUS SUBSTANCE LIABILITY; INDEMNIFICATION PROCEDURES

21.1 Indemnifications by Contractor

(a) Except as otherwise expressly provided in subsection (b) below, Contractor shall indemnify, protect, defend, hold harmless and release each State Indemnitee and Association Indemnitee from and against any and all third party Claims arising out of the following:

(i) any error, act or omission of any Contractor Party, provided that the indemnity under this subsection (a)(i) concerning Claims not related to Project Right of Way acquisition, Utility Relocations, procurement and documentation shall be limited to such Claims arising out of death, bodily injury or property damage suffered by third parties;

(ii) any violation by any Contractor Party of Laws, Regulations and Ordinances in connection with or relating to the Project or the Work;

(iii) any mechanic's, materialman's or design professional's lien on Department's right, title and interest in and to any Project Right of Way or other property arising out of the actual or alleged furnishing of labor, materials or services to or for the Project or any portion thereof by or on behalf of or at the request of any Contractor Party and due to Contractor's failure or alleged failure to pay to others any amount due or alleged to be due, provided that there has been no default in payment to Contractor under this Contract;

(iv) any failure of any Contractor Party to pay any sales, use or other taxes due or alleged to be due in connection with the Work or the purchase, supply or use of any materials, services or equipment;

(v) any Hazardous Substances originally introduced to or brought onto any Project Right of Way or other Department property by any Contractor Party;

(vi) the presence, spreading, migration, release, remediation, storing, transportation or disposal of Pre-Existing Hazardous Substances not discovered during site acquisition work due to failure of any Contractor Party to conduct investigations according to the procedures and provisions required by this Contract;

(vii) failure of any Contractor Party to handle, store, transport, monitor, remediate or dispose of, in compliance with Laws, Regulations and Ordinances in effect at the time of the activity in question, Pre-Existing Hazardous Substances which are or become known or apparent to any Contractor Party through site investigation or during the course of construction;

(viii) exacerbation, due to the negligence, recklessness or willful misconduct of any Contractor Party, of the release, spreading, migration or toxicity of Hazardous Substances which are or become known or apparent to or reasonably suspected by any Contractor Party through site investigation or during the course of construction;

(ix) infringement by any Contractor Party (excluding third party equipment and software vendors) of any actually or allegedly patented, copyrighted, trademarked, service-marked or other proprietary materials, equipment, devices or processes, including Intellectual Property and

including infringement by State due to Contractor's failure to obtain any ownership or license required to be obtained pursuant to Section 12.7; and

(x) fraud or intentional misrepresentation by any Contractor Party.

(b) Contractor's indemnities exclude the portion of liability on a Claim that is attributable (i) to the culpability of a State Indemnitee or an Association Indemnitee or (ii) to a deficiency in a Department design or construction standard which either (A) is unknown to Contractor or (B) although known to Contractor, is communicated in writing to Department and not waived by Department. If the culpability of a State Indemnitee or an Association Indemnitee or such deficiency in a Department design or construction standard has contributed to a loss, Contractor shall not be obligated to indemnify State Indemnitees and Association Indemnitees for the proportionate share of such Claim caused thereby.

(c) For purposes of this Section 21.1, a "third party" means any person or entity other than a State Indemnitee or an Association Indemnitee, except that a third party includes (i) any State employee, agent and contractor or his or her heir or representative who asserts a Claim arising out of death, bodily injury or property damage against a State Indemnitee or an Association Indemnitee and which is not covered by State's worker's compensation program, and (ii) any State department or agency other than Department which in the exercise of its authority imposes upon Department Hazardous Substance remediation requirements or costs which are within the scope of an indemnity set forth in this Section 21.1.

21.2 No Indemnity Regarding Pre-Existing Hazardous Substances

Except to the extent provided in Sections 21.1(a)(vi), (vii), and (viii), the parties agree that neither shall have any obligation to indemnify the other or any third-party beneficiary or assignee with respect to any Claim relating to Pre-Existing Hazardous Substances.

21.3 Defense and Indemnification Procedures

(a) If Department receives notice of or otherwise has actual knowledge of a Claim which it believes is within the scope of Contractor's indemnification under Section 21.1, it shall by writing as soon as practicable (i) inform Contractor of such Claim; (ii) send to Contractor a copy of all written materials Department has received asserting such Claim and (iii) notify Contractor that either (A) the defense of such Claim is being tendered to Contractor or (B) Department has elected to conduct its own defense for a reason set forth in subsection (e) below.

(b) If the insurer under any applicable insurance policy accepts tender of defense, Contractor and Department shall cooperate in the defense as required by the insurance policy. If no defense is provided by insurers under potentially applicable insurance policies, then subsections (c), (d), (e) and (f) below shall apply.

(c) If the defense is tendered to Contractor, it shall within 45 Days of said tender deliver to Department a written notice stating that Contractor (i) accepts the tender of defense and confirms that the Claim is subject to full indemnification hereunder without any "reservation of rights" to deny or disclaim full indemnification thereafter, (ii) accepts the tender of defense but with a "reservation of rights" in whole or in part or (iii) rejects the tender of defense if it reasonably determines it is not required to indemnify against the Claim under Section 21.1. If such notice is not delivered within such 45 Days, the tender of defense shall be deemed rejected.

(d) If Contractor gives notice under subsection (c)(i) above, Contractor shall have the right to select legal counsel for the State Indemnitees and Association Indemnitees, subject to reasonable approval of the State Attorney General, and Contractor shall otherwise control the defense of such Claim, including settlement, and bear the fees and costs of defending and settling such Claim. During such defense: (A) Contractor shall at Contractor's expense, fully and regularly inform Department of the progress of the defense and of any settlement discussions; and (B) Department shall, at Contractor's expense for all of Department's third party expenses, fully cooperate in said defense, provide to Contractor all materials and access to personnel it requests as necessary for defense, preparation and trial and which or who are under the control of or reasonably available to Department and maintain the confidentiality of all communications between it and Contractor concerning such defense.

(e) Department shall be entitled to select its own legal counsel and otherwise control the defense of such Claim if: (i) the defense is tendered to Contractor and it refuses the tender of defense, or fails to accept such tender within 45 Days, or reserves any right to deny or disclaim such full indemnification thereafter; or (ii) Department, at the time it gives notice of the Claim or at any time thereafter, reasonably determines that (A) a conflict exists between it and the Contractor which prevents or potentially prevents Contractor from presenting a full and effective defense or (B) Contractor is otherwise not providing an effective defense in connection with the Claim and Contractor lacks the financial capacity to satisfy potential liability or to provide an effective defense. Department may assume its own defense pursuant to subsection (e)(ii) above by delivering to Contractor written notice of such election and the reasons therefor. A refusal of, or failure to accept, a tender of defense may be treated by Department as a Claim against Contractor subject to resolution pursuant to Article 27.

(f) If Department is entitled and elects to conduct its own defense pursuant hereto, all reasonable costs and expenses it incurs in investigating and defending and Claim for which it is entitled to indemnification hereunder shall be reimbursed by Contractor on a current basis. In the event Department is entitled to and elects to conduct its own defense, then it shall have the right to settle or compromise the Claim with the Contractor's prior written consent, which shall not be unreasonably withheld or delayed, or with approval of the court, and with the full benefit of the Contractor's indemnity.

ARTICLE 22. INSURANCE AND BONDING

22.1 General and Auto Liability Insurance

22.1.1 Contractor shall obtain and keep in force a policy or policies of commercial general liability insurance (form number CG00 01 11 88 ISC 1988, 1991 or successor form specifically and exclusively for the Project and Project Right of Way), including premises/operations and products/completed operations. Such insurance policy shall contain coverage for bodily injury, broad form property damage, personal injury, blanket contractual liability either by its original form or by endorsement, and liability insurance either by its original form or by endorsement, providing coverage for claims related to the Project or Project Right of Way and related construction and staging areas.

22.1.2 Such insurance policy shall provide coverage of $25 million combined single limit of liability for bodily injury, property damage and personal injury per occurrence, with a general aggregate limit of $25 million per policy period. The amount of the deductible applicable to Contractor shall be subject to Department's reasonable approval. Contractor may obtain the required coverages through a combination of primary and excess insurance policies.

22.1.3 Contractor shall obtain a policy of insurance specifically and exclusively for the Project and Project Right of Way providing liability coverage for claims of bodily injury and property damage arising from the use of motor vehicles by or on behalf of Contractor. Such insurance policy shall provide coverage of $5 million combined single limit of liability for bodily injury and property damage per accident.

22.2 Professional Liability Insurance

Contractor shall cause to be procured by each entity rendering design for the Project, and shall keep or cause to be kept in force, a policy for professional liability or errors and omissions coverage including coverage for the James River bridges. Such insurance shall be claims made insurance and shall have a limit of $5 million for each claim plus $20 million specifically and exclusively for each claim respecting the James River bridges, with a general aggregate limit of $5 million and $20 million, respectively, including defense costs, for negligent acts, errors, or omissions in performing design. The limit of liability shall be maintained at all times until three years after the work is completed by the insured respecting the Project. The insurance shall include a deductible not greater than $150,000 for each claim, for which Contractor shall be responsible. The other terms, conditions and exclusions of the policy shall be subject to Department approval.

22.3 Property Insurance

22.3.1 The requirements respecting property insurance during the course of construction are as follows:

(a) Prior to commencement of construction in any Construction Segment and thereafter throughout the course of any such construction or any substantial repair, alteration, reconstruction, restoration or replacement in such Construction Segment, Contractor shall obtain and keep in force All-Risks Builder's Risk Insurance coverage for the Project in such Construction Segment. Such policy of insurance shall provide coverage for all risk of physical injury or loss to the modifications, alterations or improvements which are in the course of, directly affected by or part of

construction, excluding road beds and surfaces unless located on a bridge or ramp or on or in another structure.

(b) Limits of coverage shall be the full replacement value of the James River bridges including demolition.

22.3.2 Contractor, the State and Department shall be entitled to loss recovery as their respective interests may appear, but subordinated to any loss payee rights of Trustee under the Indenture. Each policy shall not require a loss deductible of more than 1% of the covered values at risk at the time of the loss for all perils.

22.3.3 Contractor shall include Department as a named insured, under an endorsement form Department approves in writing, in any policy of insurance Trustee requires to protect against casualty loss to the Project not otherwise required to be insured under Section 22.3.1.

22.4 Worker's Compensation Insurance

22.4.1 At all times required by law Contractor shall procure and maintain in full force and effect insurance coverage for all employees suffering bodily injury (including death) by accident or disease, which arises out of or in connection with the performance of this Contract. Satisfaction of these requirements shall include:

(a) full participation in any required governmental occupational injury and/or disease insurance program, to the extent participation in such program is mandatory in any jurisdiction;

(b) purchase of workers' compensation and occupational disease insurance providing benefits to employees in full compliance with all applicable Laws, Ordinance and Regulations, but only to the extent such coverage is not provided under a mandatory government program as in subsection (a) above; and/or

(c) maintenance of a legally permitted and governmentally approved program of self-insurance for workers' compensation and occupational disease.

22.4.2 Except to the extent prohibited by law, the program for Contractor's compliance with workers' compensation and occupational disease Laws, Regulations and Ordinances set forth in Section 22.4.1 shall provide for a full waiver of rights of subrogation against any State Indemnitee and any Association Indemnitee.

22.4.3 If Contractor fails to effect and maintain a program of compliance with applicable worker's compensation and occupational disease Laws, Regulations and Ordinances and a State Indemnitee and/or Association Indemnitee incurs fines or is required by law to provide benefits to such employees, or to obtain coverage for such employees, Contractor shall indemnify the State Indemnitee and/or Association Indemnitee for such fines, payment of benefits to Contractor or Subcontractor employees or their heirs or legal representatives, and/or the cost of effecting coverage on behalf of such employees. Any amount Contractor owes to the State Indemnitee and/or Association Indemnitee pursuant to the indemnity may be deducted from any payments Department owes Contractor pursuant to this Contract.

22.4.4 In addition to complying with the provisions for workers' compensation above, Contractor shall at all times required by law maintain coverage for employers liability with a policy limit of $5 million per accident.

22.5. Other Insurance Covenants

22.5.1 Each insurance policy (or the particular insurance policies specified below) shall:

(i) be in form and substance as is then standard in and acceptable to the State Corporation Commission's Bureau of Insurance for policies of like coverage;

(ii) be issued by insurance carriers licensed to do business in the State and having a current policyholder's management and financial size category rating of not less than "AX" according to A.M. Best's Insurance Reports Key Rating Guide (except for policies underwritten by Lloyd's of London and approved English companies acceptable to the State and approved in writing by Department), or of recognized financial responsibility and otherwise agreed by the parties and approved by Department in writing;

(iii) provide coverage on an "occurrence" basis and not a "claims made" basis (with the exception of professional liability and errors and omissions policies). All professional liability and errors and omissions policies written on a "claims made" basis shall include a tail period of at least three years after expiration of the policy period;

(iv) provide that no deductibles or self-insured retentions shall be applied against the State or Department;

(v) provide that the insurance policy cannot be canceled, suspended, lapsed or modified upon less than 30 Days prior written notice by registered or certified mail to Department;

(vi) with respect to the insurance policies described in Sections 22.1 and 22.3 (both primary and excess):

(A) provide that the coverage thereof is primary and non-contributory coverage with respect to all named or additional insureds; and

(B) show, on additional insured endorsement forms approved by Department in writing, Department. the State and, except for the Builder's Risk policy, Association, and their respective directors and officers as additional insureds at policy inception as to any insured loss or liability arising out of or in any way related to the Project or Project Right of Way, provided that with respect to the insurance under Section 22.1.3, the additional insured status shall not cover Department owned or hired vehicles; and

(vii) contain no provisions or exclusions inconsistent with this Contract.

22.5.2 At the time Department is required to procure each insurance policy, and thereafter not less than 30 Days prior to the expiration date of each insurance policy required hereunder, Contractor shall deliver or cause to be delivered to Department a binder or certificate of insurance from the broker, agent or carrier, in form reasonably satisfactory to Department, stating the identity of all carriers, identity of named and additional insureds, type of coverage, description of all endorsements, policy limits, deductibles, subrogation waiver, other essential policy terms and a statement of non-cancellation

consistent with Section 22.5.1(v). In addition, as soon as they become available, Contractor shall deliver or cause to be delivered to Department (i) a complete certified copy of each such insurance policy or modification, or renewal or replacement insurance policy and additional insured endorsements and (ii) satisfactory evidence of payment of the premium therefor. If Department does not receive the foregoing proof of coverage and payment within five Business Days after delivering written request therefor, Department may, in addition to any other available remedy, without obligation and without further inquiry as to whether such insurance is actually in force, obtain such an insurance policy; and Contractor shall reimburse Department for the cost thereof upon demand.

22.5.3 If on account of Contractor's failure to comply with the provisions of this Section 22.5, Department is adjudged to be a co-insurer (through admission or stipulation by Contractor or court decision), then any loss or damage it shall sustain by reason thereof shall be borne by Contractor and Contractor shall immediately pay the same upon receipt of written demand therefor and evidence of such loss or damage.

22.5.4 Contractor shall observe and comply with the lawful requirements of all insurance policies. Contractor also shall perform and satisfy the commercially reasonable requirements of insurance companies writing such types of insurance policies so that at all times companies of good standing and meeting the requirements of Section 22.5.1(ii) shall be willing to write or to continue such coverage.

22.5.5 Any insurance coverage required in this Article 22 may be effected by a policy or policies of blanket insurance, provided that (i) the Project, Project Right of Way and related construction and staging areas are specifically identified therein, by endorsement or otherwise, as included in the coverage provided; (ii) the amount of the total insurance allocated to the Project, Project Right of Way and related construction and staging areas shall be such as to furnish protection equivalent to that which would be afforded by separate insurance policies in the amounts herein required; and (iii) in all other respects any such blanket policy or policies shall comply with all other provisions of this Article 22. In any such case Contractor shall deliver or cause to be delivered to Department a certified copy of such policy.

22.5.6 Department makes no representation that the limits of liability specified for the insurance policies to be carried pursuant to this Article 22 are adequate to protect Contractor against its undertakings under this Contract or any other Project Agreement or preclude Department from taking any actions as are available to it under this Contract or otherwise at law. Department shall not be limited to the amount of the insurance premium not paid in the proof of any damages it may claim against Contractor or any other person arising out of or by reason of failure of Contractor to provide and keep in force the insurance policies required by this Article 22; but Department shall instead be entitled to recover the full amount of damages available.

22.5.7 If the insurance carriers for any insurance policy described in this Article 22 deny coverage to Contractor or Department with respect to any Contractor Claims reported to such carriers, Contractor and Department shall cooperate in good faith to establish whether and to what extent to contest, and how to fund the cost of contesting, the denial of coverage.

22.6 Performance and Payment Bonds

22.6.1 Concurrently with execution of this Contract, Contractor has provided to Department a Payment Bond in the amount of $288,108,661 in the form attached hereto as Appendix 4. The Payment Bond shall remain in full force and effect until the later to occur of one year after the Final Acceptance

Date or resolution of all claims filed thereunder. Concurrently with execution of any Subcontract with a first-tier construction Subcontractor, Contractor shall cause each such Subcontractor to provide to Department a Performance Bond in the amount of 100% of the Subcontract price, in the form attached hereto as Appendix 5. Each Performance Bond shall remain in full force and effect until the final expiration of all Warranties.

22.6.2 The Payment and Performance Bonds shall be executed by either Contractor or the Subcontractor, as appropriate, and a surety company authorized to do business in the State in accordance with the laws of the State and the rules and regulations of the State Corporation Commission. In order to be considered properly executed, the bonds shall include authorized signatures and titles.

22.6.3 In lieu of Payment or Performance Bonds, Contractor may furnish a certified check or cash escrow in the face amount required for each of the bonds, which will be held for the full period as applicable for each bond.

22.6.4 After Final Acceptance, each Performance Bond may be reduced to an amount not less than 20% of the original amount thereof.

22.7 Completion Guaranty

Concurrently with execution of this Contract, Contractor has provided to Department the Completion Guaranty in the form attached as Exhibit D to the Comprehensive Agreement, executed by FC, MKC (Delaware) and MKC (Ohio) (each a "Guarantor").

ARTICLE 23. CONTRACTING PRACTICES

23.1 Obligation to Refrain from Discrimination

Contractor shall comply with Section 11.2 of the Comprehensive Agreement.

23.2 Disadvantaged Business Enterprises

23.2.1 Department has adopted a Disadvantaged Business Enterprises ("DBE") program (which consists of both minority-owned firms and women-owned firms) pursuant to which its policy is to allow DBEs the opportunity to participate as contractors and subcontractors in the design and construction of the Project. Department has agreed to a DBE participation goal for the Project at 5% of the portion of the Contract Price related to construction. Contractor shall diligently seek to comply with Department's DBE participation goal and the objectives set forth in the Minority Business Enterprise Subcontracting Plan set forth in Appendix 7 hereto, and shall in all events comply with the commitments made in the Minority Business Enterprise Subcontracting Plan set forth in Appendix 7 hereto.

23.2.2 Contractor shall incorporate in all Subcontracts the requirement to diligently seek to comply with Department's DBE participation goal and the objectives set forth in the Minority Business Enterprise Subcontracting Plan set forth in Appendix 7 hereto, and to in all events comply with the commitments made in the Minority Business Enterprise Subcontracting Plan set forth in Appendix 7 hereto.

23.3 Minority Employment and Contracting Procedures

23.3.1 Contractor acknowledges and agrees that it is the policy of Department to promote and ensure economic advancement of minorities and women through employment. Department hereby adopts a minority hiring goal for the Project of achieving new hires for the labor force, in all categories of Work, proportionately representative of the minority groups residing in the standard metropolitan statistical area in which the Project is located. Department shall provide to Contractor, when from time to time requested, its current figures on the percentages of minorities in the population of such standard metropolitan statistical area, and such figures shall be the basis for Contractor's hiring efforts for the purposes of this Contract. Contractor shall employ or select employees possessing the necessary skill, expertise, cost level and efficiency for the performance of the Work.

23.3.2 Contractor shall in all Subcontracts require that, to the greatest extent reasonably feasible, any new hires for the labor force in all categories for such Subcontracts satisfy the foregoing minority hiring goal.

23.4 Subcontracts

23.4.1 Each instrument evidencing any agreement of Contractor with any Subcontractor shall provide that, pursuant to terms in form and substance satisfactory to Department, (a) the rights (but not the obligations) of Contractor under such instrument are assigned to Department and their respective successors and assigns (contingent only upon written acceptance of the assignment from the assignee(s) or its (their) successor(s) or assign(s) following default by Contractor or termination or expiration of this Contract), and (b) all warranties, guarantees and indemnifications (express and implied) of such Subcontractor shall inure to the benefit of Department and its successors and assigns.

23.4.2 Notwithstanding any Subcontract or agreement with any Subcontractor, Contractor shall be fully responsible for all of the Work (except as may be expressly provided to the contrary herein). Department shall not be bound by any Subcontract, and no Subcontract shall include a provision purporting to bind them.

23.4.3 Contractor shall, each month and from time to time upon request, provide Department with a list of all Subcontractors, shall allow Department access to all Subcontracts and shall deliver to Department, within ten days after receipt of a request from Department, copies of all Subcontracts as may be requested.

ARTICLE 24. REPRESENTATIVES

24.1 Designation of Representatives; Cooperation with Representatives

24.1.1 Department and Contractor shall each designate an individual or individuals who shall be authorized to make decisions and bind the parties on matters relating to the Contract Documents. Appendix 8 hereto provides the initial designations. Such individuals shall constitute Authorized Department Representatives and Authorized Contractor Representatives, respectively. Such designations may be changed by a subsequent writing delivered to the other party in accordance with Section 20.3 of the Comprehensive Agreement. The parties may also designate technical representatives who shall be authorized to investigate and report on matters relating to the construction of the Project and negotiate on behalf of each of the parties but who do not have authority to enter into binding agreements.

24.1.2 Contractor shall cooperate with Department and all representatives of Department designated as described above.

ARTICLE 25. DEFAULT

25.1 Default of Contractor

25.1.1 The term "Event of Default" shall mean the occurrence of any one or more of the following events or conditions, following notice and opportunity to cure (if applicable) as specified in Section 25.1.2 and an election by Department to declare that an Event of Default has occurred in writing and given to Contractor and Surety:

(a) Contractor fails either (i) to promptly begin the Work under the Contract Documents or (ii) to prosecute the Work in accordance with the CPM/Payment Schedule; or

(b) Contractor fails to perform the Work in accordance with the Contract Documents, including conforming to applicable standards in constructing the Project, or refuses to remove and replace rejected materials or unacceptable Work; or

(c) Contractor discontinues the prosecution of the Work (exclusive of Work stoppage (i) due to termination by Department, (ii) due to and during the continuance of a Force Majeure event, the performance of any Reimbursable Site Work or a suspension by Department or (iii) to the extent permitted under Section 25.4); or

(d) Contractor fails to resume performance of Work which has been suspended or stopped, within a reasonable time after receipt of notice from Department to do so or (if applicable) after cessation of the event preventing performance; or

(e) Contractor or any Guarantor under the Completion Guaranty shall have become insolvent, or generally does not pay its debts as they become due, or admits in writing its inability to pay its debts or makes an assignment for the benefit of creditors; or

(f) Insolvency, receivership, reorganization or bankruptcy proceedings shall have been commenced (i) by Contractor or both FC and MKC (Delaware) (but not necessarily in the same proceeding or concurrently) or (ii) against Contractor or both FC and MKC (Delaware) (but not necessarily in the same proceeding or concurrently) and such case or cases shall not be contested by FC and MKC (Delaware) in good faith or shall remain undismissed and unstayed for a period of 90 Days; or

(g) Any representation or warranty made by Contractor in the Contract Documents or any certificate, schedule, instrument or other document delivered by Contractor pursuant to the Contract Documents, or any representation of warranty made by any Guarantor under the Completion Guaranty, shall have been materially false or misleading when made; or

(h) Contractor breaches any material agreement contained in the Contract Documents; or

(i) Contractor shall be in default under the Comprehensive Agreement; or

(j) Contractor shall have assigned or transferred the Contract Documents or any right or interest therein without Department's prior written consent, and any transfer of the right or practical ability to control the policies or decisions of Contractor, whether due to transfer of partnership or

membership interests, shares, beneficial interests or otherwise shall constitute an assignment or transfer prohibited under this subsection (j) without Department's prior written consent; or

(k) Contractor shall have failed, absent a valid dispute, to make payment when due for labor, equipment or materials in accordance with its agreements with Subcontractors and applicable law, or shall have materially failed to comply with any Laws, Regulations and Ordinances or failed reasonably to comply with the instructions of Department consistent with the Contract Documents.

25.1.2 Contractor and Surety shall be entitled to 10 Days notice and opportunity to cure any breach described in (a) through (d) and (h) through (k) above (excluding any such breach which by its nature cannot be cured); provided that (a) if such breach is capable of cure but by its nature cannot be cured within 10 Days, such additional period of time shall be allowed as may be reasonably necessary to cure the breach, provided Contractor or Surety or any Guarantor under the Completion Guaranty commences such cure within such 10-day period and thereafter diligently prosecutes such cure to completion; (b) in the case of an emergency Department shall have the right to shorten the 10-Day cure period by so specifying in the notice of breach; and (c) no cure period shall extend the Guaranteed Completion Date, the Scheduled Completion Date or the deadline for Final Acceptance, nor shall any cure period excuse, delay or extend Contractor's obligations to pay Liquidated Damages hereunder.

25.2 Remedies for Contractor Event of Default

25.2.1 Upon the occurrence of an Event of Default, Department's obligation to make payments to Contractor hereunder shall be suspended unless and until the Event of Default is cured.

25.2.2 Upon the occurrence of an Event of Default, Department may notify Contractor to discontinue all or part of the Work and may terminate this Contract. In such event, Department may appropriate any or all materials and equipment on the Site as may be suitable and acceptable and may (a) direct the Surety and/or any Guarantor to complete such portion of the Work or complete this Contract, (b) enter into an agreement for the completion of such portion of the Work or the completion of this Contract according to the terms and provisions thereof with another contractor (should the Surety or any Guarantor fail to comply with its obligations), the Surety or any Guarantor, or (c) use such other methods as it deems necessary for the completion of such portion of the Work or the completion of this Contract, including completion of the Work by Department. In the event that this Contract is terminated, Sections 26.2.3, 26.2.4, 26.2.5, 26.2.6, 26.2.7 shall apply and Contractor shall immediately deliver to Department all completed and partially completed Work Product (including that not yet paid for due to offset claims of Department). In the event that this Contract is terminated for grounds which are later determined not to justify a termination for default, such termination shall be deemed to constitute a termination for convenience.

25.2.3 Contractor and Surety shall not be relieved of liability for continuing Liquidated Damages on account of a breach or default by Contractor or by Department's declaration of an Event of Default, or by actions taken by Department under this Section 25.2.

25.2.4 All costs and charges incurred by Department, together with the cost of completing the Work, will be deducted from any moneys due or that may become due Contractor, the Surety or any Guarantor, subject to Department's good faith efforts to mitigate damages. Subject to Sections 25.3.1 and 25.3.2, if such expense exceeds the sum which would be available from such moneys, then Contractor, the Surety and each Guarantor shall be jointly and severally liable and shall pay to Department the amount of such excess.

25.2.5 Each right and remedy of Department hereunder shall be cumulative and shall be in addition to every other right or remedy provided herein, and the exercise or beginning of the exercise by Department of any one or more of any of such rights or remedies shall not preclude the simultaneous or later exercise by the State of any or all other such rights or remedies.

25.3 Certain Limitations on Department Remedies

25.3.1 Subject to the limitations in Section 25.7, Contractor's liability to Department for damages resulting from breach of this Contract shall be limited to all those costs reasonably incurred by Department or any party acting on Department's behalf in completing or correcting the Work and repairing any damage to the Project or other property of any State Indemnitee or any Association Indemnitee caused thereby including Department's costs of Oversight Services in connection therewith. This limitation of liability shall not apply to liabilities incurred by Contractor arising out of its obligation to indemnify, defend and hold harmless each State Indemnitee and Association Indemnitee from third party Claims under Section 21.1 or to the extent covered by insurance required hereunder.

25.3.2 If the Event of Default consists solely of Contractor's actual or projected failure to achieve Substantial Completion by the Guaranteed Completion Date, Department shall have no right to terminate this Contract under Section 25.2.2 until such time, if any, as the accumulated and/or projected Liquidated Damages set forth in Section 25.6 exceed or would exceed $8,500,000, whereupon Department shall be free to terminate this Contract under Section 25.2.2. In other words, even if no actual Liquidated Damages have accrued or are payable, Department shall have a right to terminate under this Section 25.3.2 if the projected Liquidated Damages would exceed $8,500,000. In the event Department terminates this Contract under Section 25.2.2 solely by reason of Contractor's actual or projected failure to achieve Substantial Completion by the Guaranteed Completion Date, then the damages recoverable by Department shall be limited to the lesser of (a) the amount of such damages or (b) the result of subtracting the total Liquidated Damages accumulated and paid pursuant to Section 25.6 from $25,500,000.

25.3.3 Where this Contract provides an expressly stated remedy, such expressly stated remedy shall be exclusive of any inconsistent, additive or alternative extra-contractual remedies which might otherwise have been available at law or equity, except for (a) any common law or statutory right to indemnity or contribution regarding liability of potentially responsible parties for Pre-Existing Hazardous Substances, where the liability is not otherwise the subject of an indemnity pursuant to Section 21.2, (b) any claim or cause of action for fraud or intentional misrepresentation and (c) any subject matter on which no express contractual remedy is provided. The parties may resort to any remedy available at law or equity with respect to the foregoing exceptions.

25.4 Failure to Deliver Payment; Unavailability of Funds

Contractor agrees that Department shall not be considered in breach of this Contract as the result of any failure or refusal by Trustee to provide funds in accordance with the Indenture or the unavailability of funds under the Indenture.

25.4.1 In the event that Contractor fails to receive a payment in the amount approved under Section 14.2.4 by the date specified for payment in Section 14.2.4, Contractor may request written assurances from Department that payment will be made. Unless Contractor receives reasonably acceptable assurances from Department within five Business Days after delivery of such request to Department, Contractor shall have the right to suspend the Work for such period, provided that Contractor shall have provided a separate written notice to Department and Trustee stating that

Contractor is not satisfied with the assurances and describing the reasons for such dissatisfaction, which notice shall have been delivered at least three Business Days before suspending the Work. Notwithstanding the foregoing, Contractor shall have no right to request or receive assurance of payment, or to stop Work, where Department has suspended payment in accordance with Section 25.2.1.

25.4.2 In the event the Contingency does not contain sufficient funds to pay any amounts payable therefrom (including any automatic transfers from the Fixed Price Amount portion of the budget into the Contingency portion of the budget), each party may suspend those portions of its obligations under this Contract payable from the Contingency to the extent of the insufficient funds, provided that the party shall have delivered prior written notice to such effect to the other party and Trustee.

25.4.3 In the event the Fixed Price Amount portion of the budget contains insufficient funds to pay any amounts payable from the Fixed Price Amount because of automatic transfers from the Fixed Price Amount portion of the budget into the Contingency portion of the budget, Contractor may suspend those portions of the Work payable from the Fixed Price Amount to the extent of the insufficient funds, provided that Contractor shall have delivered prior written notice to such effect to Department and Trustee.

25.5 Limitation on Contractor Remedies

25.5.1 Except as otherwise provided in Section 25.4, and in all events subject to Section 17.9 of the Comprehensive Agreement, in the event of any alleged breach of this Contract by Department, Contractor shall provide Department written notice describing the alleged breach and 30 Days opportunity to cure the same, as a condition precedent to exercising any remedies to which Contractor is entitled at law or in equity with respect thereto.

25.5.2 In no event shall Contractor have any right to unilaterally terminate this Contract after the Financial Closing Date, notwithstanding any default by Department. The foregoing does not limit Contractor's right to suspend Work to the extent provided in Section 25.4.

25.6 Liquidated Damages

Contractor, Department and Association have agreed to liquidate damages incurred by Department and Association respectively with respect to any delay in achieving Substantial Completion and Final Acceptance by the deadlines contained in Section 17.2.1. Certain damages are allocable to Department's administrative expenses associated with delay, and the remainder is allocable to damages which will be incurred by Association as the result of a delay (collectively, the "Liquidated Damages"). Contractor acknowledges and agrees that the Liquidated Damages are intended to constitute compensation solely for Contractor's failure to meet the completion deadlines, and shall not excuse Contractor from liability for any other breach of Contract requirements, including any failure of the Work to conform to applicable requirements. If an Event of Default consists solely of Contractor's failure to achieve Substantial Completion by the Guaranteed Completion Date, then the damages recoverable by Department shall be limited as provided in Section 25.3.2.

25.6.1 Amount

25.6.1.1 Contractor agrees to pay Department the amount of $500 per day up to a maximum of $500,000 as deemed compensation to Department for damages which it incurs due to delay in completion, for each day after the Guaranteed Completion Date and through the date of Substantial

Completion, and for each day after the required date for Final Acceptance and through the Final Acceptance Date.

25.6.1.2 Contractor shall in addition pay Department the amount of $25,000 per day up to a maximum of $25,000,000, which amount will be forwarded by Department to Trustee on behalf of Association, and which shall constitute deemed compensation to Association for damages which it incurs due to delay in completion, for each day after the Guaranteed Completion Date and through the date of Substantial Completion. Association and Trustee are intended third party beneficiaries of Contractor's obligation under this Section 25.6.1.2.

25.6.1.3 It is understood and agreed by Contractor that any Liquidated Damages payable in accordance with this Section 25.6 are in the nature of liquidated damages and not a penalty and that such sums are reasonable under the circumstances existing as of the date of execution and delivery of this Contract. Contractor further acknowledges and agrees that Liquidated Damages may be owing even though no Event of Default has occurred or been declared.

25.6.2 Payment Terms

If Department determines that Liquidated Damages are owing, Department shall give written notice thereof to Contractor with a copy of such notice to Association and Trustee. Thereafter, each Draw Request and Certificate under Section 14.2.2 shall include a calculation of Liquidated Damages occurring since the prior request (or since the notice if there has been no prior request) and that amount will automatically be due on or prior to submission of such request if not paid by offset under Section 14.4.

25.7 Limitation on Consequential Damages

Except as expressly provided in this Contract to the contrary, neither party shall be liable to the other for indirect, incidental or consequential damages of any nature, whether arising in contract, tort (including negligence) or other legal theory. The foregoing limitation shall not, however, in any manner:

(a) prejudice Department's right to recover Liquidated Damages from Contractor as provided herein;

(b) limit Contractor's liability for any type of damage arising out of Contractor's obligation to indemnify, defend and hold each State Indemnitee and Association Indemnitee harmless from third party Claims under Section 21.1 and elsewhere in this Contract;

(c) limit Contractor's liability for any type of damage to the extent covered by insurance required hereunder; and

(d) limit Contractor's liability for any type of damage to the extent required to be covered by third party warranties required to be obtained by Contractor hereunder if Contractor fails to obtain such warranties.

ARTICLE 26. TERMINATION FOR CONVENIENCE

26.1 Notice of Termination

Department may terminate this Contract and the performance of the Work by Contractor at any time after the first to occur of the Financial Closing Date or December 31, 1998 and prior to the date of Substantial Completion if Department determines, in its sole discretion, that a termination is in its best interest. Department shall notify Contractor of the decision to terminate by delivering to Contractor a written Notice of Termination specifying the extent of termination and its effective date. Termination of this Contract shall not relieve the Surety of its obligation for any just claims arising out of or relating to the Work.

26.2 Contractor's Responsibilities After Receipt of Notice of Termination

After receipt of a Notice of Termination, and except as directed by Department, Contractor shall immediately proceed as follows, regardless of any delay in determining or adjusting any amounts due under this Article 26:

26.2.1 Stop Work as specified in the notice;

26.2.2 Enter into no further Subcontracts and place no further orders for materials, services or facilities, except as necessary to complete the continued portion of the Work, if any, or for mitigation of damages;

26.2.3 Unless instructed otherwise by Department, terminate all Subcontracts to the extent they relate to the Work terminated and except to the extent that continuation of the Subcontract is necessary in order to mitigate damages;

26.2.4 Assign to Department or its designee in the manner, at the times, and to the extent directed by Department, all of the right, title, and interest of Contractor under the Subcontracts so terminated, in which case Department will have the right, in its sole discretion, to accept performance, settle or pay any or all claims under or arising out of the termination of such Subcontracts;

26.2.5 Settle outstanding liabilities and claims arising out of such termination of Subcontracts, with the approval or ratification of Department, to the extent it may require, which approval or ratification shall be final;

26.2.6 Transfer and deliver to Department or its designee, as directed by Department, (a) possession and control of the Project, and (b) all right, title and interest of Contractor in and to (i) the Work in process, completed Work, supplies and other materials produced or acquired for the Work terminated, (ii) the Construction Documents and all other completed or partially completed drawings (including plans, elevations, sections, details and diagrams), specifications, records, reports, books, samples, information and other Work Product that would have been required to be furnished to Department if the Work had been completed, and (iii) all Intellectual Property;

26.2.7 Complete performance in accordance with the Contract Documents of all Work not terminated;

26.2.8 Take all action that may be necessary, or that Department may direct, for the protection and preservation of the property related to the Contract Documents that is in the possession of Contractor and in which Department has or may acquire an interest; and

26.2.9 As authorized by Department, use its best efforts to sell at reasonable prices any property of the types referred to in Section 26.2.6; provided, however, that Contractor (a) shall not take any such action with respect to any items for which title has previously transferred to Department, (b) is not required to extend credit to any purchaser, and (c) may acquire the property itself, under the conditions prescribed and at prices approved by Department. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by Department under the Contract Documents or paid in any other manner directed by Department.

26.3 Inventory

Contractor shall submit to Department a list of termination inventory not previously disposed of and excluding items authorized for disposition by Department; and within 30 Days of receipt of the list, Contractor shall deliver such inventory to Department and Department shall accept title to such inventory as appropriate.

26.4 Settlement Proposal

After termination, Contractor shall submit a final termination settlement proposal to Department in the form and with the certification prescribed by Department. Contractor shall submit the proposal promptly, but no later than 60 Days from the effective date of termination unless Contractor has requested a time extension in writing within such 60-day period and Department has agreed in writing to allow such an extension.

26.5 Amount of Termination Settlement

Contractor and Department may agree, as provided in Section 26.4, upon the whole or any part of the amount or amounts to be paid to Contractor by reason of the termination of Work pursuant to this Article 26. Such negotiated settlement may include an allowance for profit solely on Work which has been completed as of the termination date. Such agreed amount or amounts payable for the terminated Work, exclusive of settlement costs, shall not exceed the total Contract Price as reduced by the Contract Price of Work not terminated. Upon determination of the settlement amount this Contract will be amended accordingly, and Contractor will be paid the agreed amount as described in this Section 26.5. Nothing in Section 26.6, prescribing the amount to be paid to Contractor in the event that Contractor and Department fail to agree upon the whole amount to be paid to Contractor by reason of the termination of Work pursuant to this Article 26, shall be deemed to limit, restrict or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to Contractor pursuant to this Section 26.5. Department's execution and delivery of any settlement agreement shall not be deemed to affect any of its rights with respect to compliance of the completed Work with all applicable Contract requirements, any of its rights under the Performance Bonds or the Completion Guaranty or any of its rights against Subcontractors. Upon determination of the amount of the termination payment, this Contract shall be amended to reflect the agreed termination payment, Contractor shall be paid the agreed amount, subject to the limitations contained herein on Department's obligations to make payments, and the Contract Price shall be adjusted to deduct the portion thereof which is allocable to the terminated Work.

26.6 No Agreement as to Amount of Claim

In the event of failure of Contractor and Department to agree upon the amount to be paid Contractor by reason of the termination of Work pursuant to this Article 26, the amount payable (exclusive of interest charges) shall be determined in accordance with the following:

26.6.1 In the event of a termination prior to the Financial Closing Date Department will pay Contractor the lesser of amounts previously approved for payment for Work performed (excluding any Retainage and any offsets) or $1,500,000.

26.6.2 In the event of a termination occurring on or after the Financial Closing Date, the amount to be paid to Contractor for Work performed prior to the termination date shall be determined based on the CPM/Payment Schedule. In such event all invoices previously submitted, Change Orders requested and claims submitted shall be processed in accordance with the terms hereof (including payment of any Retainage). In addition, Contractor shall be paid its reasonable costs of termination of Subcontracts and otherwise winding down the terminated Work. However, the total amount to be paid to Contractor, exclusive of costs described in the prior sentence, may not exceed the total Contract Price less the amount of payments previously made. Furthermore, in the event that any refund is payable with respect to insurance premiums, deposits or similar items which were previously passed through to Department by Contractor, such refund shall be paid directly to Department or otherwise credited to Department.

26.6.3 Except for normal spoilage, and except to the extent that Department will have otherwise expressly assumed the risk of loss, there will be excluded from the amounts payable to Contractor under Section 26.6.1 or 26.6.2, the fair value, as determined by Department, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to Department, or to a buyer pursuant to Section 26.2.9.

26.7 Reduction in Amount of Claim

The amount otherwise due Contractor under this Article 26 shall be reduced by (a) the amount of any claim which Department may have against Contractor in connection with this Contract provided that Department has delivered to Contractor written notice thereof setting forth the specific grounds therefor and (b) the agreed price for, or the proceeds of sale of, materials, supplies or other things acquired by Contractor or sold, pursuant to the provisions of this Article 26, and not otherwise recovered by or credited to Department.

26.8 Payment

Department may from time to time, under such terms and conditions as it may prescribe and in its sole discretion, make partial payments on account against costs incurred by Contractor in connection with the terminated portion of this Contract, whenever in the opinion of Department the aggregate of such payments shall be within the amount to which Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this Article 26, such excess shall be payable by Contractor to Department upon demand together with interest at a variable rate per annum equal to the reference rate announced by Bank of America, NT&SA from time to time, plus 1%.

26.9 Inclusion in Subcontracts

Contractor shall insert in all Subcontracts that the Subcontractor shall stop Work on the date of and to the extent specified in a Notice of Termination from Department and shall require that Subcontractors insert the same provision in each Subcontract at all tiers. Contractor shall communicate, immediately upon receipt thereof, any Notice of Termination issued by Department to all affected Subcontractors.

26.10 No Consequential Damages

In the event of a termination for convenience under this Article 26, Contractor acknowledges and agrees that it shall not be entitled to any compensation in excess of the value of the Work performed plus its settlement costs (determined as provided in Section 26.6.1 or 26.6.2). Under no circumstances shall Contractor or any Subcontractor be entitled to anticipatory or unearned profits, unabsorbed overhead, opportunity costs or consequential or other damages as a result of a termination for convenience under this Article 26. The payment to Contractor determined in accordance with this Article 26 constitutes Contractor's exclusive remedy for a termination hereunder.

26.11 No Waiver

Anything contained in this Contract to the contrary notwithstanding, a termination under this Article 26 shall not waive any right or claim to damages which Department may have and Department may pursue any cause of action which it may have by law or under this Contract.

26.12 Dispute Resolution

The failure of the parties to agree on amounts due under Article 26, shall be a dispute to be resolved in accordance with Article 27.

ARTICLE 27. DISPUTE RESOLUTION

Disputes shall be resolved solely in accordance with Section 105.16 of the Standard Specifications. At all times during the term hereof, including during the course of, and notwithstanding the existence of, any dispute, Contractor shall perform as directed by Department, in a diligent manner and without delay, shall abide by Department's decision or order, and shall comply with all applicable provisions of the Contract Documents.

ARTICLE 28. MISCELLANEOUS PROVISIONS

28.1 Incorporation of Miscellaneous Provisions in Comprehensive Agreement

The following provisions in the Comprehensive Agreement are applicable to the Contract Documents, provided that all references therein to the "Agreement" shall instead be deemed references to the Contract Documents unless the context requires otherwise:

Section 20.1 (Assignment)

Section 20.2 (No Gift or Dedication)

Section 20.3 (Notices), provided that copies of any notices of default shall also be sent to Trustee at the following address:

Crestar Bank
919 East Main Street
Richmond, Virginia 23219
Attn: Ms. Kelly A. Pickerel
Fax: (804) 782-7855

with a copy to:

Michael W. Graff, Jr., Esq.
McGuire, Woods, Battle & Boothe LLP
One James Center
Richmond, Virginia 23219-4030
Fax: (804) 775-1061

Section 20.4 (Binding Effect)

Section 20.5 (Relationship of Parties)

Section 20.6 (No Third Party Beneficiaries), except as otherwise provided or contemplated for the Association and/or Association Indemnitees in Sections 11.3.1, 12.7(d), 14.2.2, 14.4, 19.3.3.3, 21.1, 22.4, 22.5.1(vi)(B) (and the scope of insurance coverages provided by the additional insured endorsement) and 25.6.1.2

Section 20.7 (Waiver)

Section 20.9 (Governing Law and Venue)

Section 20.11 (Survival)

Section 20.13(a) through (e) (Construction and Interpretation of Agreement)

Section 20.14 (Counterparts)

28.2 Entire Agreement; Amendment

28.2.1 THIS CONTRACT AND THE OTHER PROJECT AGREEMENTS CONSTITUTE THE ENTIRE AND EXCLUSIVE AGREEMENT BETWEEN THE PARTIES RELATING TO THE SPECIFIC MATTERS COVERED HEREIN AND THEREIN. ALL PRIOR OR CONTEMPORANEOUS VERBAL OR WRITTEN AGREEMENTS, UNDERSTANDINGS, REPRESENTATIONS AND/OR PRACTICES RELATIVE TO THE FOREGOING ARE HEREBY SUPERSEDED, REVOKED AND RENDERED INEFFECTIVE FOR ANY PURPOSE. THIS CONTRACT MAY BE ALTERED, AMENDED OR REVOKED ONLY BY AN INSTRUMENT IN WRITING SIGNED BY EACH PARTY HERETO, OR ITS PERMITTED SUCCESSOR OR ASSIGNEE. NO VERBAL AGREEMENT OR IMPLIED COVENANT SHALL BE HELD TO VARY THE TERMS HEREOF, ANY STATUTE, LAW OR CUSTOM TO THE CONTRARY NOTWITHSTANDING.

28.2.2 Notwithstanding Section 28.2.1, where this Contract confers specific rights upon Association under the provisions referenced in Section 28.1 in connection with Section 20.6 of the Comprehensive Agreement, such provisions cannot be amended without Association's prior written consent. In addition, Trustee's consent is required for amendments to this Contract which would (a) increase the Contract Price or the Contingency (except through the Change Order provisions of this Contract), (b) extend the Guaranteed Completion Date (except through the excusable delay provisions of this Contract), (c) require the consent of Association, (d) reduce the number of lanes of the Project, (e) fundamentally change the location of the termini of the Project, (f) fundamentally change the location of the toll facilities, (g) eliminate any interchange or (h) fundamentally alter the character of the Project as a limited access, grade-separated highway.

28.2.3 This Contract and the other Project Agreements attempt to set forth in full all requirements applicable under the PPTA as to the study, planning, design, acquisition, development, construction, operation, maintenance, repair, management and financing of the Project and attempt to define in full the rights and responsibilities of each party in connection therewith. To the extent requirements and rights and responsibilities have not been addressed in this Contract and the other Project Agreements, the parties agree to carry out their respective responsibilities in the spirit of cooperation contemplated by the PPTA, recognizing that they may not have defined in a sufficient detail or anticipated fully all activities necessary for the full implementation of the Project.

28.2.4 If any provisions of this Contract are rendered obsolete or ineffective in serving their purpose by change in law, passage of time, financing requirements or other future events or circumstances, the parties agree to negotiate in good faith appropriate amendments to or replacements of such provisions in order to restore and carry out the original purposes thereof to the extent practicable; provided, however, that neither party is obligated to agree to any amendment or replacement which would reduce its rights or enlarge its responsibilities under this Contract in any material respect.

28.3 Explanations; Omissions, Misdescriptions, Inclusions without Limitation

Should it appear that the Work to be done or any of the matters relative thereto is not sufficiently detailed or explained in the Contract Documents, Contractor shall apply to Department in writing for such further written explanations as may be necessary and shall conform to the explanation provided. Contractor shall promptly notify Department of all errors, omissions, inconsistencies or other defects (including inaccuracies and inconsistencies) which it may discover in the Contract Documents, provide

written recommendations regarding changes or corrections to resolve any such error, omission or defect, and obtain Department's approval before proceeding with the design Work affected thereby. Omission from the Scope of Work or the misdescription of details of Work which are necessary to carry out the intent of the Contract Documents, or which are customarily performed, shall not relieve Contractor from performing such omitted Work (no matter how extensive) or misdescribed details of the Work and they shall be performed as if fully and correctly set forth and described in the Scope of Work, without entitlement to a Change Order hereunder. The words "including," "includes" and "include" shall be deemed to be followed by the words "without limitation."

28.4 Computation of Periods

If the date to perform any act or give any notice specified in the Contract Documents (including the last date for performance or provision of notice "within" a specified time period) falls on a non-Business Day, such act or notice may be timely performed on the next succeeding day which is a Business Day. Notwithstanding the foregoing, requirements contained in the Contract Documents relating to actions to be taken in the event of an emergency, requirements contained in Section 5.3.5, and other requirements for which it is clear that performance is intended to occur on a non-Business Day, shall be performed as specified, even though the date in question may fall on a non-Business Day.

28.5 Approvals

In all cases where approvals, consents or determinations are required to be provided hereunder, such approvals or consents shall not be withheld unreasonably and such determinations shall be made reasonably except in cases where a different standard (such as, by way of example only, sole discretion) is specified. In cases where sole discretion is specified for an approval, consent, determination or other decision, the decision shall not be subject to dispute resolution hereunder.

28.6 Payment of Tolls

Contractor acknowledges and agrees that individuals working on the Project for Contractor will be required to pay tolls when using toll roads, including tolls for use of the Project after the Opening Date. Contractor shall not be entitled to reimbursement for any such tolls.

28.7 Correspondence

Contractor shall copy Department on all written correspondence pertaining to this Contract between Contractor and any Person other than Contractor's Subcontractors, consultants and attorneys.

28.8 Standard Specifications

Cross-references to provisions of the Standard Specifications which are not applicable to this Contract because they have been superseded by other provisions of the Contract Documents shall be deemed references to the Contract Document provisions which have superseded the referenced Standard Specifications provisions.

"Department"

VIRGINIA DEPARTMENT OF TRANSPORTATION,
a department of the Commonwealth of Virginia

By: _____
David R. Gehr,
Commonwealth Transportation Commissioner

Fiscal Review:

By: _____
Gregory A. Whirley, Sr.,
Controller

Legal Review:

By: _____
James F. Hayes, Esq.,
Senior Assistant Attorney General

"Contractor"

FD/MK LIMITED LIABILITY COMPANY,
a Delaware limited liability company

By: _____
James R. Carroll,
President

DEFINITIONS

DEFINITIONS

Account or **Accounts** means any one or more of the accounts from time to time created in any of the Funds established by the Indenture.

Accountant means any nationally recognized certified public accountant or firm of certified public accountants or accounting corporation of recognized experience and qualifications, selected by the Association, and may be the accountant or firm of accountants that regularly audits the books of the Association.

Accountant's Certificate means a certificate or opinion signed by the Accountant.

Accreted Value for Bonds of any Series shall have the meaning set forth in the Supplemental Indenture authorizing the issuance of such Series.

Aggregate Debt Service means, for any Fiscal Year or other 12-month period, as of the date of calculation, the sum of the amounts of Debt Service for such Fiscal Year or other 12-month period. In determining Aggregate Debt Service on Second Tier Subordinate Bonds for any Fiscal Year or other 12-month period, such Aggregate Debt Service shall be the sum of monthly payments during such Fiscal Year or other 12-month period assuming that such monthly payments are calculated to result in full amortization in equal, consecutive combined principal and interest payments at an interest rate equal to the higher of the actual stated interest rate or the maximum interest rate for a term equal to the remaining term of the applicable Second Tier Subordinate Bonds assuming the original term was 30 years.

Agreement Date, for purposes of the Comprehensive Agreement, means the date written on the cover page of the Comprehensive Agreement, and for purposes of the Design-Build Contract, means the date written on the cover page of the Design-Build Contract.

Amortized Value means the value of an Investment Security calculated by adding the amount of the premium paid upon acquisition to the par value of the Investment Security or deducting the amount of the discount received upon acquisition from the par value of the Investment Security, as the case may be, after such premium or discount has been amortized according to Generally Accepted Accounting Principles for the number of days since the acquisition of the Investment Security.

Annual Budget means the operating plan and budget for each Fiscal Year of the Association prepared by Association pursuant to Section 8.5(a) of the Comprehensive Agreement and Section 717 of the Master Indenture and

approved by Department pursuant to Section 8.5(b) of the Comprehensive Agreement and Section 711 of the Master Indenture.

Association means Pocahontas Parkway Association, a Virginia nonstock, nonprofit corporation, and its permitted successors and assigns, and means the "Issuer" in the context of the Indenture.

Association Default means any of the events listed in Section 17.4 of the Comprehensive Agreement.

Association Indemnitee means and includes the Association and all of its affiliates and subsidiaries, and each of their respective members, partners, managers, directors, officers, employees, authorized agents and authorized representatives.

Association Party means and includes the Association and any director, officer, employee, agent, contractor (other than Department), subcontractor (other than Department) at any tier or any representative of the Association.

Authenticating Agent means any bank or trust company or national or state banking association designated to authenticate the Bonds of any Series on behalf of the Issuer or the Trustee, as provided by any Supplemental Indenture, and its successor or successors.

Authorized Association Representative or Authorized Issuer Representative means any person designated to act on behalf of the Association or the Issuer by a certificate signed by its President or any Vice President and filed with Department, the Trustee and FD/MK.

Authorized Department Representative means any person designated to act on behalf of Department by a certificate signed by the Commissioner and filed with FD/MK, the Trustee and the Association.

Authorized FD/MK Representative means any person designated to act on behalf of FD/MK by a certificate signed by its President or any Vice President and filed with Department, the Trustee and the Association.

Available Construction Fund Amount means the amount of funds in the Construction Fund currently available to pay Costs of the Project, which amount shall equal at any given time of calculation (a) the funds then remaining in the Construction Fund, plus (b) interest and profits earned and to be earned, but not yet credited to the Construction Fund, under the investment agreement or agreements under which funds in the Construction Fund are invested, excluding interest and profits earned and to be earned and required to be, but not yet, credited to the Series 1998D Bond Proceeds Account, to the Rebate Fund, to any Account for the purpose of paying interest on any Series of Bonds or to the Retainage Account, minus (c) all amounts deposited in or credited to any

Account of the Construction Fund for the purpose of paying interest on any Series of Bonds, minus (d) all funds in the Series 1998D Bond Proceeds Account reserved for payment of costs of promoting, marketing and advertising the Project and its opening to the public incurred prior to the commencement of revenue operations on the Project, minus (e) interest and profits deposited in or credited to the Retainage Account and the Series 1998D Bond Proceeds Account.

AVI means automatic vehicle identification equipment used as part of ETTM Equipment.

Betterment means upgrading or expanding the capacity of a Utility facility being relocated that is not attributable to construction of the Project or that is made solely for the benefit of and at the election of the Utility Owner. The primary aim of Betterment is to make the Utility facility more useful, functional, durable, efficient or of greater capacity. However, the term "Betterment" shall not include modifications to a Utility facility which enable achievement of greater usefulness, functionality, durability, efficiency or capacity at costs equal to or less than the costs of a "like-for-like" replacement or relocation.

Board means the board of directors of the Association, or any successor in function.

Bond or **Bonds** means any bond or bonds, as the case may be, authenticated and delivered under and pursuant to the Indenture, including any Tax-Exempt Bond or Bonds, and the SIB Bond and the Contractor Bond.

Bond Counsel means Hunton & Williams or any other attorney or firm of attorneys, selected by the Issuer and acceptable to the Trustee and Department, whose experience in matters relating to the issuance of obligations by states and their political subdivisions is nationally recognized.

Bond Owner, Owner of Bonds or **Owner** means, when used with respect to Bonds, the registered owner of any Bond.

Bridge Foundation Work means that portion of the bridge substructures for all Project bridges from the top of the footing down into the support material for the structure. This work shall include all materials, labor, equipment and incidentals necessary to complete the work. It includes, but is not limited to, structure excavation, form/false work, hydraulic cement concrete, reinforcing steel, piles and drill shafts with their respective associated testing.

Business Day means any Day other than a Saturday, Sunday or other day on which The New York Stock Exchange or banks are authorized or required to close in New York, New York or Richmond, Virginia.

Capitalized Interest Account means any Account into which capitalized interest with respect to a Series of Bonds is to be deposited as provided for in a Supplemental Indenture.

Change Order means a written amendment to the terms and conditions of the Contract Documents issued in accordance with Article 19 of the Design-Build Contract.

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

Code means the Internal Revenue Code of 1986, as amended, and the United States Treasury Regulations proposed or in effect with respect thereto.

Commissioner means the Commonwealth Transportation Commissioner or any successor in function.

Competitive Transportation Facilities means any State Highway, expressway or freeway crossing of the James River (a) which is within three miles of the centerline of the Project's bridge crossing of the James River, (b) which is first placed into service after the Agreement Date and (c) the operation of which could reasonably be foreseen to have a materially adverse impact on the ability of Association to cover Debt Service and to observe its covenants under the Indenture.

Completion Bonds means Bonds issued pursuant to Section 302.3(a) of the Master Indenture.

Completion Guaranty means the Guaranty of Performance and Completion issued by FC, MKC (Delaware) and MKC (Ohio) on the Agreement Date in the form of Exhibit D to the Comprehensive Agreement, jointly and severally guaranteeing payment, performance and completion of all of FD/MK's obligations under the Comprehensive Agreement, the Project Financing Agreement and the Design-Build Contract.

Compliance Order means any written order of Department, issued after the Final Acceptance Date, which directs the Association to undertake certain improvements to the Project (a) to conform to changes in safety standards or methodologies agreed to or adopted by Department for similar portions of State Highways, or (b) to correct a specific safety condition affecting the Project which Department has determined to exist by investigation or analysis.

Compounding Date for Bonds of any Series shall have the meaning set forth in the Supplemental Indenture authorizing the issuance of such Series.

Comprehensive Agreement means the Comprehensive Agreement to Develop and Operate Route 895 Connector between FD/MK and Department dated as of June 3, 1998, and all exhibits thereto, as supplemented or amended from time to time.

Conformity means compliance with the most stringent customary manufacturing and construction tolerances where working tolerances are not specified. Where working tolerances are specified, conformity means compliance with the most stringent of such tolerances.

Construction Documents means all Shop Drawings and Working Drawings, catalog cuts and samples necessary for construction of the Project in accordance with the Contract Documents and to inspect that construction.

Construction Fund means the Route 895 Connector Toll Road Revenue Bond Construction Fund established by Section 502 of the Indenture, and includes any separate Accounts or Subaccounts established by the terms of any Supplemental Indenture or any agreement pursuant thereto.

Construction Segment means each or any segment of the Project which Department and FD/MK designate pursuant to Article 13 of the Design-Build Contract for the purpose of scheduling construction.

Construction Traffic Management Plan means the plan for traffic management submitted and approved in accordance with Section 9.1 of the Design-Build Contract.

Consultant means any Person at the time retained by or on behalf of the Association (or, to the extent specifically provided in the Indenture or in any Supplemental Indenture, by or on behalf of the Trustee or Department) for the benefit of the Bond Owners to carry out the duties imposed by or pursuant to the Indenture or a Supplemental Indenture, which Person shall be experienced and have a national and favorable reputation in the matters for which such Person is so employed.

Consulting Engineer means any Consultant with expertise in engineering. The Consulting Engineer may be an employee of Department and such employee need not have a national reputation.

Contingency means the amount available for payment of certain Costs of the Project in excess of the Contract Price or Oversight Budget, as more specifically described in Section 14.3 of the Design-Build Contract.

Continuing Disclosure Agreement means, collectively, the Continuing Disclosure Agreement between the Association and the Trustee and the Continuing Disclosure Agreement between FD/MK and the Trustee, each dated as of July 1, 1998.

Contract Documents means the Design-Build Contract, including all appendices, the Scope of Work, the Standard Specifications, the Preliminary Engineering (subject to Contractor's obligation to provide the Plans and Specifications free of any errors, omissions, inconsistencies and other defects which may be contained in the Preliminary Engineering) and the Plans and Specifications, including all amendments to any of the foregoing and all Change Orders issued.

Contractor means FD/MK.

Contractor Bond means the Series 1998E Bond issued by the Association to FD/MK under the Indenture and in accordance with the Contractor Loan Agreement on the Financial Closing Date and evidencing advances, if any, under the Contractor Loan Agreement, and any and all amendments and supplements thereto.

Contractor Claim means a separate demand by Contractor for (a) a time extension which is disputed by Department, or (b) payment of money or damages arising from work done by or on behalf of Contractor in connection with the Design-Build Contract which is disputed by Department. A Contractor Claim will cease to be a Contractor Claim upon resolution thereof, including resolution by withdrawal or release thereof or delivery of a Change Order or Design-Build Contract amendment signed by all parties.

Contractor Bond Draw Request means a draw request from the Trustee to FD/MK on the Draw Request and Certificate form attached as Exhibit 3 to the Master Indenture.

Contractor Loan Agreement means the Loan Agreement among FD/MK the Association in the form of Exhibit I to the Comprehensive Agreement, and any and all amendments and supplements thereto.

Contractor Party means and includes Contractor, any Related Party and any member company, manager, partner, director, officer, employee, agent, contractor (other than Department), subcontractor (other than Department) at any tier or any representative of Contractor or any Related Party.

Contract Price shall have the meaning set forth in Section 14.1.1 of the Design-Build Contract.

Costs of the Project means the following (provided, however, that if such costs are to be paid out of the proceeds of Tax-Exempt Bonds, "Costs of the Project" shall include only those costs permitted by the Code and which are in compliance with Section 706 of the Indenture):

(a) all amounts payable under the Design-Build Contract and all other contractors' fees and charges, the cost of labor, services, materials and

supplies used or furnished in site improvement and construction, training and testing costs, the cost of purchasing and installing machinery, equipment, facilities, rolling stock and ancillary items, and the cost of utility services;

(b) the cost of acquiring by purchase, and the amount of any deposit in court or award or final judgment in, or any settlement or compromise of, any proceeding to acquire by eminent domain, such lands, property, property rights, rights of way, easements, franchises and other interests as may be deemed necessary or convenient, options and partial payments thereon, the cost of demolishing or removing or relocating any buildings or structures or land so acquired, including the cost of acquiring any lands to which such buildings or structures may be moved, the amount of any incidental or consequent damages and the amount of any legal costs associated with such acquisition;

(c) the costs of preparing surveys, cost estimates, appraisals, plans and specifications (including any preliminary study or planning or any aspect thereof), traffic revenue studies fees for architectural, engineering, supervisory and consulting services, planning and development costs, the costs of obtaining governmental or regulatory permits, licenses, franchises and approvals, and any other fees or expenses necessary to establishing feasibility or practicability;

(d) Department's costs of services described in Sections 10.2(b) and (c) of the Comprehensive Agreement.

(e) Operating Expenses and amounts required to be deposited to the Renewal and Replacement Fund;

(f) to the extent not paid by the contractor, premiums of all insurance and surety and payment bonds required to be maintained, all claims and expenses relating to injury and damage, and casualty and liability insurance premiums in connection with insurance against loss from such claims;

(g) all federal, state and local taxes and payments in lieu of taxes legally required, or deemed advisable by the Issuer;

(h) interest to accrue on the Bonds during design and construction of the Project plus the time period thereafter, if any, covered by funds on deposit in the Capitalized Interest Account under the Indenture, and interest accrued during design and construction of the Project on other obligations of the Issuer to finance Costs of the Project;

(i) to the extent provided by Supplemental Indenture, any amount otherwise required to pay principal or Redemption Price of any Bonds;

(j) any amount required to fund or maintain the Debt Service Reserve Fund;

(k) repayment of all temporary borrowings incurred by or on behalf of, or advances made by or on behalf of, the Issuer in connection with the Project;

(l) Costs of Issuance, to the extent not otherwise described in this definition;

(m) all items of expense relating to any guarantee, bond insurance policy or Related Financial Transaction, to the extent not otherwise described in this definition;

(n) all amounts payable by Department or the Association under the Design-Build Contract or any other contract, agreement or other arrangement relating to the acquisition, design, construction and equipping of the Project; and

(o) all other costs and expenses relating to the acquisition, design, construction and equipping of the Project, including, but not limited to, costs of environmental mitigation and remediation.

Notwithstanding the foregoing, Costs of the Project shall not include any interest on debt (except as provided otherwise in subsection (h) above) or repayment of principal in respect of debt, returns on or of capital, costs funded from Reserve Accounts or Current Expenses. Costs of the Project shall be reduced by an amount equal to the sum of (i) the aggregate amount of grants of cash and (ii) the costs of goods and/or services in kind provided to Operator and used by Operator to pay Costs of the Project and which Operator has no legal obligation to repay. Costs of the Project also shall be reduced by the amount of any insurance proceeds, judgments and awards, including but not limited to condemnation awards, Operator receives on account of or in connection with previously incurred Costs of the Project.

Costs of Issuance means the items of expense relating to the authorization, sale and issuance of Bonds, which items of expense may include, without limitation: travel expenses; printing costs; costs of reproducing documents; computer fees and expenses; filing and recording fees; initial fees and charges of the Trustee, Registrar, Paying Agent, and other Fiduciaries; initial fees and charges of banks, insurers or other parties pursuant to guarantees, bond insurance policies and Related Financial Transactions; bond discounts; fees and expenses of underwriters; legal fees and charges; consulting fees and charges including costs of traffic studies and other feasibility studies conducted in connection with the sale of the Bonds; auditing fees and expense; financial advisor's fees and charges; costs of credit ratings; insurance premiums; fees and charges for the execution, transportation and safekeeping of Bonds; and any other administrative or other costs of issuing such Bonds and investing the Bond proceeds.

CPM/Payment Schedule means the most current schedule for the Project approved by Department as described in Section 13.3 of the Design-Build Contract.

Critical Path means the longest non-intermittent path between the first and the last event of the Project shown on the CPM/Payment Schedule (or, if more than one such path exists, each such path).

CTB means the Commonwealth Transportation Board, a state board of the State affiliated with the Department of Transportation.

Current Expenses means the Association's and/or Department's current out-of-pocket expenses of management, administration, maintenance, repair, preservation and operation of the Project and shall include, without limiting the generality of the foregoing, all expenses:

(a) to establish, market, collect, protect, adjust, transfer and account for tolls;

(b) to pay premiums and reserves for insurance;

(c) of management, administration and engineering relating to maintenance, repair and operation of the Project;

(d) of police services and incident response;

(e) of the Trustee and any securities depository;

(f) of legal services relating to Project management and operation;

(g) of marketing, promotion and advertising;

(h) to pay sales and use taxes, property taxes and any other taxes, fees, charges or levies (not based on income or revenue) imposed by a governmental entity and directly related to the Project or Project Right of Way or the operation thereof;

(i) of administering and maintaining the corporate existence of Association, and of administering Association's compliance with its obligations under the Project Agreements;

(j) compensation due to Department under Section 8.2(e) of the Comprehensive Agreement or for services, including Oversight Services, rendered after the Opening Date to the extent provided in Section 10.2 of the Comprehensive Agreement; and

(k) otherwise required or permitted to be paid by the Association or Department under the provisions of the Indenture, the Comprehensive Agreement or by law for management and operation of the Project.

Notwithstanding the foregoing, "Current Expenses" shall not include payments made by the Association or the Trustee to any reserve accounts under the Indenture, any expenses of Extraordinary Maintenance and Repair, or any payments of Debt Service.

Custom Software means (a) all Software and associated documentation that is first conceived or first actually reduced to practice in connection with development of the Project, (b) all revisions, modifications, derivations, translations, abridgments, condensations and expansions of such Software or other forms in which such Software may be recast, transformed or adapted, and (c) all compilations that incorporate the work or matter described in subsection (b) above.

Days means calendar days, unless otherwise designated.

Debt Service means, with respect to any particular Fiscal Year or other 12-month period, and as of any calculation date, an amount equal to the sum of:

(a) all principal of and interest on the applicable Outstanding Bonds, that is payable during such period; and

(b) the Redemption Price of such Outstanding Bonds payable during such period with respect to any Outstanding Bonds that are to be redeemed during such period pursuant to mandatory redemption provisions or pursuant to optional redemption provisions that have been exercised by the Issuer as of the calculation date.

For purposes of this definition:

(1) Debt Service shall not include the principal and Redemption Price of and interest on Outstanding Bonds to the extent the same is to be paid from proceeds of Bonds or other funds held by the Trustee or an escrow agent for the benefit of the Owners of Outstanding Bonds pursuant to Section 502 of the Indenture, and investment earnings on such proceeds or other funds.

(2) Interest paid and payable on Bonds with respect to which a Related Financial Transaction is in effect shall be determined by taking into account (in a manner that does not result in the duplication of payment requirements): (i) regularly scheduled payments due pursuant to such transaction so long as no failure to pay or event of default under such transaction has occurred and is continuing and (ii) upon termination of such transaction (by reason of an event of default or otherwise), amounts actually paid with respect to the termination of such transaction.

Debt Service Fund means the Route 895 Connector Toll Road Revenue Bond Debt Service Fund established by Section 502 of the Indenture.

Debt Service Reserve Fund means the Route 895 Connector Toll Road Revenue Bond Debt Service Reserve Fund established by Section 502 of the Indenture.

Debt Service Reserve Fund Requirement means the Senior Bonds Debt Service Reserve Account Requirement and First Tier Subordinate Bonds Debt Service Reserve Account Requirement.

Defeasance Investment Securities means any one or more of the following securities, if and to the extent the same are, at the time acquired, Investment Securities: (i) non-callable securities which are direct obligations of, or which are unconditionally guaranteed by, the United States; and (ii) any other security approved in writing by each Rating Agency.

Defect means, with respect to each element or aspect of the Work for which acceptable tolerances are specified in the Contract Documents or Reference Documents, any such element or aspect not conforming to such specified tolerances, and with respect to each element or aspect of the Work for which acceptable tolerances are not specified in the Contract Documents or Reference Documents, any such element or aspect not conforming to industry standards applicable thereto as of the time such element or aspect of the Work is undertaken; provided that in all instances "Defect" includes any element or aspect of the Work not conforming to the Design-Build Contract, Plans and Specifications, Laws, Regulations and Ordinances or Regulatory Approvals.

Department means the Virginia. Department of Transportation, a department of the State, and any other State agency succeeding to the powers, authorities and responsibilities of Department invoked by or under the Comprehensive Agreement.

Department Capital Cost Savings Account means the Department Capital Cost Savings Account of the Route 895 Toll Road Revenue Bond Construction Fund established by Section 502 of the Indenture.

Department-Caused Delays means unavoidable delays, to the extent that they affect a Critical Path, arising from the following matters and no others: (a) a suspension order pursuant to Section 20.1 of the Design-Build Contract (but not exceeding 24 hours), (b) Directed Changes, (c) failure of Department to provide responses to submittals and matters for which response by such Person is required, within the time periods indicated in the Contract Documents, (d) uncovering, removing and restoring Work, to the extent provided in Section 5.2.2.5 of the Design-Build Contract, and (e) any improper failure to act by Department within a reasonable time after delivery of notice by Contractor to Department requesting such action. Any court order to suspend Work shall not

be considered a Department-Caused Delay (although it may qualify as a Force Majeure event) despite the fact that Department may specifically direct Contractor to comply with the court order.

Department Default shall have the meaning set forth in Section 17.7 of the Comprehensive Agreement.

Department Standards means the requirements applicable to performance of the Work contained in the manuals, standards and procedures set forth in the Reference Documents.

Design-Build Contract means the Design-Build Contract between Department and FD/MK dated as of June 3, 1998, a copy of which is attached to the Comprehensive Agreement as Exhibit C, and any and all amendments and supplements thereto.

Differing Site Condition means any permanent condition on, within, under or of the Project Right of Way (such as but not limited to presence of Hazardous Substances or archaeological, paleontological, biological or cultural resources) which is materially different from (a) that represented by the data and information provided or reasonably available to Contractor as of the Agreement Date or (b) that which would have been discoverable by reasonable site investigation prior to the Agreement Date in accordance with recognized industry standards, provided that subsection (b) above shall not apply in determining whether any change in location of the Plume is a Differing Site Condition. A Differing Site Condition shall be deemed to include all manifestations of the same condition.[1]

Directed Change means any change in the Work (including changes in the standards applicable to the Work) which Department has directed Contractor to perform by Directive Letter pursuant to Section 19.3.1 of the Design-Build Contract or by Change Order under Section 19.3.2 of the Design-Build Contract. The term shall also include changes in the Work which are directly attributable to delays caused by bad faith actions, active interference, gross negligence or comparable tortious conduct by Department. The fact that Department has delivered a Directive Letter does not necessarily mean that a change in the Work has occurred.

Directive Letter means each letter issued by Department pursuant to Section 19.3.1 of the Design-Build Contract.

1/ For example, if a given geologic formation is continuous and affects the Project Right of Way in more than one location, all such locations are together part of the same "condition." Conversely, if, for example, a location is affected by a geologic fault and a nearby location is affected by a rock formation, each would be a separate "condition." Similarly, each and every discrete archeological site would be a separate "condition."

Discretionary Directed Change means any Directed Change other than a Safety Directed Change.

Draft Plans and Specifications means all drawings (including plans, elevations, sections, details and diagrams) furnished by Contractor showing the sizes, shapes and location of component elements comprising the Project and all specifications, reports, calculations, records and submittals necessary for design of the Project furnished by Contractor as described in Article 3 of the Design-Build Contract.

Draw Request means a draw request from FD/MK on the Draw Request and Certificate form attached as Exhibit 1 to the Master Indenture.

EIS means that certain signed final environmental impact statement, record of decision and re-evaluation for the Project prepared and approved by FHWA in 1994.

Environmental Laws means all Laws, Regulations and Ordinances now or hereafter in effect relating to the environment or to emissions, discharges, releases or threatened releases of Hazardous Substances into the environment including into the air, surface water or ground water or onto land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Substances or otherwise relating to the protection of public health, public welfare or the natural environment (including protection of nonhuman forms of life, land, surface water, groundwater and air) including the statutes listed in the definition of Hazardous Substances; the National Environmental Policy Act, as amended, 42 U.S.C. §§ 4321 et seq.; the Occupational Safety and Health Act, as amended, 29 U.S.C. §§ 651 et seq.; the Hazardous Materials Transportation Act, as amended, 49 App. U.S.C. §§ 1801 et seq.; the Endangered Species Act, as amended, 16 U.S.C. §§ 1531 et seq.; the Clean Water Act, as amended, 33 U.S.C. §§ 1251 et seq.; and the Migratory Bird Treaty Act, 16 U.S.C. §§ 703 et seq.

Escrow Material means all Source Code and Source Code Documentation with respect to Proprietary Software, including all relevant commentary, explanations and other documentation, as well as instructions to compile such Source Code, plus all modifications, additions or substitutions made to such Source Code and Source Code Documentation by the Proprietary Software supplier.

ETTM means electronic toll and traffic management.

ETTM Data means all data generated by or accumulated in connection with the operation of the ETTM System, including but not limited to customer lists, customer identification numbers, customer account information and billing records and other customer specific information, and including but not limited to

use and enforcement data, origin and destination information, ETTM performance statistics, and real time traffic flow information.

ETTM Equipment means the AVI equipment; video monitoring equipment; manual, automatic and electronic toll collection equipment; the transportation management system equipment; communications equipment; and all other computer hardware necessary to meet the performance specifications for ETTM set forth in the Contract Documents.

ETTM Facilities means the administration/operations building, toll booths, canopies, utility connections, lighting facilities, pedestrian tunnels, etc.

ETTM System means the ETTM Equipment and the Software which monitors, controls or executes the ETTM Equipment.

Event of Default, for purpose of the Indenture, means an Event of Default as such term is defined in Section 902 of the Indenture, and for purposes of the Design-Build Contract, shall have the meaning set forth in Section 25.1 of the Design-Build Contract.

Extraordinary Completion Bonds means Bonds issued at the direction of the Department, in the case of insufficient funds to complete the Project, pursuant to subsection 2 of Section 720 of the Master Indenture.

Extraordinary Maintenance and Repair means maintenance, repair, renewal, reconstruction or replacement of any portion or component of the Project of a type which is not normally included as an annually recurring cost in Department's roadway maintenance and repair budgets.

Fair Market Value means, as of any particular time: (i) as to Investment Securities whose bid and asked prices are published on a regular basis in a financial journal or publication of general circulation in the United States of America, the bid price for such Investment Securities so published on or most recently prior to the date of valuation by the Trustee, or (ii) as to Investment Securities whose bid and asked prices are not published on a regular basis in a financial journal or publication of general circulation in the United States of America, the average bid price for such Investment Securities at the date of valuation by the Trustee, as reported to the Trustee by any three nationally recognized dealers in such Investment Securities.

FC means Fluor Corporation, a Delaware corporation, and its successors.

FD/MK means FD/MK Limited Liability Company, a Delaware limited liability company, and its permitted successors and assigns.

FD/MK Default shall have the meaning set forth in Section 17.1 of the Comprehensive Agreement.

FD/MK Indemnitee means and includes FD/MK and all of its member companies, parents, affiliates and subsidiaries, and each of their respective managers, directors, officers, employees, authorized agents and authorized representatives.

Fiduciary or **Fiduciaries** means the Trustee, the Registrar, the Paying Agent, and any escrow, authenticating or other agent of the Issuer or of any other Fiduciary, or any or all of them, as the context may require.

Final Acceptance means the occurrence of the events described in subsections (a) through (h) inclusive of Section 18.2.1 of the Design-Build Contract.

Final Acceptance Date means the date on which Final Acceptance occurs under the Design-Build Contract.

Financial Closing Date means the date on which the Bonds have been issued, sold and delivered to investors in accordance with the provisions of the Indenture.

Financial Transaction means any rate swap transaction, basis swap, cap transaction, floor transaction, hedge, collar transaction; any other "Transaction" as defined in the 1992 U.S. Municipal Counterparty Definitions published by the International Swap Dealers Association, Inc. or any amendments to or subsequent editions of such Definitions or any similar transaction (regardless of how defined) permitted under any such amendments to or more recent editions of such Definitions or of any similar publications of such association or any similar organization; any transactions similar to any of the foregoing; or any combination of any of the transactions described in this definition.

First Supplemental Indenture means the First Supplemental Indenture authorizing the issuance of the Series 1998 Bonds substantially in the form attached as Exhibit G to the Comprehensive Agreement.

First Tier Subordinate Bonds mean any Bonds designated as "First Tier Subordinate Bonds" by a Supplemental Indenture.

First Tier Subordinate Bonds Debt Service Account means the First Tier Subordinate Bonds Debt Service Account of the Debt Service Fund established by Section 502 of the Indenture.

First Tier Subordinate Bonds Debt Service Reserve Account Requirement means the lesser of (i) 10 percent of the issue price within the meaning of the Code of the applicable First Tier Subordinate Bonds, (ii) the maximum annual principal and interest requirements for the applicable First Tier Subordinate Bonds, or (iii) 125 percent of the average annual principal and interest requirements for the applicable First Tier Subordinate Bonds.

Fiscal Year means the consecutive 12-month period beginning July 1 and ending June 30, or any other consecutive 12-month fiscal period used by Department for financial accounting purposes.

Fitch means Fitch Investors Service, Inc., its successors and assigns, and if Fitch Investors Service, Inc., shall no longer perform the functions of a securities rating agency, "Fitch" shall be deemed to refer to any other nationally recognized securities rating agency designated by the Issuer in its stead.

Fixed Price Amount shall have the meaning set forth in Section 14.1.1 of the Design-Build Contract.

Force Majeure means any of the following events (provided such events are beyond the control of Contractor and are not due to an act or omission of Contractor) which materially and adversely affects Contractor's obligations hereunder and which event (or the effects of which event) could not have been avoided by due diligence and use of reasonable efforts by Contractor:

(a) any tidal wave, hurricane force wind, flood, tornado or earthquake;

(b) any epidemic, blockade, rebellion, war, riot or act of sabotage or civil commotion;

(c) any strike, labor dispute, work slowdown, work stoppage, secondary boycott, walkout or other similar occurrence, except as excluded under subsection (iii) below;

(d) any unreasonable delay by a utility owner in connection with a Utility Relocation;

(e) any change in or new enactment of any written Laws, Regulations and Ordinances, or change in the judicial or administrative interpretation of, or adoption of any new Laws, Regulations and Ordinances which is materially inconsistent with Laws, Regulations and Ordinances in effect on the Agreement Date (subject to the exclusions set forth below);

(f) any suspension of the Work to the extent permitted under Section 25.4 of the Design-Build Contract; and

(g) any court order which restrains, enjoins, challenges or delays performance of the Work or the granting or renewal of any Regulatory Approval.

The term "Force Majeure" shall be limited to the matters listed above and specifically excludes from its definition the following matters which might otherwise be considered force majeure:

(i) fire or other physical destruction or damage, including lightning, explosion, drought, rain, storm or action of the elements or other acts of God not listed in subsection (a) above;

(ii) except as provided in subsection (b) above, explosion, malicious or other acts or similar occurrence;

(iii) strike, labor dispute, work slowdown, work stoppage, secondary boycott, walkout or other similar occurrence particular to a Contractor Party or the Project;

(iv) the presence at, near or on the Site of any Hazardous Substance;

(v) the presence at, near or on the Site of any archaeological, paleontological or cultural resource or endangered species;

(vi) Differing Site Conditions;

(vii) the suspension, termination, interruption, denial or failure to obtain or nonrenewal of any permit, license, consent, authorization or approval (including all Regulatory Approvals except to the extent that Department has agreed to be responsible for them in Section 10.3 of the Design-Build Contract) which is necessary for the performance of the Work or the operation or maintenance of the Project, except for any such matter resulting from a lawsuit as described in subsection (d) above;

(viii) a change in any Laws, Regulations and Ordinances (such as increases in tax rates) which causes an increase in amounts payable by Contractor for deliverables but which does not change the obligations to be performed by Contractor hereunder;

(ix) any lawsuit relating to any Regulatory Approval which is Contractor's risk under Article 10 of the Design-Build Contract, except as provided in subsection (e) above;

(x) Directed Changes;

(xi) any delay or cost risk for which coverage is to be provided through insurance required hereunder; and

(xii) all other matters not caused by Department or beyond the control of Department and not listed in subsections (a) through (g) above.

Fund or **Funds** means any one or more, as the case may be, of the separate special funds established by the Indenture or by any Supplemental Indenture.

Generally Accepted Accounting Principles or **GAAP** means such accepted accounting practice as, in the opinion of the Accountant, conforms at the time to a body of generally accepted accounting principles.

Governmental Person means any federal, state, local or foreign government and any political subdivision or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or entity.

Guaranteed Completion Date shall have the meaning set forth in Section 17.2.1 of the Design-Build Contract.

Guaranty of Contractor Loan Agreement means the Guaranty of Contractor Loan Agreement to be issued on the Financial Closing Date by FC, MKC (Ohio) and MKC (Delaware), in the form attached as Exhibit J to the Comprehensive Agreement, jointly and severally guaranteeing payment and performance by FD/MK under the Contractor Loan Agreement, and any and all amendments and supplements thereto.

Hazardous Substance means (a) any substance, product, waste or other material of any nature whatsoever which is or becomes listed, regulated, or addressed pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., the Hazardous Materials Transportation Act, 49 U.S.C. Section 1801 et seq., the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq., the Toxic Substances Control Act, 15 U.S.C. Section 2601 et seq., the Clean Water Act, 33 U.S.C. Section 1251 et seq., the Clean Air Act, 42 U.S.C. Section 7401 et seq., the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. Section 136 et seq., Virginia Waste Management Act, §10.1-1400 et seq., Code of Virginia (1950) as amended, all as amended or as may be amended, or any other federal, state or local statute, law, ordinance, resolution, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic or dangerous waste, substance or material, as now or at any time hereafter in effect, (b) any substance, product, waste or other material of any nature whatsoever which may give rise to liability under any of the above statutes, (c) petroleum or crude oil or products thereof other than petroleum and petroleum products which are contained within regularly operated motor vehicles, (d) asbestos and (e) radioactive wastes and substances.

Implementation Guidelines means the Implementation Guidelines under the PPTA adopted by the Commissioner on July 1, 1995 governing the selection of Qualifying Transportation Facilities under the purview of Department, as such Implementation Guidelines may be amended or supplemented.

Indenture means the Master Indenture of Trust from the Association to the Trustee pursuant to which the Bonds are to be issued, substantially in the

form attached to the Comprehensive Agreement as Exhibit F, and each Supplemental Indenture entered into pursuant thereto.

Inspection means the act of viewing or looking carefully at construction, manufacturing and design and maintenance practices, processes and products, including document control and Shop Drawing review, to ensure the practices, processes and products comply with the quality requirements contained in the Contract Documents.

Intellectual Property means ETTM books and records, toll-setting and traffic management algorithms, and Software and associated documentation used in connection with the Project (including but not limited to Software and associated documentation used for management of traffic on the Project) and the ETTM Data.

Interest Payment Date means the date on which interest is due and payable on any Series of Bonds.

Interest Rate means any interest rate borne or to be borne by a Series of Bonds.

Investment Security or **Investment Securities** means any one or more of the following securities:

(a) Direct obligations of, or obligations the principal and interest of which are unconditionally guaranteed by, the United States of America;

(b) Obligations, debentures, notes or other evidences of indebtedness issued or guaranteed, directly or indirectly, by any of the following: Bank for Cooperatives; Federal Intermediate Credit Banks; Federal Home Loan Bank System; Export-Import Bank of the United States; Federal Land Banks; Federal National Mortgage Association; Federal Home Loan Mortgage Corporation; Farmers' Home Administration; Tennessee Valley Issuer; Federal Farm Credit System; Federal Financing Bank; the Government National Mortgage Association; the Student Loan Marketing Association; or any successor;

(c) Obligations issued by public agencies or municipalities and fully secured as to the payment of both principal and interest by a pledge of annual contributions under an annual contributions contract or contracts with the United States of America; or temporary notes, preliminary loan notes or project notes issued by public agencies or municipalities, in each case fully secured as to the payment of both principal and interest by a requisition or payment agreement with the United States of America;

(d) Direct and general obligations of or obligations guaranteed by the State, the payment of the principal of and interest on which is a general

obligation of the State, provided that at the time of their purchase, such obligations are rated in one of the two highest rating categories by each Rating Agency;

(e) Demand deposits or interest-bearing time deposits, certificates of deposit or other similar banking arrangements, with the Trustee or a member of the Federal Deposit Insurance Corporation, or any such institution having (or whose parent holding company has) undivided capital and surplus of at least $50,000,000, provided that such time deposits or certificates of deposit, to the extent not insured to the full amount thereof, must be fully secured by obligations of the type specified in (a), (b), (c) or (d) above or (g) below which have a Fair Market Value, including accrued interest, at least equal at all times to the amount of such deposits;

(f) Repurchase Agreements with banks which are members of the Federal Deposit Insurance Corporation or with members of the Association of Primary Dealers in United States Government Securities (or any successor thereof), the underlying securities of which are of the type described in (a) above, which are held by a third party bank for safekeeping on behalf of the Issuer, and which are fully secured at all times by obligations of the same type which have a Fair Market Value, including accrued interest, at least equal to the amount of such Repurchase Agreement, provided that at the time such Repurchase Agreement is acquired, the issuer of the repurchase agreement is rated at least "A" by Moody's, if any Bonds are then rated by Moody's, and at least "A-" by S&P, if any Bonds are then rated by S&P;

(g) Direct and general obligations of any state, political subdivision or governmental authority within the territorial United States of America, provided that at the time of their purchase, such obligations are rated in one of the two highest rating categories by each Rating Agency;

(h) Certificates of deposit of any bank, including the Trustee, with undivided capital and surplus of at least $50,000,000, the unsecured debt of which is rated as of the date of acquisition in one of the two highest rating categories by each Rating Agency, with such certificates of deposit to be secured by any other Investment Securities or any security then acceptable to secure deposits of public funds of the State and having a Fair Market Value, including accrued interest, at least equal to the amount of the certificate of deposit;

(i) Investment agreements with any bank or other financial institution, including the Trustee, with undivided capital and surplus of at least $50,000,000, the unsecured debt of which is rated as of the date of acquisition in one of the two highest rating categories by each Rating Agency, with such investment agreement to be secured by any other Investment Securities described herein or by any security then acceptable to secure deposits of public

funds of the State and having a Fair Market Value, including accrued interest, at least equal to the amount of the Investment Agreement;

(j) Unsecured investment agreements with the Trustee or any bank or other financial institution the unsecured debt or counterparty rating of which is rated, as of the date of acquisition in one of the two highest rating categories by each Rating Agency; and

(k) Any other obligation which, at the time acquired, is rated, by each Rating Agency, in one of the two highest rating categories for long-term obligations or in the highest rating category for short-term obligations.

Issuer means the Association.

ITS 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 or Department or to manage and control traffic, all items listed in the Federal Highway Administration Intelligent Transportation Systems Summary Report dated January 19, 1995, and any future systems or services conceived or developed for the same or similar purposes; however ITS shall not include the ETTM System as used for Project Purposes.

Laws, Regulations and Ordinances means all applicable laws, codes, rules, ordinances, restrictions and regulations of the federal, State, regional or any local government (including those resulting from the initiative or referendum process) and judicial or administrative orders.

Letter of Instructions means a written directive and authorization executed by an Authorized Association Representative.

Letter of Representations means the Letter of Representations between the Issuer and The Depository Trust Company, New York, New York, regarding the Public Debt issued under the Indenture, and, if necessary, any similar letter regarding any additional Bonds offered and sold to the public.

Lien means any pledge, lien, security interest, mortgage, deed of trust or other charge or encumbrance of any kind, or any other type of preferential arrangement (including any agreement to give any of the foregoing, any conditional sale or other title retention agreement, any lease in the nature of a security instrument and the filing of or agreement to file any financing statement under the Virginia Uniform Commercial Code).

Liquidated Damages shall have the meaning set forth in Section 25.6 of the Design-Build Contract.

Master Indenture means the "Master Indenture" referred to in the definition of Indenture, without regard to any Supplemental Indenture.

Memorandum and Assignment means the Memorandum of Comprehensive Agreement and Absolute Assignment of Toll Revenues among Department, FD/MK, the Association and the Trustee in the form of Exhibit K to the Comprehensive Agreement, and any and all amendments and supplements thereto.

MKC (Delaware) means Morrison Knudsen Corporation, a Delaware corporation and its successors.

MKC (Ohio) means Morrison Knudsen Corporation, an Ohio corporation and its successors.

Moody's means Moody's Investors Service Inc., its successors and assigns, and, if Moody's Investors Service, Inc., shall for any reason no longer perform the functions of a securities rating agency, "Moody's" shall be deemed to refer to any other nationally recognized securities rating agency designated by the Issuer and its stead.

Nationally Recognized Municipal Securities Information Repository or NRMSR means a nationally recognized municipal securities information repository, as recognized from time to time by the Securities and Exchange Commission by no-action letter for the purposes referred to in SEC Rule 15c2-12 under the Securities and Exchange Act of 1934, as amended.

NEPA means the National Environmental Policy Act, 42 U.S.C. § 4321 et seq., as amended and as it may be amended from time to time.

Non-Construction Costs means (1) the costs of Project Right of Way acquisition and relocation, (2) the costs of Utility Relocations, (3) the costs of design and engineering, (4) the costs of promoting, marketing and advertising the Project and its opening to the public incurred prior to the commencement of revenue operations on the Project, and (5) any other costs approved by the Department pursuant to Section 3.3 of the SIB Loan Agreement.

Notice of Proposed Change/Direction means a notice issued by Department concerning a possible Change Order, as specified in Section 19.3.2 of the Design-Build Contract.

Notice of Termination means a notice issued by Department to terminate the Design-Build Contract and the performance of the Work by Contractor pursuant to Article 26 of the Design-Build Contract.

Opening Date means the first date on which the Project (other than overpasses and underpasses) is opened for regular public use.

Operating Expenses means Current Expenses.

Operator shall have the meaning assigned to such term in Section 56-557 of the PPTA and, for purposes of the Comprehensive Agreement, means FD/MK from the Agreement Date to and including the Transition Date and means the Association thereafter until the end of the Term of the Comprehensive Agreement.

Optimum Toll Revenues means the highest aggregate Toll Revenues that the Toll Consultant reasonably estimates may be collected in any Fiscal Year, based on a traffic study conducted as and when required under Section 4.2 of the Comprehensive Agreement or Section 717 of the Indenture.

Outstanding means, with respect to any Bonds as of any date, Bonds theretofore or thereupon being authenticated and delivered under the Indenture except:

(a) Bonds canceled or delivered for cancellation at or prior to such date;

(b) Bonds in lieu of or in substitution for which other Bonds shall have been authenticated and delivered pursuant to the Indenture; and

(c) Bonds deemed to have been paid, redeemed, purchased or defeased as provided in the Indenture, in any Supplemental Indenture, as applicable, or as provided by law.

Oversight Budget shall have the meaning set forth in Section 5.2.3 of the Design-Build Contract.

Oversight Services means those services and functions Department has the right or obligation to perform or to cause to be performed under the Laws, Regulations and Ordinances or any Project Agreement in order to monitor, review, manage or administer the Project Agreements or the work or performance of the Operator under the Project Agreements; provided that Oversight Services do not include performance by Department of responsibilities delegated to it under Section 8.3 of the Comprehensive Agreement.

Paying Agent means any bank or trust company or national or state banking association (which may include the Trustee) designated to make payment of the principal and Redemption Price of and interest on the Bonds of any Series, and its successor or successors, hereafter appointed by Supplemental Indenture and meeting the requirements of Article X of the Indenture.

Payment Bond means the payment bond described in Section 22.6 of the Design-Build Contract.

Performance Bond means each performance bond to be provided by a Subcontractor as described in Section 22.6 of the Design-Build Contract.

Person means any individual, public or private corporation, county, district, authority, municipality, political subdivision or other entity of the State or the United States of America, and any corporation, limited liability company, partnership, association, firm, trust, estate, or any other entity whatsoever.

Plans and Specifications means the 100% completed maps, plans, drawings and specifications for different components of the Work as approved by Department's Chief Engineer and bearing the seal of a Virginia licensed engineer.

Plume means the existing underground plume of Hazardous Substances located generally on the west side of the James River in the vicinity of the Route 895 and I-95 interchange, as depicted and described (a) in the certain report entitled "Environmental Site Assessment, Virginia Department of Transportation, I-95/I-895 James River to Route 1," prepared by Nick Froelich, of the Department, and Marshall Miller & Associates, bearing MM&A Project No. VRR190 and (b) on the certain map of such vicinity comparing contamination in 1993 and 1997, prepared by Site Blauveldt.

PPTA means the Public-Private Transportation Act of 1995, which is codified as Title 56, Chapter 22, Section 56-556 et seq., Code of Virginia, as amended from time to time.

Pre-Existing Hazardous Substances means any Hazardous Substance that was present within the Project Right of Way limits prior to acquisition of the property for the Project, and which was not placed or deposited there by either Contractor or Department.

Pre-Opening Expense Draw Request means a draw request from the Issuer on the Draw Request and Certificate form attached as Exhibit 2 to the Master Indenture.

Preliminary Engineering means all the attachments included in Appendices A and B to the Scope of Work.

Principal Installment means, to the extent applicable to a particular Series, as of any particular date of calculation, an amount of money equal to the aggregate of (i) the principal amount or Accreted Value of Outstanding Bonds of such Series which mature on a single future date, reduced by the aggregate principal amount or Accreted Value of such Outstanding Bonds of such Series which would at or before said future date be retired as a result of Sinking Fund Installments applied in accordance with the Indenture plus (ii) the amount of any Sinking Fund Installment payable on said future date for the retirement of any Outstanding Bonds of such Series.

Project means (a) all improvements constituting the Route 895 Connector as generally described in the Scope of Work, (b) the ETTM Facilities and

System, (c) all other improvements and other Work Product to be provided by Contractor as a condition to Final Acceptance in accordance with the Contract Documents, including all replacement wetlands and other off-site improvements required by applicable Law, Regulations and Ordinances and Regulatory Approvals, and (d) any Project Enhancements; provided, however, that the term "Project" as used in the Design-Build Contract excludes any Project Enhancements.

Project Agreement means any of the Comprehensive Agreement, the Memorandum and Assignment, the Contract Documents, the Project Financing Agreement, the Completion Guaranty, the Indenture, the SIB Loan Agreement, the SIB Loan Note, the Contractor Loan Agreement, the Guaranty of Contractor Loan Agreement, the Continuing Disclosure Agreement and the Bonds issued pursuant to the First Supplemental Indenture; and the term "Project Agreements" means all such agreements and documents in the aggregate.

Project Enhancements means any extensions of, additions to, or major modifications, replacements or reconstruction of the Project undertaken by Department or the Association with Department direction and approval after the date of Substantial Completion, including but not limited to new ramps and connectors, roadway and ramp widenings, lane additions (including high occupancy vehicle lanes), rail and transit improvements, and other additional access facilities and capacity improvements to the Project.

Project Financing Agreement means the Project Financing, Assignment and Assumption Agreement among Department, FD/MK and the Association in the form of Exhibit E to the Comprehensive Agreement, and any and all amendments and supplements thereto.

Project Manager shall have the meaning set forth in Section 2.2.3 of the Design-Build Contract.

Project Purposes means and is limited to the developing, permitting, design, financing, acquisition, construction, installation, equipping, maintenance, repair, preservation, modification, operation, management and administration of the Project. Project Purposes exclude, however, any activities associated with Reserved Rights.

Project Right of Way means all real property (which term is inclusive of all estates and interests in real property) which is necessary for ownership and operation of the Project by Department. The term specifically includes (a) all property within the access control line for the Project and (b) the property on which the ETTM Facilities are located. The term specifically excludes any temporary easements or other real property interests which Contractor deems necessary or advisable in connection with construction of the Project and/or Utility Relocations.

Proprietary Software means all Software and associated documentation developed outside the scope of the Comprehensive Agreement and the Design-Build Contract but used for Project Purposes.

Public Debt means the Senior Bonds, the First Tier Subordinate Bonds and any other Bonds issued in a public offering under the Indenture. Public Debt shall not include the SIB Bond, the Contractor Bond or any other Bonds issued to Department or Contractor.

Punch List means the list of Work which remains to be completed after achievement of Substantial Completion, and shall be limited to minor incidental items of Work necessary to correct imperfections which have no adverse effect on the safety or operability of the Project.

Qualified Management Contract means a contract that, pursuant to the applicable United States Treasury regulations, will not result in use of the Project by the manager under such contract being "private business use" within the meaning of Section 141 of the Internal Revenue Code of 1986, as amended.

Qualifying Transportation Facility shall have the meaning assigned to such term in Section 56-557 of the PPTA.

Quality Assurance (QA) means all those planned and systematic actions necessary to provide confidence that all Work fully complies with the Contract and that all materials incorporated in the Work, all equipment and all elements of the Work will perform satisfactorily for the purpose intended. Actions include design checks and reviews; document control; Shop Drawing review and approval; materials sampling and testing at the production site and the Project site; inspection of manufacturing/processing facilities and equipment; inspection of on-site equipment, calibration of test equipment, documentation of QA activities, etc.

Quality Assurance Manager means the independent consultant responsible for inspecting and testing in accordance with the Quality Assurance and Control Inspection Program as described in Appendix C attached to the Scope of Work.

Quality Assurance and Control Inspection Program means the program described in Appendix C attached to the Scope of Work.

Quality Control (QC) means the total of all activities performed by Contractor, designer, producer, or manufacturer to ensure that a product meets Contract requirements. For highway design, construction and maintenance this includes design procedures and checking, materials handling and construction procedures, calibration and maintenance of equipment, Shop Drawing review, document control, production process control, and any sampling, testing, and

inspection done for these purposes. QC also includes documentation of QC efforts.

Rating Agency means any one or more, as the context may require, of the following that as of the date of applying this definition maintain a rating on the applicable Bonds: Fitch, Moody's and S&P.

Rebate Analyst means a certified public accountant, financial analyst or bond counsel, or any firm of the foregoing, or financial institution (which may include the Trustee) experienced in making the arbitrage and rebate calculations required pursuant to Section 148 of the Code and retained by the Issuer to make the computations required under the Indenture or any Supplemental Indenture.

Rebate Fund means the Route 895 Connector Toll Road Revenue Bond Rebate Fund established by Section 502 of the Indenture, and includes any separate accounts or subaccounts established by the terms of any Supplemental Indenture or any agreement pursuant thereto.

Record Date as used with respect to any Interest Payment Date for any Series of Bonds offered and sold to the public means the date designated in any Supplemental Indenture as the record date for the payment of interest on such Series of Bonds, or if no Record Date is so designated (i) with respect to interest not in default, the fifteenth day next preceding such Interest Payment Date in respect of such Series and (ii) with respect to defaulted interest, the fifth day preceding payment thereof.

Redemption Date means the date upon which any Bonds are to be redeemed prior to their respective fixed maturities pursuant to the mandatory or optional redemption provisions of any Supplemental Indenture.

Redemption Price means, with respect to any Bond, the amount, including any applicable premium, payable upon the mandatory or optional redemption thereof, as provided in any Supplemental Indenture.

Reference Documents means those documents listed in the Scope of Work.

Refunding Bonds means all Bonds, whether issued in one or more Series, issued for the purpose of refunding a like or different principal amount of Bonds, and authenticated and delivered pursuant to the Indenture.

Register means the register maintained by the Registrar for each Series of Bonds which shows ownership of Bonds in accordance with Section 308 of the Indenture.

Registrar means any bank or trust company or national or state banking association (which may include the Trustee), designated to keep a Register of the Owners of the Bonds of any Series and its successor or successors,

hereafter appointed by Supplemental Indenture and meeting the requirements of Article X of the Indenture.

Regulatory 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 applicable Laws, Regulations and Ordinances prior to undertaking any particular activity contemplated by the Comprehensive Agreement or Design-Build Contract. The term "Regulatory Approvals" includes the EIS.

Reimbursable Site Work means the portion of the Differing Site Conditions Work, if any, subject to reimbursement by Contractor pursuant to Section 19.4.1.2(e)(ii) of the Design-Build Contract.

Related Financial Transaction means, with respect to any Series of Bonds, a Financial Transaction pursuant to which payments by the Issuer are to be paid from or secured by revenues or funds pledged to the payment of or as security for such Series of Bonds and payments to the Issuer are pledged to the payment of or as security for such Series of Bonds.

Related Party means:

(a) any person or entity that is a stockholder, member, manager or general or limited partner of FD/MK or that owns, directly or through one or more intermediate entities a 10% or greater equity interest in FD/MK (each a "substantial owner");

(b) any entity in which a substantial owner owns directly or through one or more intermediate entities a 10% or greater equity interest;

(c) any entity effectively controlled by a substantial owner; or

(d) senior management of FD/MK, or members of the immediate family of any individual substantial owner or of such senior management.

Renewal and Replacement Fund means the Route 895 Connector Toll Road Revenue Bond Renewal and Replacement Fund established by Section 502 of the Indenture.

Renewal and Replacement Fund Requirement means the amount to be deposited on an annual basis into the Renewal and Replacement Fund as specified by the Department for inclusion in the Annual Budget.

Repurchase Agreement means any agreement entered into with a Person pursuant to which the Trustee, on behalf of the Issuer, purchases and

such Person agrees to repurchase specified Investment Securities, provided that the repurchase price shall not be less than the purchase price.

Reserved Rights means all of the following:

(a) subject to Section 12.1 and the last sentence of Section 19.2 of the Comprehensive Agreement, Department's right to use, possess and enjoy any real and personal property over, on, under or adjacent to the Project Right of Way for other transportation and transit facilities, including but not limited to tunnels, flyovers, interchanges and fixed guideways; and

(b) all right to use, and use of:

(i) all electrical, fiber optic and wireless conduit, cable, capacity, towers, antennas and associated equipment or other telecommunications equipment, hardware and capacity existing over, on, under or adjacent to any Project Right of Way installed by anyone, whether before or after the Agreement Date, and all Software which executes such equipment and hardware and related documentation, to the extent not necessary and required for traffic management for the Project or for other Project Purposes;

(ii) ETTM Data or other data generated from operation of the Project or toll collection technology except as required solely for Project Purposes;

(iii) any area or space over, on, under or adjacent to the Project Right of Way for development and operation of any office, commercial, industrial or mixed use real estate project, such as but not limited to revenue-generating service or rest areas;

(iv) any equipment, facilities or capabilities for ITS studies or applications installed by Department and the right to install any such equipment, facilities or capabilities other than the ETTM System;

(v) toll collection technology for other than Project Purposes; and

(vi) any area or space over, on, under or adjacent to the Project Right of Way for any other commercial or non-commercial development or use.

Responsible Public Entity shall have the meaning assigned to such term in Section 56-557 of the PPTA and, for purposes of the Comprehensive Agreement, means Department.

Retainage shall have the meaning set forth in Section 14.2.6.1 of the Design-Build Contract.

Retainage Account means the Retainage Account of the Route 895 Toll Road Revenue Bond Construction Fund established by Section 502 of the Indenture.

Revenue Fund means the Route 895 Connector Toll Road Revenue Bond Revenue Fund established by Section 502 of the Indenture.

Revenues means all amounts received by or on behalf of the Association from Toll Revenues; proceeds from insurance (other than proceeds of fire and other casualty insurance), condemnation awards with respect to the Project; all amounts payable to the Association (but not Department) as liquidated damages under contracts, in each case, to the extent the same relate to the Project; all amounts derived from the sale or other disposition of the Association's interest in the Project; amounts derived as grants, loans or otherwise from the United States of America, the State or any other Person which may be available for, and which the Association determines to, deposit in the Revenue Fund; all investment earnings that are transferred to or deposited into the Revenue Fund; all moneys released from another Fund or Account and transferred to the Revenue Fund pursuant to subsection 2 of Section 505 of the Indenture; and all other amounts derived from or in respect of the operation of the Project which constitute revenues in accordance with Generally Accepted Accounting Principles, including without limitation tolls and any interest income earned on any Funds and Accounts which is required to be transferred to or maintained in any Fund, Account or Subaccount hereunder; provided, however, Revenues exclude (a) the costs of goods and/or services in kind provided to Association with respect to which Association has no obligation of repayment, (b) moneys and interest thereon held in the 1998 Series D Subaccount of the Construction Fund, (c) moneys and interest thereon held in the Department Capital Cost Savings Account of the Construction Fund, (d) amounts Department elects to fund under Section 6.5(c) or (e) of the Comprehensive Agreement, (e) moneys and interest thereon held in any other Fund or Subaccount other than the Revenue Fund and (f) revenues and proceeds arising out of or relating to Reserved Rights or the disposition of surplus or residual property.

RFC Notice shall have the meaning set forth in Section 19.4.2.1 of the Design-Build Contract.

Right of Way Acquisition Plan means the modifications to Department's Right of Way Manual of Instructions prepared by Contractor and approved by Department pursuant to Section 6.1.1 of the Design-Build Contract.

Right of Way Plans means the Project Right of Way plans included in the Preliminary Engineering.

ROW/Utility Allowance means the portion of the Contract Price allocated to Project Right of Way Work and Utility Relocation Work, as further described in Section 14.1 of the Design-Build Contract.

Rule 15c2-12 means Securities and Exchange Commission Rule 15c2-12 under the Securities Exchange Act of 1934, as amended (17 C.F.R. §240.15c2-12).

S&P means Standard & Poor's Ratings Group, a Division of McGraw-Hill, Inc., its successors and assigns, and, if Standard & Poor's Ratings Group, a Division of McGraw-Hill, Inc., shall for any reason no longer perform the functions of a securities rating agency, "S&P" shall be deemed to refer to any other nationally recognized securities rating agency designated by the Issuer in its stead.

Safety Directed Change means a Directed Change directing Contractor to perform changes in the Work and setting forth a written finding of the Department's Chief Engineer to the effect that it is issued to conform to changes in safety standards or methodologies agreed to or adopted by Department for similar portions of State Highways.

Safety Program means Contractor's approved safety program meeting the requirements set forth in Section 5.1.2 of the Design-Build Contract.

Scheduled Completion Date shall have the meaning set forth in Section 14.5.1 of the Design-Build Contract.

Scope of Work means the document attached to the Design-Build Contract as Appendix 6.

Second Tier Subordinate Bonds means any Bonds designated as "Second Tier Subordinate Bonds" by a Supplemental Indenture.

Second Tier Subordinate Bonds Debt Service Account means the Second Tier Subordinate Bonds Debt Service Account of the Debt Service Fund established by Section 502 of the Indenture.

Securities Depository means The Depository Trust Company, a corporation organized and existing under the laws of the State of New York, and any successor Securities Depository appointed pursuant a Supplemental Indenture.

Senior Bonds mean any Bonds designated as "Senior Bonds" by a Supplemental Indenture.

Senior Bonds Capitalized Interest Subaccount has the meaning set forth in any Supplemental Indenture.

Senior Bonds Capitalized Interest Subaccount Requirement means the amount required to be deposited in the Senior Bonds Capitalized Interest Subaccount by any Supplemental Indenture, calculated in the manner and times as set forth therein.

Senior Bonds Debt Service Account means the Senior Bonds Debt Service Account of the Debt Service Fund established by Section 502 of the Indenture.

Senior Bonds Debt Service Reserve Account means the Senior Bonds Debt Service Reserve Account of the Debt Service Reserve Fund established by Section 502 of the Indenture.

Senior Bonds Debt Service Reserve Account Requirement means the lesser of (I) 10 percent of the issue price within the meaning of the Code of the applicable Senior Bonds, (ii) the maximum annual principal and interest requirements for the applicable Senior Bonds, or (iii) 125 percent of the average annual principal and interest requirements for the applicable Senior Bonds.

Series means Bonds identified as a separate series which are authenticated and delivered on original issuance and any Bonds thereafter authenticated and delivered in lieu of or in substitution for such Bonds pursuant to any Supplemental Indenture. All Bonds of a particular Series shall be of the same Tier.

Series 1998D Bonds Proceeds Account means the Series 1998D Bonds Proceeds Account of the Construction Fund established by Section 502 of the Indenture.

Shop Drawings means drawings showing the sizes, shapes and locations of component elements comprising the Project.

SIB Bond means the Series 1998D Bond issued to the CTB under the Indenture and in accordance with the SIB Loan Agreement evidencing the SIB Loan, and any and all supplements and amendments thereto.

SIB Loan means the loan authorized to be made by the CTB to the Association under the SIB Loan Agreement.

SIB Loan Agreement means the SIB Loan Agreement among the CTB, the Association and the Trustee in the form of Exhibit H to the Comprehensive Agreement, and any and all amendments and supplements thereto.

SIB Loan Note means the promissory note to be delivered by the Association to the CTB in the form attached as Exhibit B to the SIB Loan Agreement.

Sinking Fund Installment means, as of any particular date of calculation and with respect to any Series of Bonds, the amount of money to be applied as the Redemption Price of Bonds subject to mandatory sinking fund redemption in any Fiscal Year prior to maturity pursuant to the Supplemental Indenture for such Series, as such Sinking Fund Installment shall have been previously reduced by

the principal amount of any Bonds of such Series of the maturity in respect of which such Sinking Fund Installment is payable which are purchased or redeemed by the Trustee in accordance with the provisions of Section 507 of the Indenture or of any Supplemental Indenture, other than by the prior payment of a Sinking Fund Installment.

Site means those areas designated in writing by Department for performance of the Work and such additional areas as may, from time to time, be designated in writing by Department for Contractor's use in performance of the Work. The Site initially includes the area within the Project Right of Way limits. For purposes of insurance, indemnification, safety and security requirements and payment for use of equipment the term "Site" also includes any areas on which Utility Relocation Work is performed and any property being temporarily used by Contractor for storage of equipment and/or construction Work.

Software means (a) computer instructions, including programs, routines and databases and applications supplied, procured or developed by Contractor as part of the Work or by the Association or Department in connection with the operation of the Project or other Project Purposes or in connection with Reserved Rights, including but not limited to that which monitors, controls or executes on ETTM Equipment or ITS equipment or hardware, and (b) all modifications, updates and revisions made to the matter described in subsection (a) above, including those made to correct errors or to support new models of computer equipment and/or new releases of operating systems.

Source Code means Software program higher order language listings, internal documentation embedded in program listings, associated data files and data structures, in electronic and/or printed form, necessary for maintenance of and modifications to the Software.

Source Code Documentation means the program level Software design documentation, associated data files, data structures and algorithm descriptions necessary to make program code level modifications to delivered Software.

Standard Specifications means the Virginia Department of Transportation Metric Road and Bridge Specifications dated January 1997, provided that the document attached to the Design-Build Contract as Appendix 9 shall be substituted for Division I thereof. Divisions II through VII will not apply to the Work except in connection with any design furnished by Contractor which references the Standard Specifications.

State means the Commonwealth of Virginia.

State Highway means any highway designated a State Highway pursuant to Title 33.1, Chapter 1, Sections 25, 48 and 67, Code of Virginia.

State Indemnitee means and includes Department, the Commissioner, the CTB, the State and all elected representatives, appointed officials, commissioners, officers, members, employees, authorized agents and authorized representatives of any of them.

Subaccount means any one or more of the subaccounts from time to time created in any of the Accounts established by Section 502 of the Indenture or by any Supplemental Indenture.

Subcontract means any agreement by Contractor with any other Person to perform any part of the Work or provide any materials, equipment or supplies for any part of the Work, or any such agreement at a lower tier, between a Subcontractor and its lower tier Subcontractor.

Subcontractor means any Person with whom Contractor has entered into any Subcontract to perform any part of the Work or provide any materials, equipment or supplies for the Project on behalf of Contractor (and any other Person with whom any Subcontractor has further subcontracted any part of the Work).

Subordinate means, when used with respect to a particular Tier of Senior Bonds, First Tier Subordinate Bonds or Second Tier Subordinate Bonds or bonds or other obligations subordinate thereto, all Bonds with respect to which amounts in the Revenue Fund are to be applied to the Debt Service Account for such Bonds pursuant to subsection 1 of Section 505 of the Indenture at a priority following the priority at which such amounts are to be applied to the Debt Service Account for the particular Tier of Bonds.

Substantial Completion shall have the meaning set forth in Section 17.3 of the Design-Build Contract.

Superior Obligation means a Tier of Bonds that is paid out of a Debt Service Account at a priority above the priority of another Debt Service Account for another Tier of Bonds pursuant to Section 505 of the Indenture.

Supplemental Indenture means any indenture supplemental to or amendatory of the Master Indenture, entered into by the Issuer and the Trustee in accordance with Article XI of the Indenture.

Supplier means any Person not performing work at the Site that supplies machinery, equipment, materials or systems in connection with the performance of the Work. Persons who merely transport, pick up, deliver or carry materials, personnel, parts or equipment or any other items or persons to or from the Site shall not be deemed to be performing work at the Site.

Surety means each properly licensed surety company, insurance company or other Person approved by the State Corporation Commission to do

business in the State, listed in the U.S. Treasury Department Circular 570 and with an A.M. Best and Company rating level of A- or better, Class VII or better, or as otherwise approved by Department, at its sole discretion, which has issued the Payment Bond or Performance Bond.

Surplus Fund means the Route 895 Connector Toll Road Revenue Bond Surplus Fund established by Section 502 of the Indenture.

Tax Compliance Certificate means the tax compliance certificate delivered to the Trustee in connection with any Series of Tax-Exempt Bonds.

Tax-Exempt Bonds means Bonds the interest on which is intended to be excludable from the gross income of the Owners thereof for federal income tax purposes.

Term, for purposes of the Comprehensive Agreement, means the time period commencing on the Agreement Date and expiring on the latest date the Bonds, including the SIB Bond and Contractor Bond are paid (or fully defeased) and the lien of the Indenture has been discharged in accordance with its terms.

Tier means all Bonds of one or more Series the principal and Redemption Price of and interest on which are payable from the same Debt Service Account. Bonds issued pursuant to subsection 2 of Section 720 of the Indenture are deemed to constitute a separate Tier of Bonds.

Toll Consultant means Wilbur Smith & Associates and any other engineer or engineering firm selected by the Association (with the consent and approval of Department and the Trustee) to perform and carry out the duties imposed on the Toll Consultant under the Comprehensive Agreement and the Indenture.

Toll Revenues means all amounts received by or on behalf of the Issuer from fees, tolls, rates and charges for the privilege of traveling on the Project imposed by the Issuer pursuant to the Comprehensive Agreement. Toll Revenues excludes revenues and proceeds arising out of or relating to Reserved Rights.

Toll Servicing Rights shall have the meaning set forth in Section 3.4(b) of the Comprehensive Agreement.

Total Remaining Costs of the Project has the meaning set forth in item F of the form of Draw Request attached as Appendix 3 to the Design-Build Contract and Exhibit 1 to the Master Indenture.

Traffic and Revenue Study means the certain "Route 895 Connector Comprehensive Traffic and Revenue Study," dated May 14, 1998, prepared by Wilbur Smith & Associates, all data, charts, tables analysis and other documentation assembled or prepared by Wilbur Smith in connection therewith

and all existing and future updates, reissuances, supplements and amendments thereto.

Transition Date means the first to occur of (a) the Opening Date, (b) the Final Acceptance Date or (c) the date, if any, that FD/MK's rights under the Comprehensive Agreement and the Design-Build Contract are terminated pursuant to Article XVI of the Comprehensive Agreement.

Transportation Trust Fund Earnings Rate means for any month the composite yield during the preceding month on average assets in the Commonwealth of Virginia Transportation Trust Fund as reported in the Department of Treasury "General Account Investment Portfolio-Monthly Average Balances and Yields." The composite yield is determined by dividing the annualized earnings for the month, which includes interest accruals, accretions, amortization and realized gains and losses, by the average asset balances for the month.

Trustee means Crestar Bank, a Virginia banking corporation, its legal successor, or any other commercial bank or trust company duly organized and existing under the laws of any state or the United States of America, which is authorized under the laws of the State to exercise corporate trust powers and is subject to examination by federal authority, appointed pursuant to Article X of the Indenture as its successor or its successors.

Trust Estate means:

(a) All right, title and interest of the Issuer now owned or hereafter acquired in all Revenues and to the Funds (except for the Rebate Fund, the Series 1998D Bonds Proceeds Account, the Department Capital Cost Savings Account and the Retainage Account) including amounts deposited therein (together with all investments thereof and investment income earned thereon, including Investment Securities held therein); provided, that the Issuer may establish one or more separate accounts in the Funds and Accounts, which accounts and the amounts deposited therein (together with all investments thereof and investment income earned thereon) may be held in trust exclusively for the payment of one or more designated Series of Bonds or portions thereof or for any other designated purpose, or otherwise, all as provided in the Indenture or in any Supplemental Indenture;

(b) Any and all property of every kind and nature (including, without limitation, cash, obligations or securities) which may from time to time hereafter be assigned, hypothecated, endorsed, pledged, granted, or delivered to or deposited with the Trustee by the Issuer or anyone on its behalf, or which pursuant to any of the provisions of the Indenture may come into the possession or control of the Trustee as security under the Indenture, or of a receiver lawfully appointed under the Indenture, including, but not limited to, any Related Financial Transaction (provided, however, that the Issuer's interest with respect

to a Related Financial Transaction and the Revenues derived therefrom shall be part of the Trust Estate only in respect of the Series of Bonds to which such Related Financial Transaction relates), all of which the Trustee is authorized to receive, hold and apply according to the terms of the Indenture;

(c) All right, title and interest of the Association now owned or hereafter acquired in the Project Financing Agreement (including its rights in the Comprehensive Agreement, the Design-Build Contract and certain rights assigned by the Department under the Completion Guarantee), the Guaranty of Contractor Loan Agreement, the Completion Guarantee, the SIB Loan Agreement and the other Project Agreements to which the Association is a party or of which it is a beneficiary; and

(d) Proceeds of the foregoing.

Utility or **utility** means a public, private, cooperative, municipal and/or government line, facility or system used for the carriage, transmission and/or distribution of cable television, electric power, 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 roadways.

Utility Owner or **utility owner** means the owner or operator of any Utility (including both privately held and publicly held entities, cooperative utilities, and municipalities and other governmental agencies).

Utility Relocation means the removal, relocation and/or protection in place (including provision of temporary services as necessary) of any and all utility facilities that have to be removed, relocated and/or protected in place in order to permit construction of the Project.

Warranties means the warranties made by Contractor in Article 11 of the Design-Build Contract.

Work means all of the administrative, design, engineering, real property acquisition support services, Utility Relocation, procurement, professional, manufacturing, supply, installation, construction, supervision, management, testing, verification, labor, materials, equipment, maintenance, documentation and other duties and services to be furnished and provided by Contractor as required by the Contract Documents, including all efforts necessary or appropriate to achieve Final Acceptance except for those efforts which such Contract Documents specify will be performed by Persons other than a Contractor Party.

Working Drawings means drawings needed to show things associated with the construction of something to be constructed, but which will not be part of the permanent construction, e.g. formwork.

Work Product means all the data, information, documentation and other work product produced, prepared, obtained or deliverable by or on behalf of any Contractor Party or the Association and in any way related to the Project or Project Right of Way, including but not limited to Shop Drawings, Working Drawings, Draft Plans and Specifications, Plans and Specifications, record and as-built plans and specifications, engineering documents, geotechnical soils and soil boring data, analyses, reports and records, the Right of Way Plan, property acquisition files, agreements and documents (including records of payment and related correspondence, title policies, parcel diaries and all documents described in Section 6.4.2 of the Design-Build Contract), engineers' and inspectors' diaries and reports, utility relocation plans and agreements, right of way record maps and surveys, Traffic and Revenue Studies, and other feasibility data, analyses, studies and reports, correspondence and memoranda relevant to design or construction decisions, contracting plans, air quality monitoring data, environmental reviews, studies and reports, 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 Regulatory 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, Toll Equipment and Toll Facilities records and reports, and any other documents which can be reasonably described as technical or engineering documents. Work Product expressly excludes, however, documents and information which Contractor or Association (as the case may be) and Department mutually agree in writing, or which a court determines, to be exempted or protected from public disclosure under Section 18.2 of the Comprehensive Agreement and which is not conceived or first reduced to practice for Project Purposes, such as but not limited to the EPD and other proprietary financial and pricing information of Contractor.

APPENDICES

Appendix 1 - Definitions
Appendix 2 - Bridge Foundation Work -- Unit Prices
Appendix 3 - Form of Draw Request and Certificate
Appendix 4 - Form of Payment Bond
Appendix 5 - Form of Performance Bond
Appendix 6 - Scope of Work
Appendix 7 - Minority Business Enterprise Subcontracting Plan
Appendix 8 - Designation of Initial Representatives
Appendix 9 - Division 1, Standard Specifications

DESIGN-BUILD CONTRACT

Route 895 Connector

Dated as of June 3, 1998

by and between

VIRGINIA DEPARTMENT OF TRANSPORTATION,
a department of the Commonwealth of Virginia

and

FD/MK LIMITED LIABILITY COMPANY,
a Delaware limited liability company

BRIDGE FOUNDATION WORK – UNIT PRICES

I-895 Foundation Costs

James River Bridge

West Approach	Units	Unit Cost
Concrete, abutment footing	CM	$310.00
Concrete, pier footing	CM	$310.00
Rebar, abutment footing	KG	$1.23
Rebar, pier footing	KG	$1.23
Steel Piles (360 mm)	M	$104.00
Driving test, steel piles (360 mm)	M	$185.00
Pile points, steel piles (360 mm)	EA	$105.00
Dynamic pile test	EA	$3,100.00
Excavation	CM	$19.00

River Crossing	Units	Unit Cost
Concrete, pier footing	CM	$225.00
Rebar, pier footing	KG	$1.23
Drilled shafts, 1.83M dia	M	$2,470.00
Drilled shafts, 2.44M dia	M	$5,220.00
Drilled shaft load test	EA	$157,500.00
Steel sheet piling	SM	$185.00
Excavation	CM	$38.50

East Approach	Units	Unit Cost
Concrete, abutment footing	CM	$310.00
Concrete, pier footing	CM	$310.00
Rebar, abutment footing	KG	$1.23
Rebar, pier footing	KG	$1.23
Steel Piles (310 mm)	M	$74.00
Driving test, steel piles (310 mm)	M	$95.00
Pile points, steel piles (310 mm)	EA	$95.00
Steel Piles (360 mm)	M	$85.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360 mm)	EA	$105.00
Dynamic pile test	EA	$3,100.00
Excavation	CM	$19.00

Ramp E	Units	Unit Cost
Concrete, abutment footing	CM	$300.00
Concrete, pier footing	CM	$300.00
Rebar, abutment footing	KG	$1.23
Rebar, pier footing	KG	$1.23
Steel Piles (310 mm)	M	$96.00
Driving test, steel piles (310 mm)	M	$150.00
Pile points, steel piles (310 mm)	EA	$95.00
Steel Piles (360 mm)	M	$136.00
Driving test, steel piles (360 mm)	M	$205.00
Pile points, steel piles (360 mm)	EA	$105.00
Dynamic pile test	EA	$3,100.00
Excavation	CM	$19.00

Ramp G	Units	Unit Cost
Concrete, abutment footing	CM	$300.00
Concrete, pier footing	CM	$300.00
Rebar, abutment footing	KG	$1.23
Rebar, pier footing	KG	$1.23
Steel Piles (310 mm)	M	$159.00
Driving test, steel piles (310 mm)	M	$184.00
Pile points, steel piles (310 mm)	EA	$95.00
Steel Piles (360 mm)	M	$170.00
Driving test, steel piles (360 mm)	M	$262.00
Pile points, steel piles (360 mm)	EA	$105.00
Dynamic pile test	EA	$3,100.00
Excavation	CM	$19.00

Ramp H	Units	Unit Cost
Concrete, abutment footing	CM	$300.00
Concrete, pier footing	CM	$300.00
Rebar, abutment footing	KG	$1.23
Rebar, pier footing	KG	$1.23
Steel Piles (310 mm)	M	$100.00
Driving test, steel piles (310 mm)	M	$145.00
Pile points, steel piles (310 mm)	EA	$95.00
Steel Piles (360 mm)	M	$115.00
Driving test, steel piles (360 mm)	M	$165.00
Pile points, steel piles (360 mm)	EA	$105.00
Dynamic pile test	EA	$3,100.00
Excavation	CM	$19.00

JRB and Approaches - Changes from 14 August

Concrete	CM	$300.00
Rebar	KG	$1.23
Steel Piles (360 mm) West	M	$104.00
Steel Piles (360 mm) East	M	$85.00
Pile points, steel piles (360 mm)	EA	$105.00
Excavation	CM	$19.00

Ramps - Changes from 13/14 August 1997

Concrete	CM	$300.00
Rebar	KG	$1.23
Steel Piles (360 mm)	M	$136.00
Driving test, steel piles (360 mm)	M	$205.00
Pile points, steel piles (360 mm)	EA	$105.00
Excavation	CM	$19.00

Small Structures

Mill Road over I-895	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

Osborne Turnpike over I-895	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

Ramp D over Cornelius Creek	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

Laburnum Ave over I-895	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

I-895 EBL over Cornelius Creek	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

I-895 WBL over Cornelius Creek	Units	Unit Cost
Concrete, footing	CM	$285.00
Rebar, footing	KG	$1.02
Steel Piles (310 mm)	M	$89.00
Driving test, steel piles (310 mm)	M	$100.00
Pile points, steel piles (310 mm)	EA	$110.00
Excavation	CM	$38.00

Route 150 over CSX Railroad	Units	Unit Cost
Concrete, footing	CM	$374.00
Rebar, footing	KG	$1.28
Steel Piles (250 mm)	M	$88.00
Driving test, steel piles (250 mm)	M	$100.00
Pile points, steel piles (250 mm)	EA	$100.00
Excavation	CM	$75.00

Route 5 over I-895	Units	Unit Cost
Concrete, footing	CM	$342.00
Rebar, footing	KG	$1.03
Steel Piles (360 mm)	M	$123.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360) mm)	EA	$120.00
Excavation	CM	$43.00
Pile Splice (360 mm)	EA	$150.00

Willson Road over I-895	Units	Unit Cost
Concrete, footing	CM	$342.00
Rebar, footing	KG	$1.03
Steel Piles (360 mm)	M	$123.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360) mm)	EA	$120.00
Excavation	CM	$43.00
Pile Splice (360 mm)	EA	$150.00

I-895 over Darbytown Road	Units	Unit Cost
Concrete, footing	CM	$342.00
Rebar, footing	KG	$1.03
Steel Piles (360 mm)	M	$123.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360) mm)	EA	$120.00
Excavation	CM	$43.00
Pile Splice (360 mm)	EA	$150.00

I-895 over Manahan Road	Units	Unit Cost
Concrete, footing	CM	$342.00
Rebar, footing	KG	$1.03
Steel Piles (360 mm)	M	$123.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360) mm)	EA	$120.00
Excavation	CM	$43.00
Pile Splice (360 mm)	EA	$150.00

Loop B over I-295	Units	Unit Cost
Concrete, footing	CM	$342.00
Rebar, footing	KG	$1.03
Steel Piles (360 mm)	M	$123.00
Driving test, steel piles (360 mm)	M	$140.00
Pile points, steel piles (360) mm)	EA	$120.00
Excavation	CM	$43.00
Pile Splice (360 mm)	EA	$150.00

FORM OF DRAW REQUEST AND CERTIFICATE

DRAW REQUEST AND CERTIFICATE

DRAW REQUEST NO.:_____
CERTIFICATE NO.:_____
DATE:_____

Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219
Attention: Project Manager, Route 895 Connector

Crestar Bank, Trustee
919 East Main Street
Richmond, Virginia 23219
Attention: Ms. Kelly A. Pickerel

Pocahontas Parkway Association
Two James Center
1021 East Cary Street
Richmond, Virginia 23219
Attention: President

Ladies and Gentlemen:

FD/MK Limited Liability Company ("FD/MK"), submits this Draw Request and Certificate (the "Request") pursuant to Section 14.2.3 of the Design-Build Contract dated as of June 3, 1998 (the "Design-Build Contract") by and between FD/MK and the Virginia Department of Transportation ("Department") and subsection 5 of Section 503 of the Master Indenture of Trust between Pocahontas Parkway Association and Crestar Bank as Trustee dated _____, 1998 (the "Master Indenture"). All capitalized terms used in this Request and not defined herein have the respective meanings given to such terms in Appendix A to the Design-Build Contract or otherwise given in the Design-Build Contract. Section numbers shown in this Request are the Section numbers of the Design-Build Contract unless expressly stated otherwise.

The undersigned officer of FD/MK has discussed all matters pertinent to this Request with appropriate officers, agents and employees of FD/MK and its subcontractors, and other parties to ensure the accuracy of this Request, and has made such other examinations and investigations as are necessary for purposes of ascertaining the truth of the statements contained in this Request.

On the basis of the foregoing, the undersigned hereby (1) requests the Trustee to issue and validate checks or other orders drawn on the Construction Fund in the amounts shown on Attachment 1 hereto to the Persons indicated therein and to mail, wire transfer or otherwise

deliver each such order to such Persons in accordance with the instructions set forth in Attachment 1, and (2) certifies, warrants and represents on behalf of FD/MK as follows:

A. Amount of Request.

Line	Item	Reference	Amount
1	Amount for Work performed since last Request:		
2	From Fixed Price Amount (net of previously invoiced, lost material)	14.1.1; 14.2.8.7.4	$
3	From ROW/Utility Allowance	14.1.2	
4	From Bridge Foundation Account		
5	For Bridge Foundation Work	14.1.3.2	
6	For Reimbursable Site Work (net of portion payable from Bridge Foundation Advance)	14.6; 14.6.3	
7	From Oversight Budget	5.2.3	
8	From Contingency		
9A	For Project Right of Way Work	14.1.2.5	
9B	For Utility Relocations Work	14.1.2.5	
10	For ETTM System Work	2.3.1	
11	For Department Oversight Services	5.2.3	
12	For Safety Directed Changes (estimated)	19.3.3.1	
13	For Change Orders/Directive Letters regarding Reimbursable Site Work	19.4.1.2(e)ii	
14	For Change Orders due to non-particular strikes or Utility Owner delay	19.4.1.2(d)	
15	For other Change Orders	19.4.1.2(c)	
16	From Department for Discretionary Directed Changes (estimated)	19.3.3.2	
17	Total amount of Work performed since last Request:		$
18	Adjustments and deductions:		
19	Discretionary Directed Changes payable by Dept	19.3.3.2	( )
20	Change Order Work due to non-particular strikes or Utility Owner delay prior to Final Acceptance	19.4.1.2(d)	( )
21	30% of Reimbursable Site Work performed prior to completion of Bridge Foundation Work	14.6.1	( )
22	Retainage	14.2.6.1	( )
23	Liquidated Damages claimed by Department	14.4; 25.6.1.1	( )
24	Liquidated Damages claimed by Association	14.4; 25.6.1.2	( )
25	Department costs	14.2.7(b); 11.1.3; 25.2.4	( )
26	Other Department deductions under Contract Documents	14.2.7(c)	( )
27	Net amount of Request to Trustee		$

B. Draw from Series 1998D Bond Proceeds Account. The portion of the net amount of this Request representing Non-Construction Costs of the Project eligible and to be drawn for payment from the Series 1998D Bond Proceeds Account in accordance with subsection 3 of Section 502 of the Master Indenture is $_____.

C. Payment and Payees.

1. The Costs of the Project to be paid pursuant to this Request, broken down by payee and the amount for each such payee, together with instructions regarding the method of payment and all appropriate information relating thereto, are as set forth in Attachment 1 to this Request . True and complete copies of the requisition and/or invoice of each such payee are attached hereto as part of Attachment 2 to this Request.

2. All Costs of the Project itemized in Attachments 1 and 2 are now due and payable or are due and payable within 30 days of the date of this Request; and no prior Request or draw has been made or applied to pay such Costs of the Project.

3. The Work for which payment is requested under this Request has been performed and delivered; and the payments to FD/MK and its Subcontractors requested in this Request include only those costs and charges for which FD/MK is entitled to payment at this time under the terms and conditions of the Design-Build Contract.

4. The aggregate amount of all previous draws, if any, paid to FD/MK or its Subcontractors have been applied only to the payment of Costs of the Project heretofore incurred as specified in the Design-Build Contract.

5. If any amount is shown for item A, line 23, 25 or 26 above, Trustee is directed to pay the amount shown directly to the Department. If any amount is shown for item A. line 24 above, Trustee is directed to deposit the amount shown into the Revenue Fund.

D. Certain Calculations.

1. Reimbursable Site Work. The amount requested from the Contingency for Reimbursable Site Work has been calculated in accordance with Sections 14.6.1 and 14.6.2. If this Request shows any amount payable from the Bridge Foundation Account for Reimbursable Site Work, FD/MK certifies and represents that the Bridge Foundation Work is complete.

2. Retainage. The amount of Retainage set forth in item A, line 22 above has been calculated in accordance with Section 14.2.6.1.

3. Liquidated Damages. The amount of Liquidated Damages set forth in item A, lines 23 and 24 above has been calculated in accordance with Sections 25.6.1.1 and 25.6.1.2.

4. ETTM System. The cumulative cost (including any amount requested under this Request) of the ETTM System Work referenced in Section 2.3.1 is $_____.

E. Percentage Completion.

1. The cumulative amount of all prior Requests and this Request drawing against the Fixed Price Amount portion of the Contract Price is $_____, representing _____ percent (____%) of the total Fixed Price Amount portion of the Contract Price.

2. The foregoing percentage of the Fixed Price Amount portion of the Contract Price requisitioned in all prior Requests and this Request does not exceed the percentage of the Work completed.

F. Financing Balance.

1. To the best knowledge of FD/MK, as of the end of the month for which this Request is submitted (check appropriate box):

☐ the Available Construction Fund Amount is sufficient to pay the Total Remaining Costs of the Project.

☐ the Total Remaining Costs of the Project exceed the Available Construction Fund Amount by $_____.

2. The foregoing certification is based on (a) our calculation of a current Available Construction Fund Amount equal to $_____, which calculation is made in reliance on (i) information most recently provided to us by the Trustee with respect to certain fund balances and with respect to unfunded portions of binding commitments issued by the Department to purchase Extraordinary Completion Bonds and (ii) information provided to us by others regarding interest rates under the investment contracts by which unexpended funds in the Construction Fund are invested, (b) our good faith estimate of the rate of future draws against the Construction Fund and (c) the following calculation of Total Remaining Costs of the Project. Our calculation of the Available Construction Fund Amount is made as an accommodation and without any fiduciary duty to the Bond Owners, which is hereby disclaimed.

3. To the best knowledge of FD/MK, the Total Remaining Costs of the Project and the sufficiency or insufficiency of funds to pay the same are as follows:

Line	Item	Amount
1	Amount of draw under this Request:	--
2	Net amount of this Request (item A, line 27 above)	$
3	Sum of amounts payable to Department under item A, lines 23, 25 and 26 of this Request	
4	Amount to be deposited in Revenue Fund under item A, line 24 of this Request	
5	Total (sum of lines 2, 3 and 4)	
6	Remaining Costs of the Project (excluding costs of (i) approved, anticipated and disputed Discretionary Directed Changes, (ii) non-particular strikes and (iii) Utility Owner delay):	--
7	Cost of remaining Work payable from Fixed Price Amount	
8	Unpaid Retainage	
9A	Cost of remaining Project Right of Way Work	
9B	Cost of remaining Utility Relocations Work	

10	Cost of remaining ETTM System Work (payable from the Contingency)	
11	Cost of remaining Bridge Foundation Work	
12	Cost of remaining Department Oversight Services	
13	Cost of remaining Work under pending, approved and disputed Change Orders, Requests for Changes and RFC Notices	
14	Sum of unpaid 30% adjustments for Reimbursable Site Work under this and all prior Requests	
15	Total (sum of lines 7 through 14)	$
16	Total Remaining Costs of the Project (sum of lines 5 and 15)	$
17	Sufficiency (Insufficiency) (Available Construction Fund Amount minus line 16)	$

G. Status of Project Budget

The status of the Project budget under the Design-Build Contract is as follows:

PROJECT BUDGET CATEGORY	INITIAL AMOUNT	AMOUNT OF THIS REQUEST*	TOTAL REQUESTS TO DATE*	AMOUNT REMAINING
Fixed Price Amount	$251,809,520			
Minus transfers to Contingency (14.3.4)	---	( )	( )	
Bridge Foundation Account	36,299,141			
ROW/Utility Allowance	14,000,000			
Oversight Budget	630,000			
Contingency	15,000,000			
Plus transfers from Fixed Price Amount (14.3.4)				
Total	$317,738,661			

*Excluding costs of (i) approved, anticipated and disputed Discretionary Directed Changes, (ii) non-particular strikes and (iii) utility owner delay, unless this is a Request for final payment following Final Acceptance Date.

H. Status of Contract and Contract Performance

1. The expected date of Substantial Completion of the Project is _____, which is (check appropriate boxes):

☐ not later than the Scheduled Completion Date
☐ _____ days after the Scheduled Completion Date; and

☐ not later than the Guaranteed Completion Date
☐ _____ days after the Guaranteed Completion Date.

2. As of the date of this Request, the Department claims it is responsible for payments under Section 19.3.3.3 for not more than ___ days by reason of Discretionary Directed Changes.

3. The Project is being built in accordance with the Scope of Work and the Contract Documents, and in compliance with all Laws, Regulations and Ordinances in effect at the time of performance of the relevant Work.

4. All Regulatory Approvals required for the construction of the Project and opening of the Project for normal use and operations either:

a. have been obtained and remain in full force and effect and are not subject to any appeals or further proceedings or to any unsatisfied conditions that may allow material modification or revocation; or

b. with respect to Regulatory Approvals required for construction or opening for normal use and operations and not yet obtained, such Regulatory Approvals could not be reasonably obtained before the date hereof and FD/MK has no reason to believe that such Regulatory Approvals will not be granted in due course prior to the date that such Regulatory Approvals are required in connection with the construction of the Project or opening of the Project for normal use and operations.

5. FD/MK has obtained all Subcontractor's and manufacturer's representations, warranties, guaranties and obligations required to be obtained by FD/MK under Sections 11.3 and 12.7(b) and (d) with respect to all Work performed and materials and equipment procured to date under the Design-Build Contract.

6. All insurance policies and coverages required under Article 22 of the Design-Build Contract are in full force and effect.

7. No Event of Default under the Design-Build Contract, no FD/MK Default under the Comprehensive Agreement, and no default by FD/MK, FC or MKC under any other Project Agreement exists on the date of this Request or shall occur as a result of the making of the draw to which this Request relates.

8. All representations and warranties of FD/MK, FC and MKC contained in the Design-Build Contract, the Comprehensive Agreement or any of the other Project Agreements in effect on the date hereof are true and correct in all material respects on and as of the date hereof (except for such representations or warranties that by their terms relate solely to a specific prior date) with the same effect as if made on and as of the date hereof.

9. The Design-Build Contract and each of the other Project Agreements executed on or prior to the date hereof and to which FD/MK, FC or MKC is a party is in full force and effect as of the date hereof (or, in the case of the first Request, will be in effect on the date of the draw

thereunder), each without amendment or modification except in accordance with the terms thereof and of the Design-Build Contract.

10. All amounts drawn hereunder are for Costs of the Project and no such amounts are for working capital for the Association.

I. Documentation and Conditions of Request.

1. This Request is accompanied by all documents as are required to be delivered by FD/MK pursuant to Sections 14.2.2 and 14.2.3 (and not previously delivered).

2. The information in all documents and supporting papers prepared by FD/MK, and, to the best knowledge of the FD/MK, its subcontractors, and submitted to the Department in connection with this Request is true, correct and complete.

3. The conditions to draw under this Request set forth in the Master Indenture and SIB Loan Agreement have been satisfied or waived in accordance with the terms of the Master Indenture and SIB Loan Agreement.

J. Authority; Continuation of Certifications.

1. The undersigned has the authority to deliver this Request on behalf of FD/MK.

2. The Department, Trustee and Association may assume that the matters certified herein remain true from and after the date hereof through the date of the draw to which this Request relates unless the undersigned shall have delivered to Department, Trustee and Association a certificate as to any change in any of such matters, which the undersigned hereby agrees to give promptly after obtaining knowledge thereof.

IN WITNESS WHEREOF, the undersigned has caused this Request to be executed by its duly authorized officer on the date first above written.

FD/MK LIMITED LIABILITY COMPANY

By:_____
Name:_____
Title:_____

APPROVED FOR PAYMENT IN ACCORDANCE
WITH PAYMENT INSTRUCTIONS HEREIN:

_____
Name: _____
Title: Authorized Department Representative

ATTACHMENT 1 TO DRAW REQUEST AND CERTIFICATE

Payment Instructions

NAME AND ADDRESS OF PAYEE	PAYMENT INSTRUCTIONS	AMOUNT (less Retainage, Adjustments and Deductions)
FD/MK Limited Liability Company [insert address]	[e.g. Wire to: _____]	$
Virginia Department of Transportation [insert address]	[e.g. Wire to: _____]	
[Others, e.g. escrow holders for ROW acquisitions; court clerks for ROW condemnations; Utility Owners for Utility Relocations]		
Total Invoice		$

ATTACHMENT 2 TO DRAW REQUEST AND CERTIFICATE

Invoices for Costs of the Project for the Route 895 Connector

[Attach, among other things, the following:

- FD/MK invoices in accordance with, and which describe status of completion as it relates to, CPM/Payment Schedule;
- FD/MK and Subcontractor certificates of receipt of all prior progress payments due (except for Retainage and disputed amounts);
- For Requests that include amounts payable on time and materials basis, all supporting documentation required under Section 19.7;
- For Requests that include amounts payable on unit price basis, invoices, receipts or other evidence establishing number of units delivered.]

PAYMENT BOND
(Route 895 Connector)

Know all men by these presents, that we, FD/MK Limited Liability Company, a Delaware limited liability company (hereinafter called the "Principal") and _____ (hereinafter called the "Surety"), are held and firmly bound unto the Virginia Department of Transportation, a department of the Commonwealth of Virginia (hereinafter called the "Owner") and Crestar Bank, a Virginia banking corporation (collectively, the "Obligee"), in the full and just sum of $288,108,661 lawful money of the United States of America, to be paid to the Obligee, its successor and assigns, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally and firmly by these presents:

Whereas, the Principal has entered into a certain Design-Build Contract dated as of June 3, 1998, with the Owner (the "Contract"), which Contract is incorporated by reference herein; and

Whereas, it is one of the conditions of the Contract that these presents shall be executed.

Now, therefore, the condition of this obligation is such that if the Principal shall promptly pay all just claims for labor and material (including public utility services and reasonable rental of equipment when such equipment is actually used at the site) performed for or supplied to the Principal or any Subcontractor in the prosecution of the work contracted for, then this obligation is to be void; otherwise, to be and remain in full force and virtue in law.

No alteration, modification or supplement to the terms of the Contract or any Subcontract or the nature or the work to be performed thereunder, including any extension of time for performance, shall in any way affect the obligations of the Surety. The Surety waives notice of any alteration, modification, supplement or extension of time.

The Principal and Surety shall not be liable under this bond to the Obligee in the aggregate in excess of the penal sum stated above.

Witness, the signature of the Principal and the signature of the Surety and their corporate seals duly attached hereunto affixed this _____, 19__.

FD/MK Limited Liability Company,
a Delaware limited liability company

By:_____
(SEAL)

Title:_____

_____
(Address)

_____
(Surety Company)

By: _____
(SEAL)

Title: _____

_____
(Address)

[*Add appropriate acknowledgments*]

PERFORMANCE BOND
(Route 895 Connector)

Know all men by these presents, that we, _____ [*Subcontractor*] (hereinafter called the "Principal") and _____ (hereinafter called the "Surety"), are held and firmly bound unto the Virginia Department of Transportation, a department of the Commonwealth of Virginia (hereinafter called the "Owner"), FD/MK Limited Liability Company, a Delaware limited liability company (hereinafter called "FD/MK") and Crestar Bank, a Virginia banking corporation (collectively, the "Obligee"), in the full and just sum of $_____ [*100% of Subcontract price*] lawful money of the United States of America, to be paid to the Obligee, its successor and assigns, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally and firmly by these presents:

Whereas, FD/MK has entered into a certain Design-Build Contract dated as of June 3, 1998, with the Owner (the "Contract");

Whereas, the Principal has entered into a certain subcontract under the Contract dated as of _____, with FD/MK (the "Subcontract"), which Subcontract is incorporated by reference herein; and

Whereas, it is one of the conditions of the Subcontract that these presents shall be executed.

Now, therefore, the condition of this obligation is such that if the Principal shall in all respects comply with the terms and conditions of the Subcontract and its obligations thereunder, including any and all amendments and supplements thereto, and shall indemnify and save harmless each Obligee against or from all costs, expenses, damages, injury or loss to which the Obligee may be subjected by reason of any wrongdoing, misconduct, want of care or skill, negligence or default, including patent infringement, delay or failure to comply with Contract provisions, on the part of the Principal, its agents or employees, in the execution or performance of the Contract, and shall pay all just claims for damages and injury to property then this obligation to be void; otherwise, to be and remain in full force and virtue in law.

No alteration, modification or supplement to the terms of the Subcontract or Contract or the nature or the work to be performed thereunder, including any extension of time for performance, shall in any way affect the obligations of the Surety. The Surety waives notice of any alteration, modification, supplement or extension of time.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Obligee or the heirs, executors, administrators, successors or assigns of the Obligee.

The Principal and Surety shall not be liable to the Obligee or any of them if the Obligee or any of them has materially defaulted under their payment obligations to the Principal under the terms of the Contract.

The Principal and Surety shall not be liable under this bond to the Obligee in the aggregate in excess of the penal sum stated above.

Witness, the signature of the Principal and the signature of the Surety and their corporate seals duly attached hereunto affixed this _____, 19__.

_____ (Subcontractor)	_____ (Surety Company)
By:_____ (SEAL)	By: _____ (SEAL)
Title:_____	Title: _____
_____ (Address)	_____ (Address)

[*Add appropriate acknowledgments*]

SCOPE OF WORK

PROJECT SCOPE - 895

June 2, 1998

Introduction:

The purpose of this document is to describe the scope and standard of services to be provided by FD/MK in the design and construction of Route 895 as proposed under the authority of the Virginia Public Private Transportation Act of 1995. The roadway shall begin generally at the existing I-95/Route 150 interchange in Chesterfield County, span the James River and terminate in Henrico County at I-295. As the design basis for project engineering and construction, the project will adhere to the geometry and standards set in the Preliminary Designs indicated by the plans dated January 30, 1998, attached. Any changes from the Preliminary Design shall be approved by the Chief Engineer, under article 19 of the Design- Build Contract.

Standards:

Work under this agreement will be in accordance with the following documents, which are incorporated by reference to this project scope.

AASHTO A Policy on Geometric Design of Highways and Streets, 1994 edition
AASHTO An information Guide for Roadway Lighting
AASHTO Guide for Design of Pavement Structures (Rigid Pavement)
AASHTO Guide Specifications for Distribution of Loads for Highway Bridges, 1994 edition
AASHTO Guide Specifications for Horizontally Curved Highway Bridges, 1993 edition
AASHTO Standard Specifications for Highway Bridges, Sixteenth Edition, 1996 w/VDOT Modifications
AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals. 1994 edition
Americans with Disabilities Act Accessibility Guidelines for State and Local Government Facilities
American Water Works Association Standards
FHWA Roadway Lighting Handbook
Transportation Research Board Highway Capacity Manual, Third Edition, 1994
USDOT Manual on Uniform Traffic Control Devices, 1988 edition
VDOT Drainage Manual, 1980 edition
VDOT Manual of Practice for Planning Stormwater Management, January 1992 Edition
VDOT Metric Road and Bridge Specifications, January 1997 Edition
VDOT Road and Bridge Standards, Volumes I and II, 1996 Edition
VDOT Road Design Manual, Volumes I and II, 1996 Edition
Virginia Erosion and Sediment Control Handbook, Third Edition, 1992
Virginia Uniform Statewide Building Code, 1997 Edition
Virginia Work Area Protection Manual, January 1, 1996 Edition
VDOT Post Construction Manual 1997 Edition
VDOT Hauling Permit Manual 1996 Edition
AASHTO Fracture Critical Non-Redundant Steel Bridge Members Current Spec. w/ all Interim's
AASHTO "Guide Spec.'s for Design and Construction of Segmental Concrete Bridges" 1989 w/ Interim's
AASHTO "Guide Spec.'s and Commentary for Vessel Collision Design of Highway Bridges, 1991
AASHTO LRFD Design Specifications, 1999
AASHTO "Guide Spec.'s for Thermal Effects in Concrete Bridges Superstructures" w/ Interim's
Construction and Professional Services Manual (Department of General Services)
VDOT Construction Manual, 1996 Version
VDOT Manual of Instruction Materials Division, 1995 Version
VDOT Phase Inspection, 1983 Version

Specific design criteria shall be the design criteria set forth in VDOT design contracts 0895-020-F01,PE101,C501,B601 and 8095-043-F01,PE101,C502 (Site - Blauvelt Engineers Inc. as primary consultant and 0895-043-F01,PE101, C501 (Sverdrup Civil, Inc. as primary consultant).

Description:

The facility includes the following:

A. ROUTE 150/ROUTE I-95 INTERCHANGE

The facility begins and ties directly to Route 150 near the Route 150/Route 1 interchange and will initially provide the same number of traffic lanes and configuration. Route 895 proceeds easterly, crossing over and having access to Route I-95. The existing ramps from east bound Route 150 to north and south bound Route I-95 to west bound Route 150 are retained. All existing ramps and loops on Route 150 from and to Route 1 are also retained.

The proposed access ramps between Route 895 and Route I-95 are Ramp E, from north bound Route I-95 to east bound Route 895; Ramp F, from south bound Route I-95 to east bound Route 895; Ramp G, from west bound Route 895 to south bound Route I-95; and Ramp H, from west bound Route 895 to north bound Route I-95. All ramps are single lane ramps.

Ramp F is not part of this Scope of Work but is anticipated to be built in the future at such time that traffic demands warrant. The design and construction of the Project shall be consistent with the construction of Ramp F when traffic density warrants.

The foundations for all bridge piers for these ramps will be on driven steel pile with at grade concrete pile caps. The ramp bridge superstructures shall be steel plate girders on curved ramps and pre-cast segmental concrete box girders on all others. All bridge decks shall be concrete.

B. WEST APPROACH

The mainline Route 895 west approach to the Route I-95 interchange will provide eight lanes (four each direction providing three through lanes each direction plus one lane for acceleration/deceleration at ramp termini) and have two parallel bridges carrying three lanes each over the CSX Railroad. All bridge pier foundations will be on driven pile with at grade concrete pile caps. The bridge will begin at station 9+07 and the superstructure will be precast segmental concrete sections.

C. ROUTE I-95 CROSSING

Route 895 over Route I-95 will provide six lanes (three each direction) on two parallel bridges carrying three lanes each. All bridge pier foundations will be on driven steel pile with at grade, concrete pile caps. The superstructure will be precast segmental concrete sections.

D. JAMES RIVER BRIDGE

Route 895 over the James River will provide eight lanes (four each direction providing three through lanes each direction plus one lane for acceleration/deceleration at ramp termini) supported on two parallel structures each carrying four lanes. The bridge pier foundations will be provided by drilled concrete caissons. An approximate total bridge length of 440 meters over three spans and for EBL Route 895 and bridge lengths of approximately 527 meters over four spans for WBL Route 895 will provide a minimum vertical clearance of 44.2 meters (145 feet) over the James River mean high tide water elevation and provide a minimum horizontal clearance of 91.44 meters(300 feet) of clear channel. The superstructure will be cast-in-place segmental concrete sections.

E. EAST APPROACH

Route 895 will continue on the east approach as a six lane facility on structure to approximate Station 23+60 as shown on the January 30,1998 Preliminary Plans. From Station 23+60, Route 895 continues as a six lane facility to the Toll Plaza. All bridge pier foundations will be on driven steel piles with at grade concrete pile caps. The superstructure will be precast segmental concrete sections.

F. TOLL PLAZA

Initial construction will provide four lanes (two each direction) on Route 895 from the Toll Plaza Eastern transition to the Route 5/Laburnum Avenue interchange. The median lanes in each direction will be reserved for construction until such time as the traffic demand warrants. All design and construction shall be consistent with the addition of these lanes in the future. Toll Plaza design including lane widths and clearances must be equal to meet the standards of similar facilities in service locally.

The Toll Plaza will begin at approximate Station 27+00 and end at approximate Station 13+60. East bound lanes through the toll plaza shall consist of two automatic vehicle identification (AVI) lanes carrying traffic directly through the toll plaza. These two lanes shall be the two inside lanes. Three lanes, serviced with manned toll booth, with access via tunnel from an administrative area, will consist of the three outside lanes on the toll facility. Both AVI and standard lanes shall be oriented so as to be consistent with expansion of one lane each. The West bound lanes through the toll plaza shall mirror the east bound lanes. Tunnel servicing the toll plaza shall lead from the basement of an Administration Building to service the manned toll booths via stairways. The tunnel shall carry utilities, provide ventilation and safe access to the toll plaza for personnel and movement of toll revenues to secured facilities in the Administrative Building.

Administrative building of approximately 6,000 square feet shall have facilities meeting standard industry requirements to provide for the efficient handling, secured storage, and accounting of revenues, communication with regional automated toll systems, and adequate space for supervisory personnel. Building and toll facility shall be equipped with an un-interruptible power supply system, emergency generator, and parking sized for the staff and 5 visitors. The Toll collection system shall have the same performance characteristics as the AVI system on VDOT's Local Toll both for electronic and non-electronic collection, such as the Powhite Parkway Fastoll System, as shown in Appendix E.

Overhead canopy shall consist of two canopies approximately 27' 11" by 89' 3" each.

G. ROADWAY AND ROUTE I-295 INTERCHANGE

From the Route 5/Laburnum Avenue interchange, Route 895 will continue as a four lane(2 lanes in each direction) facility (37.5 meters shoulder to shoulder with 2:1 safety slopes) to its terminus at the interchange of Route 895 and Route I-295. Ramps A and B will provide access from south and north bound Route 295 to west bound Route 895. Ramps C and D will provide access from east bound Route 895 to north and south bound Route I-295. All ramps shall be single lane.

The Scope of Work does not include Ramps A and D; however, the design shall include features which will serve to minimize costs of construction of these ramps when warranted. These ramps will be added at such time that traffic demand warrants. Design and construction shall be consistent with construction of these ramps when warranted.

H. LABURNUM INTERCHANGE

At the Route 5/Laburnum Avenue interchange, access to and from both east and west bound Route 895 will be provided via a four lane access road which will intersect at-grade in the southern quadrant of the intersection of Route 5 and Laburnum Avenue. At the at-grade intersection, two through lanes to Laburnum Avenue with left and right turn lanes into Route 5 will be provided with traffic signal control.

I. GRADE SEPARATION AND STREAM CROSSING STRUCTURES

Between the Toll Plaza and Route I-295, Route 895 will cross over Darbytown Road and Monahan Road. At both crossings the clearance under the overpass is to be sufficient to allow for an urban four lane roadway with raised median, bike lanes and sidewalks. Construction will maintain the operation of the two lane cross road at both locations.

Mill Road, Route 5 (New Market Road) and Willson Road will be bridged over Route 895 by a two lane

structure. Construction will maintain the operation of the two lane cross road at all locations.

Osborne Turnpike will be bridged over Route 895 by a four lane structure. Construction will maintain the operation of the two lane crossroads.

At all locations, any improvement or reconstruction of the cross road will be completed insuring compliance with current criteria, standards and specifications.

Yarnell Road and Britton Road will be terminated by cul-de-sacs on both sides of Route 895 with access to these roads maintained via other roads at all times.

The construction of Route 895 and cross roads shall generally conform to the design as depicted on the January 30, 1998 Preliminary Plans and provide all features and accesses as indicated thereon with the exception of those features named herein that have been itemized and approved for exclusion.

Grade separation structures shall be as shown on Figure 1

J. ULTIMATE DESIGN

The design and construction of the Project shall be consistent with those items described herein for construction at a later date (the "Ultimate Design") and shall not cause additional environmental consideration or permitting. The features which will not be initially constructed will be Ramp F, Ramp A, Ramp D, the fifth and sixth lanes between the toll plaza and Laburnum Avenue and the second lane of Ramp B and Ramp C.

Permits.

All permits and applications shall be the responsibility of FD/MK.

The project shall be designed and built under the requirements of, among other things, the Corps of Engineers permits authorized under Section 401/404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, Virginia Water Protection Permit from Department of Environmental Quality and a Virginia Pollutant Discharge Elimination System Permit (stormwater), and the Subaqueous Bed Permit from Virginia Marine Resources Commission. The Joint Permit Application shall delineate all of the wetland temporarily, adversely, or permanently impacted by construction of the project. Mitigation for the work shall be completed in accordance with the conditions of the Joint Permit. Initial construction shall be performed so as to require no further permit activities with the addition of future lanes, ramps and bridges as described in the full build alternative. The limit and extent of wetlands takes resulting from this Project are as shown in the approved permits, issued by the Corps of Engineers, Department of Environmental Quality and the Virginia Marine Resources Commission.

Right of Way.

The right of way to be acquired shall be sufficient to facilitate the full build design. No further right of way is to be required when construction of the full build facility is completed. Right of Way and Utilities to be performed in accordance with the Right of Way Acquisition Plan as developed by the parties and the Design-Build Contract.

Maintenance of Traffic

Maintenance of Traffic shall conform to the Plan as required by the Design- Build Contract and approved by the Chief Engineer and shown conceptually in the Preliminary Design. Variances to the Plan shall be requested by FD/MK and approved by the Sandston Resident Engineer. Documentation of the variance shall be maintained by FD/MK. Other than the lane restrictions approved as a part of the Plan as approved by the Residency, no temporary lane restrictions shall take place between the hours of 5:30 and 8:30 AM and 4:00 and 7:00 PM Monday through Friday.

No temporary lane restrictions shall take place between 12:00 noon on the Friday preceding and 12:00 noon the Tuesday following Memorial Day and Labor Day; or July 4 and Christmas Day if these holidays occur on Saturday or Sunday. No lane restrictions shall take place between 12:00 Noon Wednesday preceding and 12:00 noon the Monday following Thanksgiving Day. All activities related to the Project that have an impact on the traveling public shall be performed in accordance with the Construction Traffic Management Plan to be developed by FD/MK.

Temporary signage used during the construction of the project shall conform to the Manual of Uniform Traffic Control Devices.

Coordination with other VDOT construction efforts in the area shall be coordinated through the Sandston Residency. FD/MK shall adhere to the direction of the Residency.

The Construction Traffic Management Plan shall include an operational traffic analysis and proposed mitigation measures on the Project during the course of construction and their interface with the connecting and adjacent public transportation facilities and State Highways. The following information and relevant underlying assumptions shall be provided, as appropriate, for the peak a.m. and p.m. periods, for the transitional periods in which the operation of the Project changes from that in effect during the peak period operations and for non-peak, non-transitional operating periods:

(a) existing and projected volumes;

(b) ingress and egress locations;

(c) types of vehicles allowed or excluded from the project;

(d) weaving lengths under anticipated traffic flow patterns:

(e) the connections at each end of the Construction Segments;

(f) scheduling of temporary traffic diversions;

(g) enforcement areas and procedures;

(h) delays and queues;

(i) impact on public transit and HOV operations;

(j) public information, driver information plans and incident response; and

(k) provisions for construction worker safety.

The Construction Traffic Management Plan shall set forth standards and procedures for designating each Construction Segment and shall initially identify each Construction Segment. Contractor may from time to time change the designation of Construction Segments provided the change conforms to such standards and procedures and Department has approved the change in writing. Department shall not unreasonably withhold or delay its approval. Each such change shall become effective when Department and Contractor execute a written amendment or supplement to the Construction Traffic Management Plan setting forth such change.

Pavement

Typical pavement sections shall be as shown in Appendix B.

Signage and Lighting.

The main line and ramps in the I-95/895 interchange shall be lighted from the intersection with the existing grade of Route 150, through the toll plaza, to a point 300 meters east of the toll plaza. A duct bank system shall be provided throughout the length of the project sufficient for all coaxial and fiber optic cable which may be required in connection with operation of the full-build project. Cable shall be installed as required for operation of the Project.

Permanent Signs shall be a part of the Work under the Design - Build Contract to be furnished by FD/MK. This plan shall include directional and enforcement signs. The sign plans shall be approved by the Chief Engineer.

Construction Schedule.

Schedule of Construction shall be as described in Sections 13 and 17 of the Design-Build Contract.

Quality Assurance and Control Inspection Program shall be in accordance with Appendix C.

Plan preparation shall be accordance with Appendix D.

Appendices:

A - Preliminary Plans and Special Provisions (January 30, 1998).
B - Pavement Design and Geotechnical Data (January 30, 1998).
C - Quality Assurance and Control Inspection Program
D - Plan Preparation
E - ETTM Performance Specification (This is a general specification with final design to be approved by the Department.)

FIGURE 1

GRADE SEPARATION/STREAM CROSSING STRUCTURES - ROUTE 895

The dimensions and stations shown herein and on the Preliminary Design Plans dated January 30, 1998, and attached as a part of Appendix D are approximate and are subject to final design which is the responsibility of FD/MK.

Structure	Length (radial- meters)	Width (out-to-out meters)
0895-020-F01,PE101,C501		
B601-WBL Route 895 over I-95 and James River	1,453.0	Varies
Includes Ramp G	854.0	15.42 to 22.62
Includes Ramp H	722.0	10.0
AND		10.0
B602-EBL Route 895 over I-95 and James River	1,453.0	Varies
Includes Ramp E	808.5	15.42 to 22.62
		10.0
Plan Set 1 - Mainline Structures Sheets 1-127 Plan Set 2 - Ramp Structures Sheets 1-69 Special Provisions dated January 30,1998		
B603 - Route 150 over CSX RR Sheets 1-11	53.03	41.3
B604 - SBL I-95 over Falling Creek * Sheets 1-8	115.21	4.96 (Widened Portion)
B605-Ramp H over Esso Road * Sheets 1-9	6.35	10.0 (Widened Portion)
B606-Ramp H over Dupont Waterline Sheets 1-6	16.03	3.81 (Widened Portion)
0895-043-F01,PE101,C502		
B601-Mill Road over Route 895 Sheets 1-11	122.0	14.2
B602-Osborne Turnpike over Route 895 Sheets 1-11	100.0	21.4
B603-Ramp D over Cornelius Creek Sheets 1-12	66.0	10.0
B604-Laburnum Avenue over Route 895 Sheets 1-10	85.0	22.0

* THIS WORK WILL BE PERFORMED BY VDOT.

FIGURE 1
PAGE 2

Structure	Length (radial- meters)	Width (out-to-out meters)
B605-EBL Route 895 over Cornelius Creek Sheets 1-11	90.0	17.42
B606-WBL Route 895 over Cornelius Creek Sheets 1-14	90.0	Varies 13.6 to 26.33
0895-043-F01,PE101,C501		
B607-Route 5 (New Market Road) over Route 895 Sheets 1-10	53.23	15.4
B608-Willson Road over Route 895 Sheets 1-10	53.23	13.0
B609-WBL Route 895 over Darbytown Road AND	33.63	13.6
B615-EBL Route 895 over Darbytown Road Sheets 1-10	33.63	13.6
B616-EBL Route 895 over Monahan Road AND	33.83	13.6
B617-WBL Route 895 over Monahan Road Sheets 1-10	33.83	13.6
B612-Loop B over I-295 Sheets 1-10	87.24	10.6

APPENDIX A
PRELIMINARY PLANS AND SPECIAL PROVISIONS (JANUARY 30, 1998)

[Copies on file with Department, FD/MK and Association]

APPENDIX B
PAVEMENT DESIGN AND GEOTECHNICAL DATA

[Copies on file with Department, FD/MK and Association]

APPENDIX C

QUALITY ASSURANCE AND CONTROL INSPECTION PROGRAM

INTRODUCTION

QA MANAGER, an independent consultant to FD/MK, will be responsible for providing Quality Assurance and Control Inspection to monitor the ROUTE 895 construction activities for conformance with the approved Drawings, Specifications and related documents.

The Virginia Department of Transportation (VDOT) may provide quality assurance inspection during the life of the project, to verify conformance with VDOT's obligations under Design-Build Contract. The Corps of Engineers (COE), Chesterfield County, Henrico County, City of Richmond, and the Trustee and the various utility companies affected by ROUTE 895 may also occasionally provide spot inspection to review construction compliance with their respective contractual or legal requirements.

VDOT Standards and Specifications, including any project supplemental specifications specifically identified in The Contract Documents between VDOT and FD/MK, shall at all times govern the construction of this project. The QA MANAGER shall be the interpreter of these requirements unless otherwise directed by VDOT. The QA MANAGER shall certify that all construction has been placed in accordance with the approved plans and specifications.

To protect the interest of VDOT and the Bond Owners, as specified in the Design-Build Contract, a Quality Assurance and Control Inspection Program (QA/CIP) will be implemented to address and define inspection and reporting responsibilities. This Program is defined on the following pages and reflects the unique relationships among the parties involved in this Project.

ORGANIZATION AND RESPONSIBILITIES

The QA MANAGER will be responsible for monitoring the construction activities for Contractor compliance to the QA/CIP and to provide the necessary documentation and coordination of all construction engineering, inspection and testing of construction materials and construction. Actual QA/CIP manpower requirements will be determined by the QA MANAGER based upon the levels of construction activities undertaken by the Contractor and to adequately and properly monitor the work to be certified as required by the Design-Build Contract and the Project's approved schedule.

The QA Manager's Project Resident Engineer (PRE) will have overall responsibility to coordinate the utilization of Independent Materials Testing Agencies' Inspectors. The PRE will coordinate with the FD/MK's Project Manager (PM) as to the Project's schedule and the inspection staff required to adequately and properly monitor these activities for certification of compliance to VDOT.

The QA MANAGER will inform the FD/MK when the quality of its work is unsatisfactory. QA MANAGER will inform the Subcontractor when the quality of its work is unsatisfactory. The PRE will notify FD/MK if corrective measures are not implemented in a timely manner. FD/MK will make all decisions regarding removal of defective work or reduction of payment to the Subcontractors, keeping VDOT's Sandston Resident Engineer informed.

The VDOT Quality Assurance inspectors will be afforded the opportunity to perform any inspection activities including but not limited to those listed below:

- Review locations where pipe and culvert are to be installed - temporary or permanent
- Inspect pipe and culvert foundations before bedding material is placed
- Review pipe and culvert invert elevations
- Inspect bridge foundations prior to placement of concrete
- Review rebar and form work prior to concrete placement
- Monitor bridge deck and bridge substructure concrete placement

- Review significant plan changes
- Attend scheduling meetings
- Have access to all Project inspection documentation
- Review failed material tests with FD/MK and the PRE
- Coordinate all discrepancies and safety concerns with FD/MK, the Subcontractor and the PRE
- Provide overview inspection of off-site asphalt and concrete plants furnishing VDOT approved materials
- Monitor traffic control devices and traffic safety

Independent Materials Testing Agencies will furnish technicians, equipment and facilities to perform laboratory tests of fabricated and non-fabricated materials used in the construction of this Project. The QA MANAGER will provide a Materials Coordinator who will be responsible for coordinating the proper inspection coverage and documentation of materials certifications. All QA MANAGER staff and Independent Materials Testing Agencies' staff shall be VDOT certified in hydraulic cement, asphalt cement pavement, central mix aggregate and soils compaction, and nuclear safety. Troxler certification may be an acceptable alternative for nuclear density inspection of compacted soils and asphaltic concrete.

The QA MANAGER will provide Engineers and Senior Inspectors (SI) for the implementation and coordination of the approved QA/CIP and to monitor, test, supervise, review, and coordinate the construction inspection and testing program for Route 895.

The QA Manager's personnel will maintain daily logs of all construction activities and will perform, although not limited to, the following to observe and record the conformance with plans and specifications:

- Review material test results
- Coordinate inspection of bearing material for spread footing foundations with the geotechnical firm selected by FD/MK.
- Check form work and reinforcing bar placement for concrete structures.
- Monitor structural steel placement
- Monitor concrete curing procedures
- Inspect bridge deck screed machines, including operation and depth of slab settings
- Monitor deck and substructure concrete placement
- Review maintenance and protection of installed traffic control devices
- Inspect erosion and siltation control devices and coordinate storm water management related matters.

This list is not intended to be inclusive of all activities that may be required of the QA Manager.
PRE and SI's will coordinate, monitor and review the following testing activities to be performed by inspectors from the Independent Materials Testing Agencies to monitor conformance with the plans and specifications.
The QA Manager's personnel will also perform the following tasks:

- Compaction testing of engineered fills including embankment, backfills, and pipe trenches
- On-site concrete testing consisting of slump, air entrainment, temperature, and the making of concrete test cylinders.
- Compaction testing of base courses and asphalt pavement
- Continuous inspection of utility installations within 895 Right-of-Way
- Blow count recordation for driving of piles
- Witnessing pressure and leak tests performed by Subcontractors
- Field bolt torque inspection
- Checking of structural steel field-coat paint thickness

The QA MANAGER will coordinate and receive all test results and reports for the following services from the off-site laboratories and plant inspectors:

- Laboratory testing of concrete cylinders
- Shop inspection of fabricated structural steel
- Monitoring of concrete, asphalt and crusher plants
- Certifications from F.O.B. job site provided materials

INSPECTION AND ADMINISTRATION

1. INSPECTION PROGRAM

A. General

All inspections shall either be performed by or at the direction of the QA Manager's Quality Assurance Team. The QA Manager's staff will determine whether the materials and work are in compliance with the approved drawings, specifications, and applicable VDOT standards as outlined in the Design-Build Contract.

B. Control Testing

All control testing will be performed by the QA MANAGER 's staff or by inspectors from an approved Independent Materials Testing Agency. Inspection activity will be scheduled and coordinated by the QA Manager's Quality Assurance Team with FD/MK's PM. The PRE shall:

1. Provide scheduling and coordination of all testing and re-testing to maintain a quality and quality level of testing for VDOT approval and certifications.
2. Receive and check sub- contractor's material certifications and samples for conformance
3. Inspect delivered materials and equipment.
4. Inspect work in progress and in place
5. Witness field testing of construction materials
6. Make control tests to support the methods or equipment of any independent testing agency
7. Verify that the results of tests conform to contract requirements
8. Immediately notify FD/MK if materials or workmanship do not comply with the specifications. FD/MK and FD/MK will be notified in writing when these deficiencies are not correct in a timely and appropriate manner.

C. Reporting

All inspection requirements will be documented in writing. Complete and accurate reports of all Quality Control Tests will be maintained by the QA MANAGER. Among the items to be shown on the report are:

1. Description of work
2. Type of test and specification reference
3. Agency and Inspector performing the test and location, time, date and equipment used.
4. Sample source and date secured
5. Results of tests
6. Recommendation as to acceptance or rejection
7. Signature of responsible person controlling the testing work
8. Approval or rejection by the PRE

D. Scheduling and Coordination

The QA MANAGER, along with necessary representatives of the Quality Assurance Team, will attend FD/MK conducted weekly construction job meetings with Subcontractors and field superintendents to discuss safety, schedule, and outstanding issues. FD/MK, will be responsible for maintaining the master schedule for this Project as provided for in the Design-Build Contract utilizing an appropriate scheduling software. Input from

the Subcontractors and field superintendents will be coordinated by FD/MK. FD/MK's working monthly or weekly schedules from the overall Project schedule will be provided to the PRE so he can adjust his staffing levels and review possible construction delays. Each Quality Assurance Team member will evaluate these requirements from FD/MK's schedule and advise the PRE as to the location, time, and number of personnel required along with the type of testing services required.

E. Job Meetings

The following is a typical schedule for FD/MK's construction job meetings:

1. Monday - Safety meeting with the FD/MK's employees
2. Thursday - Scheduling meeting, QA MANAGER and VDOT will attend as participants
3. Friday - Weekly meeting with contractor and QA MANAGER
4. Everyday - meeting with FD/MK's supervisory personnel

The QA MANAGER will schedule and conduct the following construction job meetings.
Monday - Safety meeting with the QA manager's staff
Friday - PRE will schedule and conduct progress job meetings with contractor's PM, engineers, inspectors, Independent Material Testing Agency representatives. Schedules and manpower requirements for the following week will be discussed.

PRE will attend scheduling, safety, and contractor project meetings to coordinate and disseminate information to the QA/CIP Team.

F. Progress of Work

If required for the administration of the Project, FD/MK may make a video Cassette Recording or take photographs showing the progress of construction. Each recording or photograph will normally show the date and time. The tapes and photographs made by FD/MK and/or the Subcontractor will be for their use in reviewing Project status for the administration of contract payments.

2. ADMINISTRATIVE FUNCTIONS

A. Progress Payment

Subcontractors will be responsible for preparing monthly progress payment requisitions including those portions related to the work of their Subcontractors. A monthly meeting will be conducted with the QA MANAGER to review and finalize the payment requisition. Before this monthly meeting, the Subcontractor must submit an invoice, including Substantiation of material deliveries, so that an agreement on the quantities shown on the invoice can be reached.

B. Working Drawings

All Subcontractor working drawings shall be submitted through FD/MK in accordance with the requirements of the specification. In addition, all communication between the Subcontractors and the PRE, with respect to the working drawings, shall be channeled through FD/MK.

C. Conformity with Plans and Specifications

All work performed and all materials furnished shall be in conformity with the Contract requirements.

The QA MANAGER has the authority to enforce requirements of the Contract Document, and Referance Document, when deficient materials or unsatisfactory finished products fail to conform to Contract Documents and Reference Documents. The QA Manager's Quality Assurance Team, in accordance with their assignments, shall monitor, inspect and accept the work as it progresses. Work that is not acceptable will be brought to the immediate attention of the supervisor of the Subcontractor performing the work who will have the deficiency corrected before it is covered. All deficiencies that are not corrected (hereinafter referred to as a Non-Conformance), including those pertaining to rules, regulations and permit requirements, will be documented by

the QA MANAGER. A Non-Conformance Report (NCR), referenced by a unique number, will be forwarded to FD/MK within 24 hours of discovery of the Non-Conformance. Form DD67-NCR will be used for this purpose. NCR's can be initiated by the QA MANAGER, VDOT, FD/MK, and any agency issuing a permit for the prosecution of this work. In order to maintain Project continuity, all NCRs will be submitted to and coordinated by the QA MANAGER for resolution. Subcontractors may submit through FD/MK to the PRE a proposed method of correction for approval. FD/MK will require the Subcontractor to remove, replace or correct inferior materials and workmanship. Responsibility for the expense for these corrections will be resolved between FD/MK and the Subcontractor. Each item will be placed in a computer database so as to create an ongoing punch list. This punch list will be provided on a monthly basis to FD/MK and VDOT. The objective is to resolve NCRs within thirty days.

In the event materials, or the finished product in which the materials are used, are not in strict conformity with the Contract requirements, but the removal of these materials will cause serious schedule and possible completion impacts,, the PRE, with the concurrence of VDOT, will make a final determination as to whether the work can be accepted.

In the event that it is accepted, the QA MANAGER will document the basis of acceptance. FD/MK and VDOT will be responsible for any decisions as to an appropriate adjustment in the Contract price or other specific requirements or adjustments that are appropriate.

FD/MK shall have the authority to suspend the work, wholly or in part, by written order for such period as they deem necessary because of any condition considered by them to be unfavorable for the suitable prosecution of the work or failure on the part of their Subcontractors to perform any provision of the Contract Suspension of work ordered by FD/MK may occur as a result of receiving a NCR recommending suspension of work. A NCR recommending suspension of work can be initiated by any of the parties noted above but must be furnished to the PRE for coordination and concurrence within 24 hours of discovery. VDOT, if deemed necessary, can instruct FD/MK to suspend the work.

D. As-Built Documentation

An independent survey contractor will be engaged by FD/MK to do the as-built survey of Route 895. FD/MK and/or its Subcontractor shall prepare and furnish red-lined prints of Contract drawings to the QA MANAGER showing significant as-built conditions that would not otherwise be covered by the as-built survey. All as-built shop drawings, catalog cuts, and diagrams, and other information prepared by FD/MK, its Subcontractors, suppliers and manufacturers, that are necessary to properly maintain the accepted facility, are to be furnished to the PRE and the Department. To control the documentation of the changes made, the PRE shall, on a daily basis, maintain at a central location complete set of contract full size drawings to reflect "AS-BUILT" CONDITIONS WITH CHANGES MARKED IN GREEN PENCIL.

E. Interpretations and Requests for Information

Any requests for information shall be submitted to the PRE through the appropriate inspector. The PRE will coordinate the request with the Designer, FD/MK and VDOT . A timely response will be provided by the QA MANAGER for these requests.

F. Extra Work

All request for extra work will be coordinated by FD/MK who will inform the QA manager's PRE so that proper quality control can be performed. All adjustments to contracts as a result of extra work requests will be the responsibility of FD/MK.

G. Safety

FD/MK and its Subcontractors are responsible for the safety of their operations and their employees (a Safety Superintendent will be employed full time by FD/MK). Whenever unsafe conditions are noticed by the QA MANAGER during the prosecution of the QA/CIP, they will immediately be brought to the attention of the responsible party in charge. If, after notification, satisfactory corrections are not made in a timely manner, the

Contractor's Safety Superintendent will be informed and requested to take appropriate action. If satisfactory corrections are not forthcoming, FD/MK will be informed by the PRE. The QA MANAGER shall not advise or issue directions regarding, or assume control over, safety precautions and programs of others.

VDOT shall have the authority to suspend work due to safety violations or unsafe conditions occurring within Project Right of Way. VDOT shall review the signing and traffic control devices where the Project interfaces with existing roadways VDOT shall also have the authority to suspend work along detours being used by the general public where unsafe conditions or inadequate traffic control measure are noted. Unsafe conditions found by VDOT on Project Site shall be brought to the attention of FD/MK for disposition as described above.

The PRE will conduct weekly safety meetings with his staff in addition to that conducted by FD/MK. Such meetings are to maintain safe operations by QA Manager personnel.

APPENDIX D

Plan Preparation

All drafting must be done in such a manner that when reduced to one-half of the original size the drawings will be perfectly legible and useful for construction. This will mean that lettering should be a minimum of one eighth (1/8) inch in height. The structure plans shall be prepared on standard size sheets, the size of which shall be thirty-six (36) inches by twenty-two (22) inches, with a one-half (1/2) inch border, except on the left edge where the border will be two (2) inches wide. The plans shall be prepared in ink on plastic or other materials approved by VDOT. The approved sheets shall be furnished by FD/MK. Plans shall also be submitted in electronic format using CAD Microstation. VDOT will furnish one direct positive of all applicable standard detail sheets upon request by FD/MK. Standard detail sheets are available in electronic format using CAD Microstation. Files furnished to FD/MK in electronic format shall be returned to VDOT and removed from FD/MK's and its designer's computer equipment upon completion of this contract.

Quantities for contract plans shall be accurately computed and listed separately for each unit of the superstructure and substructure and, in the case of large units, for its component parts. Concrete shall be computed to a precision of the nearest cubic meter where the amount exceeds one thousand (1,000) cubic meters and to the nearest one-tenth (0.1) cubic meter below this amount. Reinforcing steel shall be computed to the nearest five (5) kilograms on the basis of theoretical weight, and a complete reinforcing steel schedule showing all lengths and bends shall be furnished by FD/MK. Structural steel shall be computed to a precision of fifty (50) kilograms. Other bid items shall be computed to a precision as instructed by VDOT.

Each sheet of the contract plans shall be completely dimensioned, and all elevations necessary for construction purposes shall be shown. In steel construction, complete details shall be furnished showing all sizes and overall dimensions of members, number and arrangement of all fasteners at joints, type and size of welds, except that they need not be dimensioned as completely as shop plans. This work shall be performed to the same degree of refinement as that performed by VDOT in its current work as will be shown upon request by specimen drawings.

Dead load defection diagram shall be computed and shown on the drawings, and in addition a camber diagram should be shown. The deflections are those anticipated to occur in the beam upon placement of the concrete deck, diaphragms, curbs and parapets. The camber diagram for pre-stressed beams should be shown on the plans giving the expected net camber, which should be the amount of rise that should occur at mid-span when stress transfer is made and the member is freely resting on storage supports. Sequence of concrete placement operation for continuous beams or girder construction shall be given, and all erection stresses shall be computed where necessary for design. A summary table of moments, shears, reactions and stresses for primary load carrying members shall be included in the plans.

Appendix E

ROUTE 895 TOLL SYSTEM

ETTM Preliminary Performance Specifications

TABLE OF CONTENTS

Project Definition ..... -1-

Design Considerations ..... -1-

Environmental Requirements ..... -1-
General Toll System Approach ..... -3-
- Toll Rate Schedule ..... -3-
- Toll Collection Methods ..... -3-
- Inter-operability ..... -5-
- Vehicle Classification ..... -5-

Approach to Toll System Technology ..... -6-
- ETC only lanes ..... -6-
- Manual Cash/ETC lanes ..... -7-
- Automatic/ETC Lanes ..... -8-

Communication Equipment/System Architecture ..... -9-
Host Computer System ..... -10-

Technical and Functional Requirements ..... -12-
- Host Computer System ..... -12-
- Lane Controllers ..... -23-
- ETC Account Status Indicators/Lane Traffic Signal ..... -27-
- Canopy Lane Status Lights ..... -29-
- ETC Reader ..... -31-
- ETC Lane Kits ..... -32-
- Vehicle Classification System (High Speed) ..... -33-
- Vehicle Classification System (Low Speed) ..... -35-
- Toll Collector's Terminal ..... -37-
- Receipt Printer ..... -44-
- Patron fare display ..... -47-
- Intercom subsystem ..... -49-
- Video surveillance subsystem (security) ..... -51-
- UPS for Ramp Plaza ..... -53-
- UPS for Mainline Plaza ..... -55-
- Automatic Coin Machine ..... -57-
- Data Communications System ..... -61-
- Maintenance ..... -62-
- Spare components ..... -64-
- Maintenance equipment ..... -65-
- Documentation ..... -65-
- Training ..... -76-
- Video enforcement subsystem ..... -77-
- Vehicle Enforcement Subsystem Image Processing ..... -80-

Project Management ..... -82-

Installation Coordination ..... -82-

Project Schedule ..... -82-

System Test and Training Center ..... -84-

System Testing ..... -84-

Appendix E

ROUTE 895 TOLL SYSTEM
ETTM Preliminary Performance Specifications

Project Definition

This document describes the toll collection system that will be designed to collect tolls on Route 895. Route 895 is a to-be-built 8.8 mile road in the vicinity of Richmond Virginia running from the Chippenham Parkway and Interstate 95 in Chesterfield county to I-295 in eastern Henrico county.

Design Considerations

The following design considerations shall apply to the work undertaken in this contract. Any deviations from these requirements shall be noted by the proposer in the proposal.

New Equipment

All equipment, parts, cables, etc. supplied for this system shall be new and unused. The equipment provided shall have been successfully used previously in comparable applications. Equipment shall be state of the art wherever this does not conflict with the requirement for prior successful use in comparable applications.

Patents, Copyrights and Intellectual Property

Neither the system nor any component thereof shall infringe upon or violate any patent, copyright, trade secret or proprietary right of any other party. The Contractor shall defend and hold harmless *FD/MK* against any and all claims of such infringement.

Quality of Materials

All materials shall be of the best quality and shall be integrated in accordance with best engineering practice so as to provide an overall system that is properly functional and operates in a manner suitable with its intended purpose

Reliability and Accuracy

The system shall operate at the reliability and accuracy rates set forth in the specifications herein.

Environmental Requirements

All exterior equipment used at the toll plaza shall directly meet or shall be placed in equipment enclosures which directly meet NEMA Standard VCS 6-110.12 for Type 3 dust-tight, rain-tight and rustproof enclosures. The equipment enclosures shall be firmly anchored to structure or the concrete island and shall contain appropriate environmental controls and sealed openings for wiring and cables. All equipment enclosures shall be secured with lock and key. A set of master keys shall be provided.

All housings of equipment placed in the toll lane or toll booth shall be made of stainless steel or other approved corrosion resistant material.

The operating environment is specified as follows:

Operating Temperature:	-20 degree Celsius (-4 degree Fahrenheit) to +55 degree Celsius (+131 degree Fahrenheit)
Humidity Extremes:	10 to 95 percent relative humidity, non-condensing.

All equipment shall not be damaged or performance degraded when stored or transported at -20 degree Celsius (-4 degree Fahrenheit) to +70 degree Celsius (+158 degree Fahrenheit).

General Toll System Approach

General Toll System Approach - The toll collection system approach envisioned for Route 895 is a closed system. The planned tolling points are illustrated in Figure 1. As shown, tolls would be collected at one mainline barrier toll plaza and at the two ramp locations.

Toll Rate Schedule

The anticipated initial toll levels for use of the road by passenger cars are $2.00 at the mainline barrier and $0.50 at the ramps. However, planning and negotiations continuing with the developer and the State of Virginia may result in lowering the toll to $1.50 at the mainline barrier. Tolls for larger vehicles such as trucks and busses will be set to correspondingly higher levels.

Variation in the toll charged in an individual transaction may also occur because of future operational choices such as the following:

Change in toll levels between peak and off peak periods in an attempt to influence demand (congestion pricing); and/or Discounts offered to vehicles paying by the Electronic Toll Collection (ETC) method will be accommodated by the system.

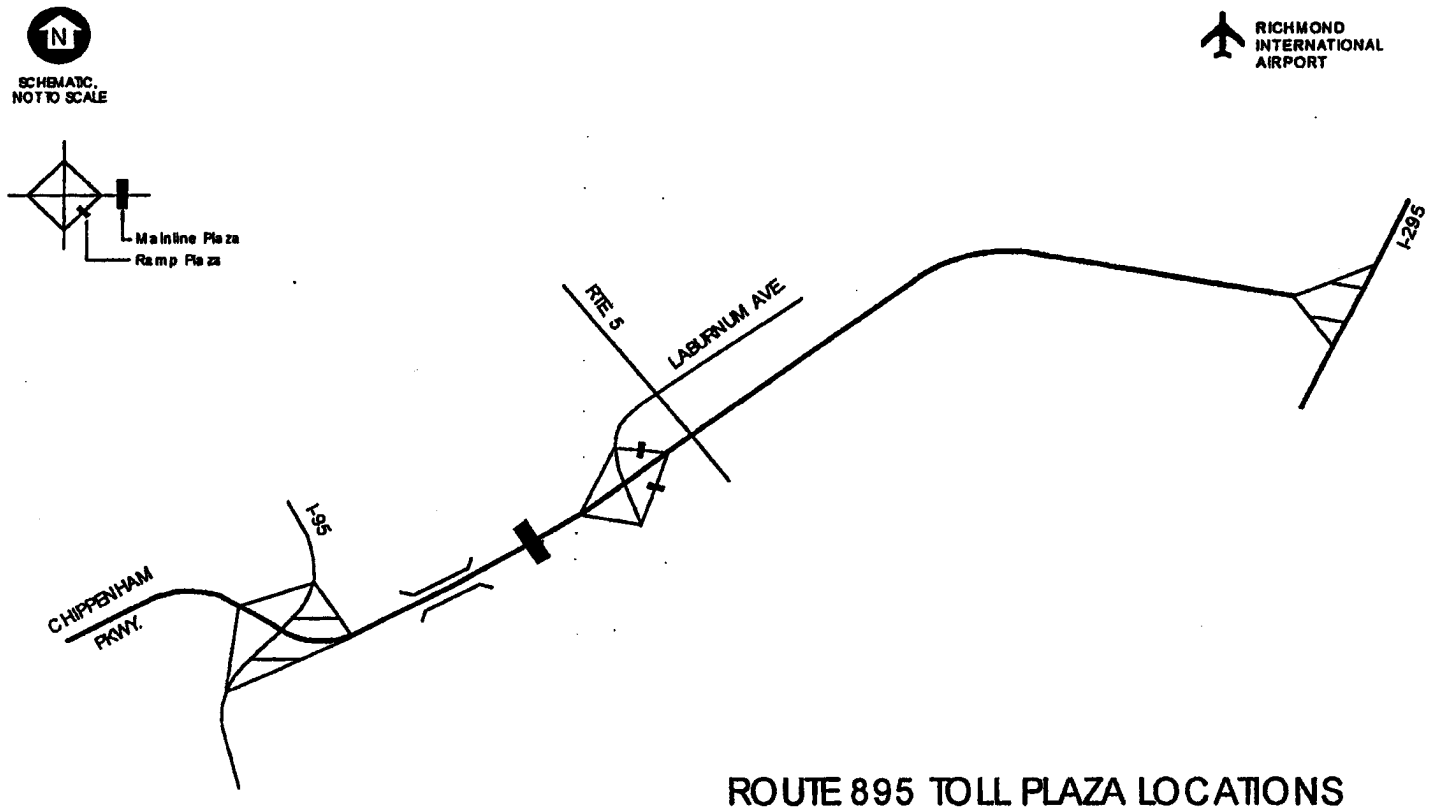
No decisions have been made yet regarding congestion pricing or discounts but the toll system design shall support these capabilities.

Toll Collection Methods

Tolls on Route 895 will be collected in traditional ways, using manned toll booths as well as automatic coin machines. Electronic Toll Collection will also be provided and will be promoted so that it becomes the primary method of toll collection.

Coin machines will be used only at the ramp plazas, as the only cash payment method, since the anticipated low traffic projections through the ramps are unlikely to justify placing personnel at these locations. Ramp plazas will also accept ETC as a method of toll payment.

Manned toll booths will be placed at the right hand side of the mainline barrier plaza to accommodate cash paying patrons, leaving ETC equipped vehicles to pass through the center of the plaza. These ETC express lanes will be designed to allow toll collection at regular highway speed. All of the manned lanes will be equipped with ETC as well as cash collection capability. Thus motorists with ETC tags who enter the cash toll plaza either by mistake, to ask directions, or the ETC only lane are temporarily closed, can be accommodated.



ROUTE 895 TOLL PLAZA LOCATIONS

WILBUR SMITH ASSOCIATES

FIGURE 1

Inter-operability

The key toll collection system element raising the issue of compatibility or inter-operability is electronic toll collection. Major national efforts are now underway to develop standards not only for ETC but also for vehicle to roadside communications which is used in a variety of intelligent transportation systems applications. Without the development of these common standards a vehicle might need a separate tag for each frequently used facility. The concern is obviously most acute among geographically closely clustered toll facilities.

The Virginia Department of Transportation (VDOT) has set a standard for ETC operation within the state. All ETC facilities within the state are to use Mark IV tags and this equipment is presently installed and operating on the Dulles Toll Road, the Dulles Greenway (Dulles Toll Road Extension) and the Coleman Bridge. It is also planned for installation on the Powhite Parkway and the Downtown Expressway, both in the Richmond Area. Neither the Downtown Expressway nor the Powhite Parkway currently have ETC, but they may very well acquire it during the prosecution of this project. The ETC equipment to be used on Route 895 is thus determined.

VDOT has established a central clearinghouse operation for all ETC operations within the state. ETC tags are issued by the clearinghouse at no charge to the individual toll road operator. Under the scheme ETC accounts are with the clearinghouse rather than with the operator.

Use of ETC for toll collection in a configuration, as is planned for Route 895, where vehicles are not restrained from toll evasion by the presence of a toll collector or a gate, shall require the employment of a violation detection system. The Video Enforcement System (VES) shall capture video images of the license plate for those vehicles that pass through ETC-only lanes without the reading of a valid ETC tag and violators at the ramp plaza lanes.

Vehicle Classification

All vehicles, regardless of class will be charged the same toll thereby eliminating the need to classify vehicles at the ramp plazas. An automatic vehicle classification system (AVC) shall be installed in the mainline plaza lanes to determine the classification of each vehicle. Vehicles shall be classified based on the number of axles. The vehicle classification system shall determine one of five tentatively identified classes for the vehicle.

Class 2 - Two-axle, four-tire or six-tire vehicles - including passenger cars, pick-up trucks, trucks, vans, motorcycles, buses and motor homes;
Class 3 - Three-axle vehicles and combinations - including buses and Class 2 vehicles towing trailers;
Class 4 - Four-axle vehicles and combinations - including Class 2 vehicles towing two-axle trailers;

Class 5 - Five-axle vehicles and combinations - including single unit and vehicle combinations; and
Class 6 - Six or more axle vehicles - including single unit and vehicle combinations.

Approach to Toll System Technology

In developing the toll collection system for the Route 895 Connector the need for a variety of equipment is foreseen. The equipment would outfit lane types that include the following:

- ETC-only express lanes;
- Attended lanes accepting cash or ETC; and
- Automatic Coin Machine lanes also equipped with ETC

The mainline plaza will have the first two of the above listed types of lanes. Signs placed over the travel lanes in advance of the toll plaza will direct ETC equipped vehicles to stay to the left and cash paying vehicles to move to the right. Signs over the individual lanes will identify them as either ETC Express lanes or a combination cash and ETC lane. As the toll plaza is approached, illuminated lights over the lanes will indicate lane status; Green for open lanes and red for closed lanes. ETC-only lanes will not have these status lights and will be open at all times, except during necessary maintenance.

ETC only lanes

Normal highway lanes, two in each traffic direction, will be provided for ETC tag equipped vehicles. These ETC-only lanes will pass through the center of the plaza with cash toll paying vehicles driving through manual lanes on the right hand side. As a vehicle passes through an ETC lane, an antenna mounted over the lane interacts with the tag in or on the vehicle. A reader (signal processor) attached to the antenna interprets the tag number and sends the number to the lane controller. The lane controller will check the tag database to determine the status of the tag. The tag will have a status defined by Customer Service Center; OK, Active, Low Balance, Negative Balance, Suspect, Bad, Stolen. AVC equipment will be installed and used to determine the vehicle's classification. The lane processor will create a transaction record containing the tag number, lane ID, date, time, vehicle classification, transaction number, and the toll to be debited to the account represented by the tag number. The tag number, vehicle classification, date, time, and lane ID will come from the tag reader, a second vehicle class will come from the AVC system. The lane controller will send the transaction record to the Host computer for further processing and to the Customer Service Center computer for account processing.

A video enforcement system (VES) will be installed in the ETC-only lanes to capture an image of the rear of the vehicle including the license plate. If the vehicle does not have a valid tag the lane controller will save the image captured by the VES along with

appropriate transaction details including the lane ID, date, time the vehicle classification/toll and send them to the Host computer for processing. If the vehicle has a valid tag the video image will be discarded and an ETC transaction message will be composed and transmitted to the host computer for re-transmission to the Customer Service Center as described above.

Note that each pair of ETC-only lanes will consist of two adjacent, non-separated traffic lanes of normal highway width. Thus, ETC system must be designed to eliminate cross lane reads and simultaneous reads during possible lane change by the vehicle in the read zone. The video enforcement system also must capture images of vehicles that may change lanes.

Manual Cash/ETC lanes

In a manual/ETC lane, as the vehicle approaches the attended toll booth, the toll collector will classify the vehicle on the manual lane terminal. Post classification AVC will also determine the vehicle's classification. If a valid tag is not present, the lane controller will display the toll on a patron toll display mounted outside the toll booth in a manner allowing it to be easily read by the motorist. The toll attendant will collect the toll from the driver and record the transaction on the attendant's terminal. This record will be sent to the lane controller which will cause the lane traffic light to change from red to green. The toll collector shall be able to request a receipt for the transaction until the AVC subsystem indicates the vehicle has left the lane.

When the automatic vehicle classification system has classified the vehicle, the lane controller will reset the traffic light and send the completed transaction (which will include lane ID, date, time, toll collected, attendant ID, vehicle classification from the attendant, vehicle classification from the vehicle classification system, and transaction number) to the Host computer for processing.

If a valid tag is present on the vehicle, the same process will occur except the toll terminal shall notify the attendant that the vehicle is paying by ETC. The attendant will not collect a fee and the lane controller will switch the illuminated lane traffic light from red to green and attach the tag number and the vehicle classification associated with the tag to the transaction record sent to the Host Computer. If the tag has a low balance, the yellow lane traffic light will be illuminated.

At the end of the attendants tour, the Host computer will have a summary of the total of the tolls collected by class for the attendant. This will be balanced against the cash deposited by the attendant and compared to the accumulated results of the AVC subsystem.

Recording of unusual occurrences such as vehicle run through (non-payment), no funds, emergency vehicle, etc. shall be made and recorded through the attendant's terminal.

Automatic/ETC Lanes

Each ramp plaza shall be configured identically. An approaching motorist will have the option of paying cash by depositing coins in an automatic coin machine (ACM) or using a valid ETC tag. As the vehicle approaches, the motorist will find the toll due displayed on the patron fare display, where it is easily read by the motorist.

If the driver elects to pay with cash, the required coins are deposited in the ACM basket. The ACM counts the cash and reports the amount to the lane controller. As each coin is counted the patron fare display shall decrement appropriately. When the toll due is satisfied, the lane controller sends a command to turn the lane traffic signal to green. When the vehicle exits the lane by passing over a vehicle loop detector installed in the roadway, the toll display and the traffic light will be reset for the next vehicle. Since all vehicles at the ramp plazas pay the same toll, no AVC subsystem is required here.

If the vehicle is equipped with a valid ETC tag, the ETC reader shall capture the tag number and send it to the lane controller. The lane controller shall cause the lane traffic signal to light green for a valid account or yellow for a low balance account. The patron fare display shall be changed to zero. A vehicle loop detector installed in the roadway shall clear the toll display, change the lane traffic light to red, and reset the system for the next vehicle.

A video enforcement sub-system will be installed in each of the Automatic/ETC lanes. As each vehicle passes over the vehicle detection loop used to reset the system, the video enforcement sub-system will produce an image of the rear of the vehicle. If a vehicle is detected by the vehicle loop detector in the roadway without a valid transaction having taken place in the lane, the video enforcement sub-system image processor will capture the image and send it, along with the invalid tag number (if available), date, time, and lane number to the Host computer for processing. All images associated with valid transactions will be discarded.

To assist the driver in the event of problems or questions, an intercom will be installed in the ACM to allow the driver to speak to a supervisor or attendant at the mainline toll plaza. A video surveillance camera with remote pan tilt zoom(PTZ) control will be mounted so as to allow full viewing of the activity in the lane on a video monitor at the mainline toll plaza. This camera will also provide security surveillance for the plaza. The plaza will be lighted in a manner as to provide ample light for both driver/system interaction and good video surveillance.

Equipment - The equipment to be placed in the ETC-only lanes shall consist of the following:

- Lane controller;
- ETC reader/antenna;
- Video camera;
- Supplemental lighting;
- Image capture and storage electronics; and
- AVC Equipment – high-speed treadle and overhead laser vehicle separator.

ETC manual lanes will contain the following equipment:

- Lane controller;
- Toll terminal;
- ETC reader/antenna;
- Collector ID reader- a magnetic card reader;
- Receipt printer;
- Patron fare display;
- Overhead traffic light;
- Lane Traffic Light/ETC account status indicator;
- Intercom station; and
- Four strip treadle with a surrounding loop to act as vehicle classifier.

In addition, one manual/ETC lane shall contain a video monitor and camera controls attached to the surveillance system and intercom master station to communicate with ACM-ETC lanes.
The ACM-ETC lanes at the ramp plazas shall contain the following equipment:

- Lane controller;
- ETC reader/antenna;
- Automatic Coin Machine;
- Decrementing patron fare display;
- Receipt printer;
- Overhead traffic light;
- Video enforcement camera;
- Supplemental lighting;
- Image capture electronics;
- Intercom station;
- Lane Traffic Light/ETC account status indicator; and
- Surveillance camera.

Communication Equipment/System Architecture

The toll system shall be configured as a single host computer and multiple lane controllers. No Plaza level computers are planned. Intelligent workstations shall be provided for the plaza supervisor, the auditor, the violations processing clerk and for the maintenance technician. Access to various computer functional areas shall be controlled by access passwords.

The lane controllers may be located in the lane or in the plaza building according to the preference of the systems supplier. Communications between the plaza building and the mainline toll lanes shall be via fiber optic cable. Communications between the mainline plaza building and the ramp plazas shall also be via fiber optic cable. The distance is approximately 1.5 miles between the ramp and mainline building.

Communications between the host computer and the FasToll Customer Service Center (FCSC) computer in Leesburg, VA will be provided by FCSC. FCSC will provide a DECrouter on site for interfacing the Host computer and its network to the communication line. Proper interfacing to the FCSC provided DECrouter shall be the responsibility of the Contractor.

Host Computer System

Host Computer System- The Host computer shall reside in the toll plaza administration building and will process data collected from the lane controllers as well as retrieving data from FasToll customer service center computer (FCSC) and updating data in the lane controllers at the mainline plaza and the ramp plazas. All tag accounting will be done at VDOT customer service. Tag transaction files will continually be received by the Host computer and forwarded on to the Customer Service Center computer. The Host computer will pass the updated ETC account status information received from the Customer Service Center to the lane controllers. All transfers between the host computer and the Customer Service Center computer will take place using a protocol predetermined by VDOT. This protocol is described elsewhere in this document.

All reporting shall be provided by the Host computer. Reports such as toll attendant tours, lane and plaza utilization, coin vault tours, non-cash vs. cash, and other revenue, etc. shall be generated. The host computer shall maintain records of all ETC transactions so as to reconcile credits received from the Customer Service Center against these transactions. The host computer shall be configured with four (4) intelligent terminals for toll supervisors, maintenance personnel, violations processing clerk and auditors.

Report formats shall be submitted by the Contractor for *FD/MK*'s review and approval. The reports to be provided shall include but not necessarily be limited to the following:

Reports (Detail & Summary)
Toll Collector
    Segment of duty

- Tour of duty
- All tours over a specified period
- All collector segment of duty list over specified period
- Collector exception report over specified period
- Collector identification report
- Collector standby report over a specified period exceeding a specified time
- Unusual Occurrence Report

Vault
- Vault activity list
- Vault cash collected report

Revenue
- Periodic revenue by lane
- Periodic revenue by plaza/system
- Year to date revenue by plaza/system
- Periodic non-revenue report
- Daily Lane open/close report
- Insufficient funds report
- Insufficient funds list
- Periodic ETC revenue by lane
- Periodic ETC revenue by plaza
- Year to date ETC revenue by system

ETC
- ETC tag usage
- Periodic ETC income report
- Periodic ETC detailed transaction report
- Non revenue ETC tag list
- Reconciliation report of ETC transactions vs. FCSC credits.

Traffic
- Hourly lane traffic (by class)
- Hourly multiple lane traffic (by class)
- Periodic daily multiple lane traffic
- Year to date daily multiple lane traffic

Operations
- Unusual occurrence
- Daily lane operations

Audit
- Daily audit log
- Daily system adjustment
- Monthly audit log

Technical and Functional Requirements

Host Computer System

The work under this section shall include all labor, materials and support services to complete the design, fabrication, integration, packaging, delivery, testing and acceptance of the toll system Host Computer hardware and software in accordance with the requirements of these specifications.

The toll system Host Computer shall perform all data storage, processing, communications, and other functions for the entire toll system. The Host Computer shall perform operating system and application software functions described elsewhere in this document.

The Host Computer shall be located in the administration building adjacent to the Mainline Toll Plaza. It shall send data to and receive data from the ten (10) lane controllers at the Mainline Toll Plaza and the two (2) remote ramp plazas and the FasToll Customer Service Center. The Host Computer shall be configured and sized to accommodate the possible future addition of six (6) extra toll lanes. Additionally, it shall communicate with four (4) work stations in the administration building and two printers. The Proposer shall provide a physical layout of the computer processor and its peripherals including communications cabinets.

The Host Computer proposed shall be of the latest design currently in production at the time of FD/MK's notice to proceed to their contractor.

System Configuration

The system configuration of the host computer system proposed shall meet at least the following:

- The Host Computer and its operating system must allow for multi-tasking and multi-user capabilities without degrading the toll processing functions;
- The Host Computer shall have dual redundant servers utilizing level 5 RAID technology with a capacity of not less than 16 Gb and shall be expandable to three times its initial capacity;
- A high speed tape backup unit shall be included with a minimum capacity of 20 Gb per tape;
- Each server shall contain a DVD drive and a LS120 floppy drive.

- The full duplex data transfer capabilities between the Host Computer and its data collection devices (lane controllers and the FasToll Customer Service Center) must be adequate to maintain real time data at all locations without affecting vehicle traffic speeds or toll attendant processing speeds while maintaining data transfer accuracy of 99.98%;

- The Host Computer system must be able to communicate with the FasToll Customer Service Center (FCSC) in the format prescribed by VDOT. That format follows below;

- A network interface card and related software to allow connection to the DECrouter supplied by the FCSC;

- A complete backup system including automated backups occurring while the system is fully functional and without system degradation shall be provided;

- Two high speed laser printers;

- Four complete work stations (color monitor, keyboard, processor, etc.); and

- A user defined five level security system.

Application software shall be client-server based software and the database shall be Oracle 7. A series of reports necessary to audit toll collector functions and ACM activity shall be included. Report formats shall be submitted for approval as part of the software documentation.

The information below is provided to describe to the proposers, the FasToll Customer Service Center/ETC system interface. However, the responsibility for the successful interface of the two systems shall be the Contractor's. It shall be the responsibility of the Contractor to verify the message formats with FCSC prior to developing the necessary software to accomplish the interface.

VDOT Customer Service Center data transfer protocol

The FasToll Customer Service Center (FCSC) utilizes a DEC based computer system with VMS as its operating system. Communication is achieved using the DECnet protocol which is carried over multiple communications media via modems, routers, terminal servers and TSUs. For the Route 895 tollway, the FCSC will provide a DECrouter at the Mainline Toll Plaza Administration Building. This router will provide a 10BaseT ethernet port to the Mainline Toll Plaza Host computer system. This connection shall provide the physical connection between the Host computer system and the FCSC.

In order to make use of this interface, the Contractor must provide computer equipment with an ethernet interface that is capable of communicating using the DECnet protocol. This protocol shall be used to send and receive the messages and files described in this interface specification. The messages that shall be communicated are as follows:

- Time synch messages from the FCSC;
- Individual transponder status updates;
- Complete transponder status files for all FasToll transponders;
- File transfer status messages;
- FasToll transactions that occur in the toll lanes; and
- Message synchronization and re-synchronization.

The following sections define the message formats and message structures that shall be used to communicate with the FCSC to enable FasToll transactions to be carried out in the Route 895 toll lanes and for VDOT's existing service center to maintain the corresponding FasToll accounts.

Message Structure

Each message comprises a message header (MH_STATUS) and a transaction. The DestId and SrcId fields indicate the unique identification numbers of the component processes to which the message should be delivered (DestId) and the message source (SrcId). Every component process must have a unique ID.

Messages from FCSC to Route 895 Host Computer

The DestId for these messages will correspond to the identification assigned by the FCSC to the Route 895 Host computer system. The SrcId for these messages will correspond to the FCSC Host computer identification.

Time synchronization messages - TIME_SYNCH_TX - Because it is essential that the Host Computer, and FCSC clocks be synchronized, periodically (every half hour) the FCSC will send this message to update the current time.

Individual AVI tag status updates - AVI_STATUS_TX - Whenever the status (inactive, active, lost/stolen, low-balance, no funds) of an AVI transponder changes, the FCSC send this message to the Host Computer so that the transponder status databases can be updated at the Host Computer and ETC system lane controllers.

Complete AVI tag status file - (FTGENAVI.TMP) - The FCSC also sends the complete tag status file periodically (at midnight) and on demand. The transmission is performed with the VMS COPY command, for this reason the plaza must be running VMS or a process that can

simulate the VMS functionality to support this file transfer. The file contains the status of all the transponders registered at the FCSC. The Host Computer must be able to receive this file and send the data on to the lane controllers. The file is formatted as a series of bytes where each byte represents the status of two tags. The first nybble (4 bits) is the status of an even tag, the second nybble is the status of the following odd tag. For instance, the first byte of the file contains the status of tags 0 and 1, the next byte is tags 2 and 3, and so on to the total size of the file.

File transfer complete message - FILE_XFER_COMPLETE_TX - After the file is successfully transmitted to the Host Computer, the FCSC sends a message to tell the plaza that there is a new file.

Fence Bumps - The FCSC sends "fence bump" messages so the plaza knows which messages have been received and archived at the FCSC (see below). A fence bump message is merely a message header with the appropriate value in the ucTFMType field, there is no corresponding transaction data.

Messages from Route 895 Host Computer to FCSC

Revenue transactions - AVI_TX - Most messages between the Host Computer and FCSC are AVI transactions. These may involve revenue transponders or non-revenue transponders. The DestId for these messages will correspond to the FCSC Host computer identification. For these messages the SrcId shall correspond to the ETC system lane in which the transaction occurred. Lane number SrcIds will be assigned by the FCSC.

Transponder File Requests - FILE_REQUEST_TX - The plaza also needs to be able to request a download of the complete Fastoll transponder file. The DestId for these messages will correspond to the FCSC Host computer identification. The SrcId for these messages will correspond to the identification assigned by the FCSC to the Host Computer.

Guaranteed Messages and Retransmission

Most messages, and especially revenue transactions, shall be sent guaranteed. This means that the messages will be buffered until they can be sent and until the receiving end has confirmed that the transaction has been committed and archived.

Each guaranteed message shall be assigned a unique sequence number by the message source. Separate sequence number counts shall be used for each Source Destination directional pair. In the event of a catastrophe either system shall request retransmission of any missing messages. Messages for each Source Destination directional pair shall be locally stored until a

"fence bump" transaction is received indicating which messages have been archived at the receiving end and can be discarded from the current message storage file.

For example:

- The Host Computer sends messages 1 through 500, and the FCSC receives them and processes them and backs them up to tape at the end of the day;
- The FCSC sends the plaza a "fence bump" message indicating that messages up through 500 have been archived;
- The next day the Host Computer sends messages 501 through 1000, and the FCSC receives them and processes them; and
- A catastrophe occurs at the FCSC resulting in the loss of current data. To recover the FCSC restores from their archive tape and then the FCSC asks the Host Computer to re-transmit from the fence. The plaza must be able to send messages 501 through 1000 again.

Message Formats and Data Structures

Generic ARCS Message -

(message header)	(transaction)

Message Header - MH_STATUS

uwMsgSize	DestId	SrcId	ulSequence	Priority	TimeStamp	ucTFMType

```
typedef struct {

    UWORD        uwMsgSize PACKED;     /* message data length */
    DESTID       DestId PACKED;        /* dest id */
    DESTID       SrcId PACKED;         /* source id */
    ULONGWORD    ulSequence PACKED;/* sequence */
    PRIORITY Priority PACKED;          /* priority, unused */
    CS_TIME_T    TimeStamp PACKED;     /* message time stamp */
    UCHAR        ucTFMType PACKED;     /* transaction file management function */
                                       /* flags */
    } MH_STATUS;
```

Fence Bump

Message header only, MH_STATUS contains:

uwMsgSize = 0 (there is no message data)

ulSequence = point at which to set fence (i.e. if messages up to 1000 have been archived the ulSequence = 1000)
ucTFMType = MHTFM_BUMP_FENCE

ARCS Revenue Transaction Descriptions

Automatic Vehicle Identification Transaction - AVT_TX

VSR HEADER	VSR_AVI

```
typedef struct AviTx {
VSR_HEADER   Header;   /* Header structure */
VSR_AVI      Avi;      /* AVI Structure */
}AVI_TX
```

ARCS VSR (Vehicle Status Record) Descriptions

Header VSR - VSR_HEADER

uwTxId	Date Time	ucSeqNumber	uwDuration	ulEventData	ucPreFwdAxles	ucPreRevAxles	ucFwdAxles	ucRevAxles	uwRevenuecol	ucClass	ePayMethod

```
typedef struct VsrHeader {

UWORD          uwTxId;          /* Transaction id */
CS_TIME_T      Date Time;       /* time in seconds */
UCHAR          ucSeqNumber;     /* sequence within second */
UWORD          uwDuration;      /* duration in seconds */
ULONGWORD      ulEventData;     /* unused - set to 0 */
UCHAR          ucPreFwdAxles;   /* preclass forward axle count */
UCHAR          ucPreRevAxles;   /* preclass reverse axle count */
UCHAR          ucFwdAxles;      /* forward axle count */
UCHAR          ucRevAxles;      /* reverse axle count */
UWORD          uwRevenueCol;    /* toll to be debited from account */
UCHAR          ucClass;         /* collector classification */
PAYMENT_METHOD_E   ePayMethod;  /* cash, check, card... */
```

} VSR_HEADER;

Automatic Vehicle Identification VSR - VSR_AVI

ulId	ucRegion	UcAuthority	ucTagStatus	ucErrorCode

```
typedef struct VsrAvi {

ULONGWORD   ulId;          /* Tag id              */
UCHAR  ucRegion;           /* Tag region          */
UCHAR  ucAuthority;        /* issuring authority  */
UCHAR  ucTagStatus;        /* tag status          */
UCHAR  ucErrorCode;        /* Error Codes         */
}VSR_AVI;
;
```

Other Transactions

File Transfer Complete - FILE_XFER_COMPLETE_TX

uwTxId	eFile Type

```
typedef struct FileXferCompleteTx {
UWORD        uwTxId;
DATA_FILE_TYPE_E   eFileType;
} FILE_XFER_COMPLETE_TX;
```

Time Synchronization - TIME_SYNCH_TX

uwTxId	ucTMSType	ucTCMNumberof Type	1CalendarTime

```
typedef struct TimeSynchTx {
UWORD  uwTxId;            /* Transaction id */
UCHAR  ucTMSType;         /* ? */
UCHAR  ucTCMNumberofType;        /* ? */
LONGWORD  1CalendarTime;       /* Current time */
} TIME_SYNCH_TX;
#define TIME_SYNCH_TX_LEN sizeof(TIME_SYNCH_TX)
```

Individual AVI Tag Status - AVI_STATUS_TX

uwTxId	ulAviTagNum	ucIssuingAuthority	ucStatus

```
typedef struct AviStatusTx {
UWORD  uwTxId;
ULONGWORD      ulAviTagNum;
UCHAR  ucIssuingAuthority;   /* Region or authority code */
UCHAR  ucStatus;
} AVI_STATUS_TX;
```

Updated File Request - FILE_REQUEST_TX

uwTxId	eFileType	eUpdateType	uwLaneNumber	uwPlazaNumber

```
typedef struct FileRequestTx {
UWORD        uwTxId;
DATA_FILE_TYPE_E   eFileType;
UPDATE_TYPE_E      eUpdate Type;
UWORD        uwLaneNumber;
UWORD        uwPlazaNumber;
} FILE_REQUEST_TX;
```

Miscellaneous ARCS Structures

ARCS common services time format - CS_TIME_T

DLSTTz	CalendarTime

```
typedef struct {
TIME_OFFSETS DLSTTz PACKED; /* Combined DLST and TZ
offset */ time_t  CalendarTime PACKED; /* Local calendar time */
} CS_TIME_T;
```

C code definitions of constants, data Types, and enums

Note: This section is provided for reference purposes in defining the field structures and data formats in the above transactions. Not all definitions that follow will be utilized in the FCSC to Host Computer communications.

A note on the PACKED attribute:
The attribute PACKED only has meaning in Linux systems. On all other systems PACKED is #DEFINEd as a null token and is thereby ignored.

```
/* TFMType function codes (See MH_STATUS) */
#define MHTFM_NONE              0 /* No TFM function -- normal message */
#define MHTFM_RELIABLE     1 /* Reliable transmission */
#define MHTFM_RETRANSMIT        2 /* Retransmit request */
#define MHTFM_BUMP_FENCE          3 /* update transaction file wrap fence */
#define MHTFM_NO_RETRANSMIT   4 /* Retransmit failure signal */
#define MHTFM_RELIABLE_RESET  5 /* Force reset of link states */
#define MHTFM_STATE_REQUEST   6 /* Ask adjacent TFM for RLink state */
#define MHTFM_FENCE_VIOLATION 7 /* No restraint from before fence */
#define MHTFM_MAXIMUM_STATE_EXCEEDED   8 /* Future state retransmission reqd
*/
#define MHTFM_RETRIEVE_ARCHIVE_2  9 /* Last resort disk retrieval */
#define MHTFM_CANCEL_REQUEST_2  10 /* Cancel last resort disk retrieval */
#define MHTFM_FENCE_REQUEST  11 /* Request fence from next TFM */
#define MHTFM_BUMP_ACK   12 /* Update transaction commit ack */
#define MHTFM_ACK_REQUEST  13 /* Request ack from next TFM */
#define MHTFM_STATE_RESPONSE   14 /* Request state from next TFM */
#define MHTFM_AM_RETRIEVAL_COMPLETE   128 /* Archive retrieval complete */
#define MHTFM_AM_ILLEGAL_OPERATION   129 /* Archive operation */

/* ucErrorCode function codes (See VSR_AVI) Errors concerning AVI reader */
#define AVI_NO_EROR 0x00
#define AVI_DATA_CONVERSION_EROR 0x01
#define AVI_LUHN_EROR 0x02
#define AVI_CHECKSUM_EROR 0x04
#define AVI_PROTOCOL_EROR 0x08
#define AVI_BAD_CRC_EROR 0x10
#define AVI_SHUTDOWN 0x00

/* ucStatus status of the tag */
#define AVI_VALID_TAG 0 /'* Tag is OK */
#define AVI_LOW_BALANCE_TAG 1 /'* Tag account has low balance */
#define AVI_NEG_BALANCE_TAG 2 /'* Tag account has negative balance */
```

```
#define AVI_VERIFY_TAG 3 /'* Tag is suspect */
#define AVI_INVALID TAG 4 /'* Tag is bad */
#define AVI_STOLEN_TAG 5 /'* Tag is stolen */

    typedef short              WORD;            (16 bits)
    typedef unsigned shortUWORD;          (16 bits)
    typedef long               LONGWORD;        (32 bits)
    typedef unsigned long      ULONGWORD;       (32 bits)
    typedef char               CHAR;            (8 bits)
    typedef unsigned char      UCHAR;           (8 bits)
    typedef unsigned char      FLAG;         (8 bits)
    typedef unsigned char      BOOLEAN;         (8 bits)
    typedef int                CS_FILE;         (32 bits on VMS & QNX, 16 bits on MS-
    DOS)
    typedef UWORD              DESTID;          (16 bits)
    typedef char               TIME_OFFSETS;    (8 bits)

    DLSTTz
    bits 1-6:  time zone (5 for EST)
    bit 7:  always 1
    bit 8:  0 = standard time, 1 = daylight savings time

    Calendar Time
    Number of seconds since 1-Jan-1970 00:00:00.0 UTC (GMT)

    typedef enum {
    NO_PM,  /* no pay method */
    AVI_PM,
    ACM_PM,
    CASH_PM,
    NON_REVENUE_PM
    TOKEN_PM,
    SCRIP_PM,
    CARD_MAGNETIC_PM,
    CARD_MANUAL_PM,
    STICKER_PM,
    PREPAID_PM,
    NUMBER_OF_PAYMENT_E,
    }   PAYMENT_METHOD_E_E;
    typedef UWORD PAYMENT_METHOD_E;

    typedef enum {
    TOLL_RATE,
```

```
EMP_ID,
AVI_TAG,
AVI_TAG2,
MAX_FILES,
} DATA_FILE_TYPE_E_E;
typedef UWORD DATA_FILE_TYPE_E;

typedef enum {
COMPLETE_FILE_UPDATE,
ADD_RECORD,
DELETE_RECORD,
UNDEFINED
} UPDATE_TYPE_E_E;
typedef UWORD UPDATE_TYPE_E;
```

Lane Controllers

The Contractor shall furnish and install a lane controller in each of the Mainline Toll Plaza lanes and each of the ramp lanes and one spare unit for a total of thirteen (13) lane controllers. The lane controllers shall control and monitor the subsystems and communicate with the Host Computer.

The work under this section shall include all labor, materials, and support services to complete the design, programming, fabrication, testing, installation, integration and acceptance of the lane controller subsystem.

The lane controller shall send and/or receive information from the following units:

- ETC readers;
- Toll attendant's terminal;
- Receipt printer
- Magnetic card reader
- Patron fare display;
- Automatic coin machine;
- Vehicle classification system - high speed;
- Vehicle classification system - low speed;
- ETC account status lights;
- Canopy status lights; and
- Violation image capture equipment.

At the Mainline Toll Plaza, the controllers may be installed in the lanes utilizing NEMA dust tight and water tight enclosures or they may be rack mounted in the administration building. At the ramp plazas, they shall be enclosed in the toll island building.

Host Computer Messages

Messages between the controllers and the Host Computer shall use error checking protocol and include a sequential transaction number. Circular message log files shall be maintained. Messages from the controllers to the Host Computer involving vehicle transactions shall contain, at a minimum, the following groups of data:

ETC Express Lanes

- Transaction number;
- ETC tag number;
- Lane number;
- Vehicle classification from the tag;
- Vehicle classification from the high speed vehicle classification system;
- Current date;

- Current time;
- Calculated toll using the tag vehicle classification;
- Calculated toll using VCS system; and
- Image captured from the video enforcement subsystem (if invalid or no tag);

Manual Lanes

- Transaction number;
- ETC tag number (if a tag is present);
- Lane number;
- Vehicle classification from the tag (if tag present);
- Vehicle classification from the toll attendant;
- Vehicle classification from the slow speed VCS;
- Current date;
- Current time;
- Calculated toll using tag vehicle classification (if present);
- Calculated toll using input from the toll attendant;
- Calculated toll using the slow speed VCS;
- Toll attendant ID number;
- Toll attendant tour number;
- Toll attendant segment number; and
- Vehicle license plate number (if in violation).

Automatic/ETC Lanes

- Transaction number;
- Lane number;
- ETC tag number (if tag present);
- Calculated toll;
- Current date;
- Current time;
- Automatic Coin Machine (ACM) toll collected; and
- ACM vault number;
- Vehicle image from the VES.

Messages from the Host Computer to the lane controllers involving ETC tag data shall, at a minimum, contain the following:

- Transaction number;
- ETC tag number; and
- ETC tag status.

Messages from the Host Computer to the Mainline Toll Plaza controllers involving toll calculations shall, at a minimum, contain the following:

- Transaction number;
- Vehicle classification;
- Toll; and
- Effective date and time.

Messages from the Host Computer to the ramp plazas involving toll calculations shall, at a minimum contain the following:

- Transaction number;
- Default toll; and
- Effective date and time.

Special messages from the Host Computer to a lane controller will be of the following type:

- Activate a device;
- Open lane, close lane; and
- Date and time sync.

The controller tag database shall be able to accommodate account status information for a minimum of 5,000,000 tags.

All controllers shall be interchangeable from lane to lane. The contractor shall install the spare controller in the Mainline Toll Plaza operations building test and training center. It shall have the same software setup as the other controllers and shall be interchangeable with them.

In the event of a failure of the Host computer or the communications line to it, the lane controller shall be able to operate in stand alone mode for an extended period of time. The lane controller shall have sufficient storage to hold toll transactions for thirty (30) days of operation plus video images for 1000 violators.

The lane controllers shall operate effectively at an input power of 115 VAC $\pm$ 15 volts at 60 $\pm$ 3 Hz. The lane controller shall be supported by the Mainline Plaza UPS and the individual UPS at the ramp plazas.

The lane controllers should have a MTBF of 8000 hours with a MTTR of 1 hour.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;

- Complete as built drawings of the equipment and installation;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual;
- Circuit board pictures identifying major components; and
- Complete operations manual (10 copies).

Testing

The Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

ETC Account Status Indicators/Lane Traffic Signal

The Contractor shall provide an ETC account status indicator (traffic signal) at each of the two (2) Automatic Coin Machine/ETC lanes at the ramp plazas and each of the six (6) Manual/ETC lanes at the Mainline Toll Plaza. The work under this section shall include all labor, materials and support services to complete the installation, integration, testing, and acceptance of an 8-inch diameter aluminum signal head.

Each traffic signal head shall consist of three (3) completely identical signal sections rigidly fastened together to present a continuous, pleasing appearance. Each section shall have a separate and complete housing. The traffic signal shall meet or exceed the Equipment Standard of the Institute of Transportation Engineers' (ITE) latest revision.

The ETC account status indicator is to be used to display the status of an ETC account or the end of a non-ETC toll transaction as the vehicle passes through the lane.

Design Requirements

The housing of each section shall be a one-piece corrosion resistant aluminum alloy die casting.

The prism traffic signal lens shall be standard red, yellow, and green and shall conform to the latest revision of the ITE standard specifications. The yellow lens shall be inscribed "Low Bal".

The signal head color shall be yellow, except that the inside of the visor and the front side of the backplate shall be painted dull black.

Operational Requirements

The ETC account status indicator/traffic light in Manual/ETC lanes shall be lit red during non-activity periods. At the occurrence of a valid non-ETC transaction, the lane controller shall signal the light to turn green. The lane controller shall signal the light to turn red when the vehicle has cleared the exit loop. At the end of a valid ETC transaction, the lane controller shall signal the light to turn green for a valid ETC account and yellow for a low balance ETC account. Again, the signal shall return to red when the vehicle has cleared the exit loop.

The ETC account status indicator/traffic light for ACM/ETC ramp plaza lanes shall be lit red during non-activity periods. During a cash transaction, once the full toll has been paid, the signal shall turn green. When exit has been indicated by the trailing traffic loop, the light shall return to red. During an ETC transaction, the green light shall be lit after a valid ETC transaction occurs, returning to red as indicated above. The account status indicator shall light yellow when an ETC transaction occurs and ETC tag funds are below the prescribed

level, and return to red as indicated above. The account status indicator shall remain red for invalid ETC tags and ETC accounts below zero balance.

Reliability

The mean time between failures shall be more than 8000 hours (including bulbs) and the mean time to repair (MTTR) shall be less than 1 hour.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;
- As build drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Canopy Lane Status Lights

The Contractor shall provide a Canopy Lane Status light at each of the six (6) Manual lanes at the Mainline Toll Plaza. The work under this section shall include all labor, materials and support services to complete the installation, integration, testing, and acceptance of a 12-inch diameter aluminum signal head for the canopy lights.

Each canopy light head shall consist of two (2) completely identical signal sections rigidly fastened together to present a continuous, pleasing appearance. Each section shall have a separate and complete housing. The traffic signal shall meet or exceed the Equipment Standard of the Institute of Transportation Engineers' (ITE) latest revision.

The canopy lights shall be mounted on the canopy directly over the center of each lane in a manner making them visible to motorist in enough time to make a safe lane change decision to an open lane.

The canopy lights shall be used to display the status of the lanes (open/closed). The lane controller will signal the traffic lights to illuminate the red light for closed and the green for open.

Design Requirements

The prism traffic signal lens shall be standard red and green and shall conform to the latest revision of the ITE standard specifications.

The signal head color shall be yellow, except that the inside of the visor and the front side of the backplate shall be painted dull black.

Operational Requirements

The canopy light shall be red when the lane is closed, in standby, or open in maintenance mode. It shall be green when the lane is open.

Reliability

The mean time between failures shall be more than 8000 hours (including bulbs) and the mean time to repair (MTTR) shall be less than 1 hour.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;
- As build drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

ETC Reader

The Contractor shall provide the same ETC equipment used on the Powhite Parkway Extension. Currently, this shall be one (1) dedicated MARK IV Model 800000-001 redundant reader for each pair of ETC express lanes, one (1) MARK IV Model 8000000-001 redundant reader for each group of manual ETC lanes (one group east bound and one west bound), and one (1) MARK IV Model 800000-001 redundant reader for each of the ramp plazas total 6 readers). At the time of procurement, the Contractor shall verify the equipment at the Powhite Parkway Extension and implement any changes made since this writing. This work shall include all cables, connectors, cabinets, labor, materials, firmware, and services necessary to accomplish the design, fabrication, integration, testing, installation, and acceptance of the electronic toll collection system.

The readers, at the time of installation, shall be the latest version of the model in use at the Powhite Parkway Extension.

MARK IV tags will be distributed by FCSC eliminating the need for the Contractor to provide tags with this project.

The MARK IV readers integrated with the ETC lane kits and the lane controller must be able to perform a read/write function to a tag in a lane at speeds high enough to prevent any loss of tag reads as vehicles pass through the express lanes at speed rates of 5 to 90 MPH and prevent any degradation in the toll attendant's ability to process vehicles in the manual lanes.

The readers in the manual lanes must have the same protocol as the readers in the express lanes and must be synchronized with them.

Accuracy Rate

The readers provided along with the appropriate cables, connectors, lane controllers, and installation must provide an accuracy rate of 99.99%.

Reliability Requirements

The mean time between failures (MTBF) of the readers shall be greater than 14,000 hours and the mean time to repair (MTTR) shall be less than 1 hour.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

ETC Lane Kits

The Contractor shall provide lane kits for the ETC reader equipment described above. Currently, this shall include three (3) MARK IV Model 800122-002 lane kits for each pair of ETC express lanes, three (3) MARK IV Model 800122-002 lane kits for each group of manual ETC lanes (one group east bound and one west bound), and one (1) MARK IV Model 800122-002 lane kit for each of the ramp plazas (total 14 lane kits). This work shall include all cables, mountings, connectors, cabinets, labor, materials, firmware, and services necessary to accomplish the design, fabrication, integration, testing, installation, and acceptance of the electronic toll collection system.

The lane kits, at the time of installation, shall be the latest version of the model specified.

The MARK IV lane kits shall include a radio frequency (RF) module, an antenna, adapter cables, and all necessary connectors. The RF module shall slide into one of the eight slots on the RF rack located within the ETC reader unit.

The MARK IV lane kits integrated with the MARK IV readers and the lane controller shall be able to perform a read/write function to a tag in a lane at speeds high enough to prevent any loss of tag reads as vehicles pass through the express lanes at speeds of 5 to 100 MPH and prevent any degradation in the toll attendant's ability to process vehicles in the manual lanes.

Lane kits shall be installed and aligned in such a manner as to prevent cross reads between adjacent lanes, prevent reads from trailing vehicles (tailgating), and to read vehicles straddling adjacent lanes. The Contractor shall design the system to assure accurate relationships between tag reads and the vehicle being classified.

Reliability Requirements

The mean time between failures (MTBF) of the readers shall be greater than 14000 hours and the mean time to repair (MTTR) shall be less than 2 hours.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Vehicle Classification System (High Speed)

The Contractor shall provide a Vehicle Classification System (VCS) in each of the four (4) ETC Express Lanes at the Mainline Toll Plaza. This work shall include the provision of a combination vehicle separator and high speed axle detector, classification logic module, and all necessary cables and connectors. It further includes all labor, material, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the system in accordance with these specifications.

A vehicle will pass through the lane at normal highway speeds. The ETC system shall identify the vehicle, read the tag and send the tag ID number and lane number to the lane controller where a toll transaction will be created. The VCS shall classify the vehicle according to the number of axles on the vehicle.

Design Requirements

The VCS shall classify vehicles at speeds of 5 to 100 mph. The classification module shall send the classification information to the lane controller to be combined with the transaction data from the tag read. Thus, the systems must be synchronized to assure proper matches with tag reads and vehicle classifications. The accuracy rate of synchronization between the two systems shall be 99.99%. The system shall recognize when a synchronizing problem occurs and be self-correcting to avoid repeating errors.

The selection of components that make up the high speed vehicle classification system (vehicle separator and axle detector) are the responsibility of the Contractor. The vehicle separator may be an overhead laser device that is also used in the video enforcement subsystem as the triggering mechanism for image capture. Alternatively a dedicated device may be used for the purpose of vehicle classification.

The high speed axle detector shall have a record of successful performance in projects. The axle detecting sensors must be flexible and conform to any road profile maintaining a uniform distance to the road surface. The final installation shall be flush with the road surface.

The sensor installation configuration shall allow for separation of vehicles in the lanes, classifying a vehicle in each lane, and distinguishing a vehicle straddling two lanes.

The classification logic shall allow user defined vehicle classes and shall be controllable from the Host Computer in the Mainline Toll Plaza administration building. The Contractor shall provide all communication and integration logic between the classification logic module and the lane controller vehicle transaction record.

Electrical Requirements

The vehicle classification system (including all components) shall operate at 115 VAC 60 HZ.

Reliability Requirements

The mean time between failures (MTBF) of the high speed axle detectors shall be 8000 hours minimum and the mean time to repair (MTTR) shall be 4 hours maximum. The MTBF for the vehicle separator shall be 8000 hours minimum and the MTTR shall be 1 hour maximum. The MTBF for the classification logic shall be 8000 hours minimum and the MTTR shall be 1 hour maximum. The overall system MTBF shall be 2000 hours minimum and the MTTR shall be 1 hour maximum.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;
- Complete as built drawings of the equipment and installation;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual; and
- Circuit board pictures identifying major components.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Vehicle Classification System (Low Speed)

The contractor shall provide a vehicle classification system (low speed) in each of the six (6) Manual/ETC Lanes at the Mainline Toll Plaza. This work shall include the provision of the loops, treadles, and classification logic modules. The system to be provided shall be a treadle and loop system. This work further includes all labor, material and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the vehicle classification system in accordance with these specifications.

The vehicle classification system shall be installed as a post transaction system. In a Manual Lane, a vehicle will stop at a toll attendant's booth where the attendant will enter the vehicle classification and collect the appropriate fare as determined by the lane controller. The vehicle will accelerate away from the toll booth and pass over the vehicle classification system. The vehicle classification system will determine the proper classification and send it to the lane controller where it will become part of the transaction record for that vehicle.

Design Requirements

The vehicle classification system indicated is a four strip treadle system. Other technology meeting, at a minimum, the standards for the treadle system will be considered.

The vehicle classification system shall contain, at a minimum, the following:

- A four (4) strip treadle accurate to within ±0.5% over 1000 axles over a speed range of 0 mph to 40 mph (0 km/h to 65 km/h);
- The classification logic shall adjust axle totals for vehicles detected backing up;
- The inductive loop shall be placed in such a manner as to surround the treadle and detect the presence of a vehicle;
- Communication protocol between the classification logic module and the lane controller shall be compatible. The Contractor shall integrate the classification system and the lane controller; and
- All installation detail must be approved by VDOT.

Electrical Requirements

The vehicle classification system (including all components) shall operate at 115 VAC 60 HZ.

Reliability Requirements

The mean cycles between failures (MCBF) of the 4-strip contact treadle shall be 1,000,000 axles and the mean time to repair (MTTR) shall be 4 hours maximum. The MCBF for the vehicle induction loop shall be 8000 hours minimum and the MTTR shall be 4 hours maximum. The MCBF for the classification logic unit (if used) shall be 8000 hours minimum and the MTTR shall be 1 hour maximum. The overall system MCBF shall be 2000 hours and the MTTR shall be 1 hour.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;
- Complete as built drawings of the equipment and installation;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual; and
- Circuit board pictures identifying major components.

Testing

The contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Toll Collector's Terminal

The Contractor shall provide six (6) toll collector's terminals which shall include keypads, displays, cash drawer, and magnetic stripe card readers to serve as the interface between the toll collector and the lane controller. The terminal shall have an interface for a receipt printer and it shall be connected to and interfaced with the lane controller for each corresponding lane. This work further includes all labor, material, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the terminals in accordance with these specifications.

The toll terminal shall be located on the toll booth counter. It shall be designed in a manner to allow non-technical personnel to exchange the entire unit in case of failure.

The toll terminal shall incorporate a display keyboard and collector magnetic stripe ID card reader. The toll terminal housing shall be high quality brushed stainless steel and designed to be impervious to electrostatic discharge built up on the toll collector's hands from contact with motorists, even in extremely dry conditions.

Keypad

The description of a keypad is not intended to preclude the approach of utilizing a touch screen terminal. The keypad shall have, at a minimum, the following elements:

- Replaceable key cap labels permitting legend changes;
- Watertight/oil tight switches; and
- Modular construction allowing removal of defective switches.

Spare keys shall be incorporated into the design of the key pad.

Controller

The terminal's controller will provide all of the functions of the terminal and provide the interface to the lane controller..

Display

The color and brightness of the display shall permit viewing under high and low ambient light conditions. Brightness and contrast shall be adjustable. The display capacity shall be a minimum of 40 characters. Character height shall be 0.5 inches, minimum.

Magnetic Stripe Card Reader

A magnetically encoded card identifying an authorized user of the terminal will be issued to each attendant. Upon starting a tour or tour segment, the attendant will swipe the card through the reader. The lane controller will validate the data and activate the terminal for use. The attendant will end a tour or segment by pressing appropriate keys on the keypad. The system will permit the collector to open the lane by keying in his/her ID when this is authorized by the toll supervisor through the toll supervisor's workstation. This alternate opening procedure is only intended for use when the mag card reader or collector's ID card are not functioning.

Each time a card is used, a message shall be sent from the terminal to the lane controller and the Host Computer. At a minimum, the message shall contain the following:

- Employee ID number;
- Lane number;
- Current date;
- Current time; and
- Event (tour start, segment start).

The magnetic stripe reader shall be an integral part of the terminal and be environmentally designed to operate in a toll lane. The Contractor shall supply the reader and a five year supply of cards.

Operational Requirements

The toll terminal shall be powered on at all times, even when that particular lane is in the closed mode. Upon initial connection of the toll terminal, self-diagnostic tests shall automatically be performed in order to ensure that the terminal is functioning properly.

If a malfunction is detected during the self-diagnostic test, the terminal shall transmit a message to the lane controller unit indicating that a terminal malfunction has surfaced. The unit shall also attempt to identify the extend of the failure. A malfunction message shall be sent to the message display on the terminal in order to inform the Toll Collector that the terminal is inoperative.

If during the course of the self-diagnostic test no malfunction is encountered, the terminal shall send a message to the Host Computer indicating that the terminal has been successfully powered on. During the course of a successful power-on process, the lane controller unit shall download the current system time and date to initialize the terminal system clock. The current toll schedule shall also automatically updated. As the terminal is powered on, the employee badge number invalid list will be transmitted to the terminal.

The process of opening and closing a lane shall be designed in a way that will minimize the effort required by the operator to segregate transactions from one segment of duty (SOD)to the next. The system shall not allow a segment of duty to start or stop while a transaction is incomplete. If an ETC tag has been read in the lane or a vehicle is present at the Toll Collector's booth and the classification has been entered, the transaction must be completed prior to a change of SOD.

To open a toll lane, the Toll Collector shall swipe or insert his/her magnetic stripe badge through or into the card reader. If the badge number is not a valid collector badge number, a message stating this shall be displayed on the terminal and the procedure shall be automatically terminated. When the Toll Collector badge number is correctly read, the following shall occur:

- The canopy signal shall change from red to green;
- The traffic light shall set to red (if already not in this condition);
- A "lane open" message shall be generated by the terminal and sent to the lane controller unit;
- A new segment-of -duty (SOD) file message shall be established for transaction message updating;
- The terminal display shall show a "lane open" message; and
- The Supervisor's workstation shall show the toll lane as being in the open mode.

In the event that the Toll collector badge is not read properly, an opportunity shall be provided for the Collector to enter his/her badge number manually. The Collector shall request the toll supervisor to enable a keyed log-in. When authorized by the toll supervisor, the Collector shall manually enter the badge number (including check digit) on the terminal key board. Upon valid entry of the badge number, the above lane open steps shall occur, with the only exception being that the lane open and SOD message shall indicate that the toll lane was opened via a manual procedure.

The ability to manually long-on and log-off a terminal with a maintenance badge number shall be integrated into the toll system. Initiating the lane open procedure with a maintenance badge shall cause the above lane open steps to occur, except that the booth canopy light shall remain red during the maintenance segment of duty. All revenue and traffic data generated during a maintenance segment shall be filtered out of the actual traffic and revenue reports.

Just prior to closing a toll lane, the Toll Collector shall have the option of first placing the lane in standby mode. After pressing a "STANDBY" button on the terminal keyboard, the plaza canopy light shall change from green to red, but the terminal and lane components shall continue to operate in a normal fashion. This feature shall warn patrons who are approaching the toll plaza that the lane is now closed and is no longer available for vehicle processing.

Placing the terminal in standby mode shall generate a message to be sent to the Host Computer and also display the lane status on the Supervisor's workstation screen. Upon entering the standby mode, the only way for a Collector to exit that particular terminal status would be to log-off and back on again. There shall be an indication on the terminal that shows the Collector that he/she is in the standby mode.

To close a toll lane, the Toll Collector shall swipe or insert his/her Collector badge through or into the card reader. When the collector badge number is properly read, the terminal shall automatically log-off and the following events shall occur:

- The canopy signal shall change to red;
- The traffic light shall change from green to red (if already not in this position);
- A "lane closed" message shall be generated by the terminal and sent to the lane controller unit;
- The current segment of duty shall be closed and sent to the plaza computer;
- The terminal display shall show a "lane closed" message; and
- The Supervisor's workstation shall show that the lane is n ow in the closed mode.

In the event the Collector badge number is not read properly, an option shall be provided to manually close the toll lane. The Collector shall manually enter the badge number (including the check digit) on the terminal keyboard. After manually closing the lane, the above lane close events shall occur, with the exception that the lane closed message shall indicate that the toll lane was closed in the manual mode. The lane closing procedure, both in the normal and manual mode, shall also apply for maintenance badges.

The terminal shall have provisions for the classification of vehicles. The vehicle classification shall be processed first, followed by the method of payment determination. The transaction currently being processed would be able to be successfully changed until the method of payment key is activated. Depressing the classification key shall cause the toll due to be displayed on the patron fare display and on the Collector's terminal message display. The terminal display and patron fare display shall continue to display the most recent classification until the next transaction is processed, or a thirty (30) second "time out" elapses. The vehicle classification count and associated cash amount shall be updated in the current SOD file each time a transaction is successfully completed. A transaction message shall be sent to the plaza computer to be used in updating the supervisor's workstation status display. Upon crossing the vehicle detector loop and treadle, associated fields in the SOD message shall also be updated.

While the lane is open, the Collector will be classifying and accepting payment from each paying motorist. When vehicles with ETC tags enter the lane, the toll terminal shall so advise the Collector. An audible indication shall be provided in addition to an appropriate message on the toll terminal display. If the motorist has an ETC tag but wishes to pay cash, the terminal design shall support this procedure and shall properly record the transaction.

The toll attendant will visually determine the vehicle classification and communicate it to the lane controller by pressing a "class key" on the terminal's keypad representing the classification. The lane controller shall calculate the toll due and display it on the terminal's display as well as the patron fare display. The attendant will accept payment from the patron. If a receipt is requested, the attendant presses the receipt key activating the printer. The receipt may be requested up until the point that the vehicle crosses the exit loop.

The terminal shall permit other types of data entry such as toll fare exceptions, extra axles, classification exceptions, etc.

Electrical Requirements

Toll collectors terminals shall operate on 115VAC 60Hz or a low voltage system, provided such low voltage system is provided by the contractor as an integral part of the toll collection system.

Connection point(s) to receipt printer must be clearly labeled by permanent printing or etching. Connection point(s) to receipt printer must be unique and must be keyed to avoid misalignment of printer cable(s).

Reliability

The toll attendant's terminal shall have a MTBF of 30,000 hours and a MTTR of 15 minutes.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment Data Sheets;
- Performance specifications;
- Complete as built drawings of the equipment and installation;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual;
- Circuit board pictures identifying major components; and
- Operating Manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Receipt Printer

Receipt Printers will be provided in all six (6) manual ETC lanes of the mainline plaza. Each of these lanes shall be equipped with an industrial quality Receipt Printer, which shall be a separate unit from the terminal. The printer will print a receipt at the request of the Toll Collector after a valid cash transaction. Printing will be at highest possible speed as not to slow lane operations. Receipt print time shall be 2.5 seconds or less. The replenishment of receipt paper will be possible by the Toll Collector without utilizing tools.

This work shall include the provision of the receipt printers and supplies as described below and all labor, materials, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the printers in accordance with these specifications.

Design Requirements

The freestanding receipt printer unit will be located on the counter of the toll booth, next to the toll terminal, and designed to fit such appropriate space. It shall be designed in such a manner as to allow non-technical personnel to physically exchange the entire unit in case of failure.

The receipt printer shall also be designed to allow toll collection personnel to easily replace receipt printer paper, without affecting normal operation in the toll lane, and without requiring any tools. Access to change paper will not permit access to electronics, and the electronics section of the printer will require a key to access. Printers will use standard thermal cash register roll paper, approximately 2.25 inches wide, readily available from at least two (2) suppliers. The Printers will have a capacity of no less than 2000 receipts, approximately 2.5 inches long each, per roll of paper.

Receipt design must be changeable and will be determined by *FD/MK* in consultation with the Contractor. At a minimum, receipt will contain facility name, date, time, lane number, and toll paid.

The printer electronics shall include the drive electronics, interfaces to lane controller and/or toll terminal, and associated circuitry. The printer shall include receipt transport device, driver logic, paper roll assembly, power supply, and other necessary parts to meet operational requirements.

Printers will be housed in stainless steel or equally corrosion resistant material. Housing must meet environmental requirements defined elsewhere in this document. The receipt printers shall have a MTBF of 4,000 hours minimum and a MTTR of one hour maximum.

Operational Requirements

A receipt shall only be generated upon request by the Toll Collector, and only one receipt shall be provided for each successfully completed transaction. Receipts shall not be provided, even upon request of the Toll Collector, after ETC transactions. Receipts for cash transactions shall be printed in 2.5 seconds or less after the appropriate button is pushed. Receipts for Insufficient Funds and Non-revenue transactions may take longer to print. In addition, a receipt test routine will be available from the toll terminal.

Upon completion of printing, a receipt will be cut but held in place until Collector removes receipt, to avoid wind blowing receipt away.

Printers shall have status lights for power on, paper jam, paper low, and communications lost (communications feed to lane controller and/or toll terminal lost.) A paper low indicator will light and an audible beep sounded when a supply of approximately 25 receipts are left on roll. An audible beep will sound each time a receipt is printed and paper is low (less than 25 receipts remaining).

Electrical Requirements

Receipt printers will operate on similar electrical current as toll terminal or can be supplied directly from the toll terminal. However, power draw of receipt printer shall not exceed 5 AMPS at 115VAC.

Documentation Requirements

Two complete sets of documentation shall be provided by the contractor in accordance with guidelines in Documentation section of this RFP. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Supplies

The Contractor will supply 400 rolls of receipt paper satisfying the design conditions for use in receipt printers at system startup.

Testing

Receipt Printers will be tested according to the test schedule. Factory tests will include all receipt printer operations including printer test, cash transaction, non-revenue transaction, insufficient funds transactions, ETC transaction, etc. Also included will be the testing of replacing receipt paper roll, attempts to open printer electronics area, and disconnection and replacement of printer through cable disconnects and reconnects. Overall size, housing, and design will be evaluated to meet design and operational criteria.

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Maintenance

Under terms of the Warranty Period and any executed Options, Contractor shall be responsible for receipt printer maintenance. Receipt paper will be supplied by *FD/MK*.

ACM Receipt Printers

Receipt printers will also be provided as part of the ramp plaza ACM machines. Such printers will be an integral part of the ACM machine cabinet front and easily accessible to patrons inside vehicles.

This work shall include the provision of the ACM receipt printers and supplies as described below and all labor, materials, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the printers in accordance with these specifications.

Design Requirements

ACM Receipt Printers shall be of a type supported by the ACM manufacturer. Receipts must print in 2.5 seconds or less. Receipt paper rolls will be designed for at least 2000, 2.5 inch long receipts per roll.

ACM Receipt Printers shall be designed for easy replenishment of receipt roll paper. Replenishment shall be simple enough to accomplish in five (5) minutes or less and shall require a minimum amount of training.

The printer electronics shall include the drive electronics, interfaces to lane controller, and associated circuitry necessary to meet these requirements. The printer will also include receipt transport device, driver logic, paper roll assembly, power supply, and other necessary parts to meet operational requirements.

The ACM receipt printers shall have a MTBF of 4,000 hours minimum and a MTTR of one hour maximum.

Operational Requirements

Upon pressing receipt button and after a successful cash transaction, a receipt will be issued. Only one receipt per transaction will be issued. Receipts will not be issued for ETC transactions, even upon request by patron. Receipts must be cut from roll once printed and ejected far enough for patron to reach receipt. However, receipt must be held firmly until pulled by patron to avoid receipt being dropped or blown away.

A manual method for issuing a test receipt by entering a test command into the lane controller shall be provided.

When a minimum of 200 receipts remain on printer roll, printer will send a maintenance diagnostic message to toll supervisors workstation.

Electrical Requirements

ACM receipt printers will operate on same power as ACM machine or will feed directly off an internal ACM supply if designed to do so. Cabling to printer from other devices (interface and electric supply) must be of a type which allows easy disconnect and reconnect of a replacement printer.

Documentation

Two complete sets of documentation shall be provided by the contractor in accordance with guidelines in Documentation section of this RFP. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Supplies

Contractor shall supply 200 rolls of receipt paper for use in ACM receipt printers at system startup. Further supplies of ACM receipt paper must be readily available from at least two (2) sources.

Testing

ACM Receipt Printers shall be tested according to the test schedule. Factory tests shall include all receipt printer operations including printer test, cash transaction, and ETC transaction. Also included will be the testing of replacing receipt paper roll and disconnection and replacement of printer through cable disconnects and reconnects.

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Maintenance

Under terms of Warranty Period and any executed Options, Contractor shall be responsible for ACM receipt printer maintenance.

Patron fare display

The Contractor shall provide a patron fare display in each of the six (6) Manual/ETC Lanes at the Mainline Toll Plaza and a patron fare display as an integral part of each of the two (2) ramp plaza ACM machines as outlined in the section Automatic Coin Machine. This work shall include all labor, material, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the fare display in accordance with these specifications.

The patron fare display shall be placed in such a manner as to be easily read by the patron. The manual ETC lane display shall be blank until the toll collector has indicated the vehicle classification and the lane controller has calculated the toll due. The lane controller will then send the toll due to the fare display. The fare display will clear when the vehicle has left the lane.

Design Requirements

The patron fare display shall be a variable three line five characters per line alphanumeric display for the toll amounts, change amounts and messages for observation by the patrons. Toll amounts shall be shown in dollars and cents ($XX.XX). Leading zeros shall not be displayed.

The display modules shall be easily read in all light

The patron fare display shall be integrated into the toll collection system and shall be controlled by the lane controller. The Contractor will be responsible for integration to the lane controller.

Reliability Requirements

The patron fare display shall have a mean time between failures (MTBF) of 2,500 hours minimum and a mean time to repair (MTTR) of 1 hour maximum.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Intercom subsystem

The Contractor shall furnish and install a complete microprocessor controlled, duplex voice communication system. The system shall include a toll booth station in five (5) of the six toll booths, a master station in the Mainline toll plaza administration building, a master station in one of the Mainline Toll Plaza manual lanes (to be designated at the time of installation), and two automatic coin machine (ACM) stations at each of the two ramp plazas. One of the stations will be accessible to motorist using the ACM and the other shall be inside the ACM accessible to service personnel. The system shall include all necessary boards, power supplies, master control stations, substations, receptacles, special mounting boxes, loudspeakers, terminal boards, cable, connectors, and accessories for a complete operational communication system.

The system shall include two (2) duplex master stations with handsets, five (5) tollbooth substations (wall mounted) and two (2) ramp plaza substations with loudspeakers.

System Operational Functions

Each substation (either a toll booth or ACM) shall be programmed to call the master station at the Mainline Toll Plaza administration building. The call will be identified on the master station and a distinctive tone shall sound. If there is no response at the administration building after a predetermined time, the call shall automatically be redirected to the second master station located in one of the toll booths.

Each master station shall be capable of redirecting substation calls to the other master station without waiting for a predetermined time out (creating the ability for either substation to be the prime unit).

Each substation shall be a full duplex, hands free unit. Normal conversation shall be conducted between a substation and a master without a handset. Each master station shall have the choice of either hands free or using a handset.

The two (2) ACM mounted substations shall be designed to withstand vandalism and weather. There shall be a large environmentally protected button to be used by a vehicle driver to place a call. The speaker shall be waterproof. The Contractor shall coordinate the integration of the intercom substation into the ACM with the supplier of the ACM. The unit should be internal leaving the front panel of the ACM smooth except for the activation button. The intercom shall be well integrated and not have the appearance of being "hung on" the front of the ACM.

The Contractor shall supply two (2) loud speakers (one at each ramp plaza). The loud speakers will allow the user at either of the two masters to speak to anyone in the vicinity of the ACMs.

Data communications between the ramp plazas and the Mainline Toll Plaza administration building will be via fibre optic cable.

Reliability Requirements

The intercom system shall have a mean time between failures (MTBF) of 4000 hours minimum and a mean time to repair (MTTR) of 1 hour maximum.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual; and
- Operations manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Video surveillance subsystem (security)

The contractor shall provide a video surveillance subsystem to assist in providing security at both the mainline plaza and the ramp plaza locations. The subsystem shall include one (1) PTZ color camera at each of the two ramp plazas placed in such a manner as to concentrate on the area of the ACM and interacting driver but able to pan, tilt, or zoom to other areas of the plaza. At the mainline plaza, one (1) PTZ color camera shall be placed in each Manual/ETC and each ACM/ETC lane in such a manner as to concentrate on the area of interaction between drivers and the toll collector or ACM. Additionally, two (2) color monitors to be located at the Mainline Toll Plaza administration building and at one toll booth, one (1) 8 channel sequential switcher, and one (1) time-lapse VCR. This work further includes all labor, material and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the video surveillance system.

A pan/tilt/zoom camera will be installed on the overhead gantry in a position allowing observation of the automatic coin machine (ACM) or toll collector and the space between the ACM or toll collector's booth and a vehicle in the adjacent lane. The camera shall be mounted on a pan/tilt/zoom mechanism allowing observation of the entire area surrounding the ACM or toll collector's booth. The image captured by the camera shall be transmitted via fiber optic cable (provided by the Contractor) to a monitor in the supervisor's area in the administration building at the Mainline Toll Plaza. A second monitor shall be placed in the toll attendant's booth containing the master intercom station.

Provision shall be made for encoding a data stream from the lane controller onto the CCTV signal for all cameras located at the plazas.

Controls for the PTZ operations of the cameras shall be located at each monitor location.

A S-VHS/VHS high density time-lapse recorder/player shall be located in the supervisor's area at the Mainline Toll Plaza. The recorder/player shall have the ability to be switched to real time and fixed on one of the ramp plazas.

A sequential switcher shall be provided allowing automatic switching between cameras at intervals defined by the user. In addition to switching between cameras for normal observation and recording, the switcher shall monitor up to 8 alarm sensors. Each alarm sensor shall control one camera. If the alarm is activated, the switcher will automatically switch to its related camera and hold on it. Additionally, the switcher shall have an alarm output that will activate the VCR alarm and switch the VCR to real time mode for recording in greater detail during the alarm period.

The Contractor shall be responsible for providing a compete surveillance subsystem as specified including all mounting brackets, cables, connectors, labor, and services. The contractor shall provide adequate lighting at each ramp plaza to assure image quality similar to daytime conditions.

The Contractor shall provide sufficient tapes for the recorder/player for one (1) weeks worth of continuous monitoring in normal mode.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Testing

Contractor shall demonstrate proper functional operation of the video surveillance subsystem at the factory test, in lane verification testing and during the operational acceptance test.

UPS for Ramp Plaza

An Uninterruptible Power Supply (UPS) shall be provided at each ramp plaza to allow for full toll collection operations in case of power failure or brown-out. The UPS will also act as a filtering and power conditioning device for all equipment operating from UPS during normal operations.

This work shall include the provision of ramp plaza UPS as described below and all labor, materials, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the UPS in accordance with these specifications.

Design Requirements

The Ramp Plaza UPS shall be sized to operate all toll collection equipment, including surveillance cameras and intercom system, for a period of fifteen minutes after power failure such that toll collection can continue.

The Ramp Plaza UPS will not be required to run ACM environmental equipment, receipt printers, traffic signal, or general building power.

UPS batteries will be of sealed type and provided in environmental cabinets. The proposal shall specify the KVA rating, make and model of the Ramp Plaza UPS System proposed.

Operational Requirements

When operating in normal mode, each UPS shall act as a power filter and conditioning device for all attached equipment. A standby ready message shall be displayed at the plaza supervisor workstation. At power failure, the UPS will supply power to continue toll collection activities for up to 15 minutes from failure. Switching to UPS power shall be fast enough such that no transaction data is lost and no part of the toll equipment powers down. When operating in supply mode, the UPS shall send a UPS supply message to the plaza supervisor station. Near the end of the 15 minute period, a shutdown eminent message shall be sent to the toll supervisor workstation. This notification will occur in such time as to allow proper shutdown of ramp plaza lane controller and attached equipment before any data is lost.

If line power should return during the 15 minute supply period, UPS will return to normal mode but will continue to send a "charging" message to the plaza supervisors workstation while the batteries are not at full strength. Also, if at anytime during normal operations batteries are not a full strength, the "charging" message will show at the plaza supervisor workstation.

When regular power returns after shutdown, UPS will automatically reset, supply power for attached equipment, and begin re-charging.

The UPS shall have the ability to send maintenance diagnostic messages to the toll supervisor workstation if problems surface.

Electrical Requirements

The 115VAC 60Hz electrical power to feed the UPS shall be provided by others. The Contractor shall install the power cabling (utility and UPS) to the lane equipment.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

UPS for Mainline Plaza

An Uninterruptible Power Supply (UPS) shall be provided at the mainline plaza to allow for full toll collection operations in case of power failure or brown-out. The UPS will also act as a filtering and power conditioning device for all equipment operating from UPS during normal operations.

This work shall include the provision of the mainline plaza UPS as described below and all labor, materials, and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the UPS in accordance with these specifications.

Design Requirements

The mainline plaza UPS shall be sized to operate all toll collection equipment, including surveillance cameras and intercom system, for a period of fifteen minutes after power failure such that toll collection can continue. An emergency electric generator (provided by others) should have begun operation within the 15 minute period.

The Mainline Plaza UPS shall not be required to run booth or ACM environmental equipment, receipt printers, traffic signals, canopy lights, or general power to the plaza building.

UPS batteries will be of sealed type and provided in environmental cabinets. The proposal shall specify the KVA rating, make and model of the Mainline Plaza UPS System proposed.

Operational Requirements

When operating in normal mode, the UPS shall act as a power filter and conditioning device for all attached equipment. At power failure, UPS shall supply power to continue toll collection activities for up to 15 minutes from failure. Switching to UPS power shall be fast enough such that no transaction data is lost and no part of the toll equipment powers down. When the remaining UPS capacity has been reduced so that only five (5) minutes of operation remain, the Host Computer shall be alerted so that it may have time to conduct an orderly shutdown.

An emergency power generator, supplied by another party, shall supply power after power failure. When emergency generator power is supplied to the UPS, it shall return to normal or charging operations (as appropriate) and condition and filter generator supply to be used by equipment powered by UPS. Plaza toll operations should, at this point, be able to restart. Similarly, when regular line power returns, UPS should return to normal or charging operations and supply conditioned power to attached equipment.

At anytime the UPS batteries are not at full charge, a charging message shall be sent to the supervisor workstation. The UPS shall also have the ability to send maintenance diagnostic messages to the toll supervisor workstation if problems surface.

Electrical Requirements

Sufficient power shall be supplied to the Contractor for UPS by another party. , It is the responsibility of the contractor to make sure UPS is properly connected to supply circuits which are backed by the generator system, and to coordinate with generator system supplier for proper integration of UPS and generator system such that all design requirements are met.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Performance specifications;
- Complete as built drawings;
- Complete parts list, including manufacturer and manufacturers part number; and
- Maintenance manual.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Automatic Coin Machine

The Contractor shall provide an automatic coin machine (ACM) at each of the two Automatic Coin Machine/ETC lanes at the ramp plazas. The ACM shall be partially enclosed in the ramp plaza utility building which shall be provided by others. The work under this section shall include all labor, materials and support services to complete the design, fabrication, programming, testing, integration and acceptance of two (2) automatic coin machines (ACMs) in accordance with the requirements of these specifications.

Design Requirements

The ACMs shall be designed, fabricated and tested to ensure that the ACMs will operate satisfactorily and accurately without material degradation or reduction in performance. Each ACM shall consist of the following major elements or assemblies.

1	Cabinet or housing unit to accommodate all internal devices.
1	Flexible coin hopper mounted on the exterior of each cabinet and one pare unit.
1	Coin processor assembly for counting coins and tokens. Must be able to process five (5) coins in 1.5 seconds or less.
1	Microcomputer with associated controls.
1	Dual vault assembly with electronic vault identification logic.
1	Security system interface for cabinet alarms.
1	Slot reader assembly for reading magnetic stripe cards and keypad.
1	Reject receptacle for returning invalid coins to patron.
1	Receipt printer assembly for issuing on demand receipts to patron.
1	Decrementing fare display.
1	Heater and air conditioning system.
1	Audio intercom.
1	Vehicle loop detector unit (including loops) for ACM activation with vehicle presence.
8	Coin vaults with vault identification devices.

The ACM shall have complete control over the counting of coins and fare display. The ACM shall be able to indicate to the Lane Controller the complete transaction (transaction number, date, time, vault number, total collected for the transaction). It shall accept data from the Lane Controller (date, time, fare, etc.).

The dual vault system shall allow the secure, uninterrupted collection of coins when one vault is removed. The ACM shall detect, or calculate, when a vault is full and automatically switch to the second vault. There shall be an interface for electronically recording the vault numbers as they are inserted/removed from the ACM and sending the information to the lane controller.

The ACM shall have adequate internal diagnostics to allow any changes in ACM operation status or the status of any of its devices to be reported to the lane controller which shall show them as alarms on the toll supervisor's work station terminal.

The ACM coin processor shall be able to detect foreign coins, slugs, and debris and reject them. An anti-coin jam process shall be available within the coin acceptor mechanism. The coin recognition system shall recognize US coins and tokens ranging in size from the US dime to the US half dollar and the Susan B. Anthony dollar. Coin processing shall have an accuracy of 99.96%.

An audio intercom shall be integrated into the coin machine and connected to both a supervisor's work station in the Mainline Toll Plaza admin. bldg. and one of the toll collector booths at the Mainline Toll Plaza manual lanes. (See Intercom Subsystem)

The Contractor shall be responsible for investigating all field conditions and installation requirements.

The Contractor shall be responsible for the integration of the ACM to the Lane Controller, ETC system, traffic signal, etc.

The magnetic card reader and keypad shall provide secure access to the ACM and removal of vaults. A valid card must be inserted and an associated PIN entered on the keypad to gain access or remove a vault.

The ACM shall have heating and cooling capabilities to maintain the proper temperature and humidity for maximum operating efficiency.

The coin vaults shall be fabricated to be a secure assembly for coin collection in the ACM lanes. The top of the vault shall close and lock as the unit is removed from the ACM. At least one vault, of the two vault system, must be in place in order for the ACM to function. Coin vaults shall be made of aluminum or stainless steel.

The size of the ACM cabinet, not including the coin hopper dimensions, shall be such that it fits in the space provided in the ramp lane building and forms a tight, secure seal with the building around the area where the faceplate and coin hopper protrude through the building allowing easy driver use. The Proposer shall confirm the ACM cabinet dimensions and access door locations within the proposal.

There shall be a patron fare display integrated into the coin machine. It shall reset to the default fare and decrement as coins are counted. The display characters shall be a minimum of 2" tall and readable in bright sunlight and complete darkness. The message "DEPOSIT" shall be located above the display.

Details of the ACM including the vaults, display and receipt printer shall be provided in the proposal.

Operational Requirements

Each lane, when a vehicle is not present, shall have a lane traffic light with red illuminated. The ACM shall display the default fare. The patron will put coins in the ACM coin hopper. As the coins are counted, the displayed fare will decrement. When the default fare has been paid, the ACM will indicate the paid status to the lane controller. The lane controller will switch the lights in the lane traffic light from red to green. When the vehicle passes over a vehicle detection loop located as it exits the lane, the ACM will reset (change the display to the default fare). The lane controller will switch the lane traffic light from green to red.

If the vehicle has a valid tag, the lane controller shall send a fare due of $00.00 to the fare display, switch the lane traffic light from red to green, and reset the ACM. (Alternatively, if ETC account balance is low, traffic light will switch to yellow "Low" light instead of green light.) When the vehicle passes over a vehicle detection loop as it exits the lane, the lane controller will switch the lane traffic light from green or yellow to red and reset the patron fare display to the default fare.

The ACM logic will send a vehicle count from the closing loop at the lane exit, method of payment (ETC/cash), the amount of payment, and a transaction number to the lane controller for each vehicle passing through the lane.

Software/Firmware Requirements

Self-diagnostic software/firmware shall be provided to test the ACM when the ACM lane is opened and to operate interactively to detect malfunctions and failures and to report such failures to the lane controller at the time of occurrence. Diagnostics shall be callable from a remote location with appropriate outputs to reflect the status of the equipment.

Electrical Requirements

The ACM shall operate on 115 VAC 60 HZ power and shall be equipped with an electrical panel containing functional and operational status indicators, circuit breakers, power on/off switch, a maintenance light and dual convenience power outlet with ground fault detectors. All electrical interconnects shall be achieved by connectors which shall be keyed to ensure correct orientation.
All conduit and wires for the ACM, for communications, and for connection to lane sensors associated with the ACM shall be provided and installed by the contractor.

Reliability Requirements

The ACM shall have a mean time between failures (MTBF) of 2,500 hours and a mean time to repair (MTTR) of 1 hour.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Operations manual reflecting as built condition;
- Performance specifications;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual/trouble shooting procedures including theory of operation; and
- Circuit board pictures, identifying major components.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Data Communications System

Fiber Optic Network - The Contractor shall furnish and install a fiber optic network between the Mainline Toll Plaza administration building and one of the Ramp Plaza control buildings and between the two Ramp Plaza control buildings. This work item shall include the provision of a fiber optic cable with a minimum of 56 fibers, waterproof duct, splices, connections, field cabinets, signal interfacing equipment, adapters, and terminators. It further includes all labor material and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the fiber optic network in accordance with these specifications.

The fiber optic network shall be located within the roadway right of way, but removed from the traffic lanes and highway shoulders except where it is necessary to cross the roadway to connect the two Ramp Plaza buildings. It shall be buried to a depth of not less than 1 meter and be inside a waterproof duct to be provided by the Contractor. The Contractor shall determine the final placement and installation techniques and submit them to *FD/MK* for review and approval. Installation techniques shall include routing the cable under and/or around any buried or exposed obstructions. Where crossing the roadway to provide communications between Ramp Plaza buildings, the Contractor must bore beneath the highway at a depth below all base material used for road construction. There shall not be any splices in the cable located under the roadway.

At a minimum, the fiber optic network shall provide a direct communication link from each of the ramp plazas and the Mainline Toll Plaza administration building for the intercom subsystem, the video surveillance subsystem, and data communications between the lane controllers at each ramp plaza and the Host computer.

The duct size shall be large enough to add a second cable of equal size at a future date. Field cabinets shall be located at each point requiring splicing of the cable. Performance loss due to connection devices and/or splices shall not cause any loss of performance of any of the connected subsystems.

The Contractor shall provide any devices (line drivers, etc) required to meet the specifications of the connected subsystems.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

As built drawings for the Fiber Optic network including all splicing detail;
Equipment data sheets;
Operations manuals reflecting as built condition;

Performance specifications;
Complete parts list, including manufacturer and manufacturers part number;
Maintenance manuals/trouble shooting procedures including theory of operation; and
Circuit board pictures, identifying major components.

Testing

The fiber optic network will be tested at the end of installation for signal loss across the network. It will be inspected during installation to assure proper installation and depth. It will be tested repeatedly as part of the testing of each connected subsystem.

The Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Inter-Module Communications - Data communications between individual modules in the system shall be consistent. There shall be selectable RS232 9600 to 28,800 serial baud rates via UL approved female sockets.

File or record transfer protocol shall be compatible between modules. The Contractor shall provide detailed file and record transfer protocol in a format easily understood by data processing professionals. In the case of the VDOT FasToll Customer Service Center data exchange with the toll system Host Computer, VDOT FCSC shall be the controlling agency. The Contractor is not to expect VDOT to make changes to accommodate the Contractor.

All modems supplied with the project shall be the fastest modems generally available at the time of installation and have selectable baud rates that match the baud rates of the equipment to which they will be integrated.

Proposers varying from this must submit an exception statement with the proposal. Exceptions will be considered and accepted or rejected at the exclusive discretion of *FD/MK*.

Maintenance

The Toll Collection System described in this document shall be designed to provide for a high level of maintainability. It is intended that the toll system shall be fully maintained by the Contractor from date of Final Acceptance of the system through the end of the Warranty Period. Maintenance support shall also be provided for the duration of any subsequent Maintenance Options that may be selected.

Maintenance Personnel

Maintenance shall be provided through field service, operational testing, remote diagnostics and control, and by maintenance personnel either on-call or on-duty 24 hours a day, seven days a week throughout the entire Warranty Period and any exercised Options.

Maintenance Procedures and Repair Times

The objective of the maintenance program during the warranty period shall be to limit all equipment repairs to exchanging major components (e.g. a toll terminal or treadle). Replaced components shall then be promptly sent to the factory for repair or replacement and returned to spares inventory for future use. During the warranty period, the Contractor will train VDOT's personnel to perform preventative maintenance and to solve maintenance problems including the exchange of components.

At the end of the warranty period, VDOT will decide if VDOT's personnel are qualified to perform routine maintenance on the system. If it is determined that VDOT's personnel are qualified, the Contractor will become a "consultant" to VDOT's maintenance personnel and assist in solving maintenance problems that are beyond their skills. The Contractor shall propose an hourly rate for such services.

All malfunctions which inhibit toll collection or audit shall be remedied within a total four hour period after notification. A response time of two hours is permitted from malfunction notification. An additional two hours is then allowed for repair. The total time shall be measured from the time the problem is first reported by the Host Computer System (or in case of failure of the Host Computer System to report a malfunction, the time from notification of the Contractor of the malfunction) until the particular component is back on-line and functioning at full capacity. Replacement with spare units shall satisfy the repair times. However, spare units shall be promptly repaired or replaced by the Contractor to ensure that they are continually available for use. Lack of available spare units or parts shall not obviate the need for the Contractor to meet repair times. MTTRs given elsewhere in this proposal for components will be held to, regardless of the total time allowed for repair given above.

Preventative Maintenance for Mechanical Equipment

A complete schedule of proposed preventative maintenance procedures shall be set forth in the Maintenance Plan to be submitted within sixty (60) days after approval of the Factory Tests. Upon approval by VDOT, the Maintenance Plan shall be adhered to through the entire term of the Warranty Period and any elected optional maintenance periods. VDOT may, based on actual operational experience, reasonably require revisions to the Maintenance Plan to ensure that the System functions properly. The Contractor shall make and adhere to such revisions.

At a minimum, maintenance personnel shall make routine general inspections of System equipment at least once every two-weeks.

Preventative maintenance shall include all mechanical equipment supplied by Contractor including Patron Fare Indicator, ACM's, Traffic Lights, Canopy Lights, Treadle System, Receipt Printers, Host Computer Printers, UPS's, all electronic equipment fans and filters, and surveillance system mechanical components.

Software Maintenance

As a part of system maintenance, the Contractor shall maintain, modify, debug and/or upgrade all System software, both custom software and third party software, as required to ensure that the Systems performs as it did at system acceptance. The Contractor shall provide qualified personnel who are familiar with the System and/or are adequately trained for this task. Programmers may conduct work from remote sites if approved by VDOT. All changes made to System software shall be properly documented in the appropriate manuals and documentation.
Software source code for all components shall be provided to VDOT or put into escrow to allow access to change software should Contractor be unable to provide software support.

Warranty Period

The Warranty Period shall begin at system acceptance and continue through a period of two (2) years. Following the conclusion of The Warranty Period, VDOT shall have the Option to exercise further full maintenance support for five additional one year periods. The annual price of the maintenance Options will be determined by application of a cost escalator factor to the initial Maintenance Option price stated in the proposal. The cost escalator shall be _____.

Spare components

A satisfactory means of obtaining spare parts and toll equipment components through the life of the proposed toll system must be made by the Contractor. This requirement will be met regardless of whether or not any Maintenance Options are executed. The design life of the toll system is 15 years.

Fully assembled and tested spare parts and components shall be provided during the Warranty Period and any exercised Options, in reasonable minimum quantities as identified in the Maintenance Plan, at no additional cost to VDOT. The Contractor shall include or maintain a comprehensive spare components parts list and parts inventory for all elements of the system in the Proposal.

All spare parts shall be numerically encoded with a parts list number. These parts shall be stored at the mainline plaza building. The Contractor, based on experience, shall closely monitor the need for spare parts and components and recommend any additions or deletions

to the inventory, subject to VDOT's approval. All spares shall be maintained in good operating condition at all times. A complete spares inventory, in good working condition shall be turned over, at no additional cost, to *FD/MK* at the conclusion of the Contractor's maintenance responsibility.

Spare Components and parts shall include but not be limited to:

- Lane Controllers;
- ETC Account Indicators/Lane Traffic Lights;
- n Canopy lane status lights;
- ETC Readers;
- ETC Lane Kits;
- Vehicle Classification Treadles;
- Toll Collector Terminals;
- Receipt Printers for Manual Lanes;
- Receipt Printers for ACM Lanes;
- Patron Fare Displays;
- Automatic Coin Machines;
- Automatic Coin Machine Baskets;
- Enforcement System;
- Host Computer System;
- Intercom System; and
- Surveillance System.

The cost for spare parts will be given on a detailed price list submitted with the proposal. This list will be used with appropriate cost escalator factors to purchase spare equipment after the Warranty Period and any executed Options have terminated.

The Proposer shall include a list of spare parts and components in the Proposal.

Maintenance equipment

The Contractor shall provide a complete set of all items, tools, and equipment necessary for the repair, testing, and routine preventative maintenance of the toll collection system, along with a list of such items. This list shall describe the specific function of each device, the approximate cost thereof, and the approximate quantity required for execution of the Maintenance Plan. At the end of the Warranty Period and any exercised Options, the Contractor shall promptly make available to VDOT at no cost, all maintenance equipment which is necessary for operations personal to properly maintain the System. The Contractor shall also provide any special instructions needed in connection with utilization of the maintenance equipment and tools.

Documentation

The contractor shall submit to *FD/MK* for review and approval and provide and update, as required, the following system documentation:

Conduit and Plaza Design/Modification Requirements

Shop Drawings
Wiring Diagrams
Test Plan
Training Plan
Installation Plan
Maintenance Plan
Software Documentation
    Software Specification
    Software Development Plan
Manuals
    Toll Collector Manual
        Remote Operations of Ramp Lanes from Booth Manual
    Toll Supervisor Manual
    Maintenance Manual
    Violation Enforcement Sub-System Manual
Parts Lists and Catalogs
As-Built Drawings

All documentation shall become the property of *FD/MK*.

Conduit and Plaza Design/Modification Requirements

The Contractor shall submit to *FD/MK*, within sixty (60) days of notice to proceed, detailed plans for conduit and plaza modifications (above and beyond existing design at notice to proceed) necessary to execute the contract and fully install the System. The Contractor must then coordinate with the project engineer to assure that all necessary modifications to design plans are executed.

Shop Drawings

The Contractor shall prepare accurate and complete Shop Drawings covering all aspects of the work. The general form and required detail of the working drawings shall be subject to approval of *FD/MK*. Shop Drawings shall clearly, and in detail, show the design of all components. Two reproducible copies of all Shop Drawings will be submitted to *FD/MK* no more than one hundred and twenty (120) days after Notice to Proceed and at least ten (10) business days before the Contractor commences toll equipment fabrication. *FD/MK* shall provide an approval or rejection of each Shop Drawing within ten (10) business days after

receipt. Review of Shop Drawings is for general adequacy and overall consistency with system requirements.

Approval of such drawings does not relieve Contractor from responsibility to provide equipment in full compliance with this document. If corrections are required, drawings will be re-submitted until approved. Re-submission shall not be seen as a valid cause for delay in completing schedule requirements.

Shop Drawings are required for all components and housings to be fabricated or assembled by the Contractor. For items procured in a complete package by the Contractor from another manufacturer, the Contractor shall submit detailed drawings, service manuals, and other documentation prepared by the original manufacturer in lieu of Shop Drawings. This documentation shall be complete and sufficiently detailed to show all critical dimensions and technical and functional characteristics of each component.

Shop Drawings prepared by the Contractor shall include all views of component housings, keyboard layouts, module placement, internal architecture of terminals, lane controllers, ACMs, traffic signals, AVI systems, etc. All connection points between components shall also be indicated.

Wiring Diagrams

The Contractor shall prepare and update a detailed typical manual, ACM, and express ETC lane Wiring Diagram as installed. If installation of any equipment proves to be unique to a specific lane (such as lane with Surveillance System components), the Contractor shall provide a separate Wiring Diagram of that toll lane. The Wiring Diagrams shall show all toll equipment, cables, wired, routes, connections, power sources, and other equipment. All equipment shall be identified both by name and function. All cables and wires shall be identified as to size, location in conduits, functions, point-to-point connections and color coding. All connectors shall be labeled.

Additional Wiring Diagrams for all other equipment not covered by the above shall be prepared and provided under the conditions of the Shop Drawings, and later as-built diagrams provided after System Approval.

All Wiring Diagrams shall be submitted in reproducible form, with two copies provided.

Test Plan

The Contractor shall submit to *FD/MK* within ninety (90) days of Notice to Proceed, a detailed plan for testing all components of the System. This plan shall include component, system functional tests, and all other tests described in the System Tests section of this

document and component Tests as outlined with each piece of equipment. *FD/MK* will return comments on or approval of this plan within twenty (20) days of submission of plan.

The Contractor's Test Plan is subject to approval by *FD/MK*. *FD/MK* shall be permitted to participate in or observe any and all of these tests. Tentative dates for conducting tests should be included in the Test Plan. *FD/MK* has the right to request changes in Test Plan dates when such requests are submitted in writing, fourteen (14) days prior to scheduled test date.

Training Plan

A detailed schedule for satisfying all training requirements outlined in the Training section of this document shall be submitted to *FD/MK* for review and approval not more than ninety (90) days after Notice to Proceed. The plan shall include all types of training required for specific personnel, including:

- Toll Collectors;
- Toll Supervisors;
- Administrative Staff;
- Auditors;
- Violation Image Processors; and
- Maintenance Personnel.

The Training Plan shall include a complete description of each proposed course format and content, training techniques and objectives, instructor outlines, training equipment, and demonstration procedures. Training shall consist of classroom and "hands-on" equipment operation either in shop type set up or actual "live" lane equipment at *FD/MK*'s direction.

Installation Plan

A detailed Installation Plan shall be submitted by the Contractor in two phases; preliminary and final. The preliminary submission shall be made within ninety (90) days of Notice-to-Proceed. The final submission shall be made within one hundred eighty (180) days of Notice-to-Proceed, but no less than thirty (30) days prior to the commencement of toll collection equipment installation.

Both the preliminary and final Installation Plans shall be subject to the review and approval of *FD/MK* and/or its representatives. No changes shall be made following approval of the final Installation Plan without the written approval of *FD/MK*.

The Installation Plan shall include, but not necessarily be limited, to the following:

- Installation management procedures;
- Preliminary site work;

- Component installation sequence; and
- Completion schedules.

Maintenance Plan

The Contractor shall submit to *FD/MK* and VDOT a detailed Maintenance Plan for review and approval no more than one hundred (100) days after Notice-to-Proceed. The plan shall include maintenance staffing and administration, dispatch procedures, communication requirements, preventive maintenance techniques and schedules, support from outside maintenance service (for example, computer manufacturers), final maintenance equipment list and other details as may be required by *FD/MK* or VDOT.

Software Documentation

Software documentation for Application Software/Firmware shall include, but not be limited to the following elements:

- Overview description of software/firmware for each system and major subsystem, including data flow and other diagrams as necessary to demonstrate software structure and the relationship between individual application programs;

- Narratives describing each function of each individual program and relationship to the overall system (how called, names of other programs or routines called, and names of files or other data areas accessed by it);

- Formats of files, messages and data areas used by more than one program;

- Screen layouts or formats;

- Commented listings of all Application Software/Firmware. The listing of each program module shall describe the program's function, calling sequence and return sequence; and

- Documentation of all command, batch or other files used in the compilation linking, loading, and execution of Application Software/Firmware.

Documentation of the six (6) elements stated above shall be submitted to *FD/MK* for review and approval at three stages of software development, as follows:

1. **Preliminary Draft** - Within thirty (30) days following completion of a successful Factory Demonstration.
2. **Final Draft** - Upon successful completion of final Post-Installation Testing.
3. **Final** - Within thirty (30) days after issuance of Final System Acceptance.

The failure to detect any functional deficiencies in the Application Software/Firmware documentation shall not relieve the Contractor of any responsibilities under this Contract.

Programming manuals shall be available for programmer level personnel for all languages used in development of the toll collection equipment system. For operating systems, communication programs, assemblers, compilers, and utility programs used to develop and operate the software and toll equipment, the Manufacturer's standard manuals shall be available. The most current version operating system software, with the highest level of manufacturer support at the time of equipment installation, shall be used and provided on magnetic tape, or other *FD/MK* approved media.

All documentation, other than that describing Application Software/Firmware, shall be submitted at the time of installation of the toll collection equipment.

As noted in Software Maintenance, software source code for all components shall be supplied or put into escrow to allow access to change software should Contractor be unable to provide software support. *FD/MK* shall not sell or otherwise distribute software developed for, or used as part of the delivered toll collection system.

Software Specification

After thoroughly reviewing the functional requirements of the Toll Collection Equipment System as defined in this document, the Contractor shall prepare a detailed Software Specification. This Software Specification shall include a description of all programs required to satisfy all functional requirements, as set forth in this document. Flow diagrams shall be included in the Software Specification for programs used in all subsystems to clearly identify data flow through the system and to illustrate the relationship between individual programs and/or subroutines. If separate sheets are used in delineating each function, an overall flow diagram shall be provided indicating how each subroutine fits into the overall software program.

A preliminary data dictionary and file/record document shall also be included in the Software Specification. This document shall define all data messages, records and files accessed by more than one program in the toll collection system. This shall include a plain language description of each data element, its format, the programs or modules in which it is used and the data element as it will be coded into the software programs.

The Software Specification shall be submitted to *FD/MK* for review within ninety (90) days of Notice-to-Proceed.

Software Development Plan

A detailed Software Development Plan shall be prepared and submitted to *FD/MK* for review and approval no more than sixty (60) days after Notice-to-Proceed. This plan shall indicate all elements of the software development process and shall include the following submittals:

- Software Development Schedules;
- Assignments to Subcontractors;
- Programming languages;
- Software testing plan;
- Software documentation plan; and
- Software management plan.

A complete program of software testing shall be defined as a part of the Software Development Plan. The Contractor's testing plan shall include a summary of test procedures, dates and equipment to be used for each particular test. The Software Documentation Plan shall include a description of documentation to be provided for application programs, as well as incorporating standards to be followed and sample documentation, where available.

The Contractor shall fully update software/firmware documentation throughout the Warranty Period in order to reflect changes (if any) made in the toll collection system after the commencement of revenue collection. The Contractor shall be held responsible for the cost of updating documentation, unless the change is due to "extra work" as requested by *FD/MK*.

It is not anticipated that documentation changes during the Warranty Period will require a complete documentation package resubmittal. Update sheets should be provided by the Contractor together with clear instructions as to how they are to be incorporated into the previously submitted package. The approach to be adopted for documentation updates should be included in the Software Development Plan, as described earlier, which shall be provided by the Contractor.

Manuals

A number of training and operating manuals shall be provided under this Contract. All manuals which are not standard manuals shall meet the following criteria:

- Whenever possible, all data shall be printed on 8.5 X 11 inch sheets;
- Manuals shall be bound in loose-leaf binders with the name of the manual printed on each binder;
- Tab indexes shall be provided for each major section of the documentation for which data is submitted and also for each section and/or major classification of equipment. All index tabs shall be a permanent part of a durable index sheet; and
- Maximum use of simple diagrams and other graphic aids is strongly encouraged.

Three (3) draft copies of all manuals shall be submitted to *FD/MK* for VDOT's review, possible revision and/or approval before final reproduction. Draft submissions shall be made no less than thirty (30) days prior to the deadline for final submission.

Toll Collector Manual

Thirty (30) copies of a Toll Collector Manual shall be provided. This document shall include a complete and simple description of all operational toll collection procedures and a non-technical description of manual/ETC lane functions. This manual shall not include any information that will jeopardize the security of the toll collection system. The manual shall be designed for use by minimally skilled personnel. The manual shall contain illustrations and diagrams as required to demonstrate the step-by-step operations required for processing all normal and irregular toll transactions, opening and closing the lane, and all other toll collector procedures.

Final copies of this manual shall be delivered no less than sixty (60) days prior to commencement of the toll collector training program. Draft copies shall be delivered sufficiently in advance to allow a thirty (30) day review period, including revisions and eventual approval.

Remote Toll Collection Manual

Two (2) copies of a Remote Toll Collection Manual shall be provided. This document shall include a complete and simple description of operation of additional booth equipment provided in toll booth with surveillance monitor and intercom system for ETC/ACM lane monitoring.

Final copies of this manual are to be delivered no less than sixty (60) days prior to commencement of the toll collector training program. Draft copies shall be delivered sufficiently in advance to allow a thirty (30) day review period, including revisions and eventual approval.

Toll Supervisor Manuals

Five (5) copies of a Toll Supervisor Manual shall be provided under this Contract. This document shall provide a complete description of Supervisor's Workstation functions, input menu options, and screen format descriptions. Diagrams and simplified instructions are encouraged. This manual shall include text to define the Supervisor's duties in order to efficiently monitor the following:

- Toll Collector activities;
- Real time messages to report equipment malfunctions to maintenance; and

- ETC, ETC/ACM, and ETC/manual lane activity.

Supervisor Manuals shall also include instructions for restarting System after power failure, should system not restart on its own, proper shutdown of ETC/ACM lanes in case of power failure, and proper shutdown of Host Computer in case of power failure. Supervisor manual should also include use of Surveillance System and Intercom System.

Final copies and draft copies shall be delivered according to the same schedule identified above for Toll Collector Manual.

Auditors Workstation Manual

Two (2) copies of a Auditors Workstation Manual shall be provided. This document shall provide a complete description of the auditing, management, and reporting functions of the Auditors Workstation, input menu functions, and high security password program. Functioning of interfacing with FasToll Service Center and account resolution functions should also be included in this manual.

Final copies and draft copies shall be delivered according to the same schedule identified for Toll Collection/Supervisor's Manuals.

Host Computer System User's Manual

Two (2) copies of a Host Computer System User's Manual shall be provided. This manual shall provide complete descriptions of the functions for:

- Generation of reports;
- Integration with workstations and other related peripherals;
- System Diagnostics; and
- Other related functions not covered under other manuals.

Complete diagrams, illustrations, and instructions shall be provided for ease of understanding the toll collection system operation, including normal operating and communication procedures, computer restart/recovery and diagnostic procedures and general instructions in the event of equipment malfunctions. All operator commands, error messages and responses shall be explained in detail.

For standard components not manufactured by the Contractor, the Manufacturer's standard equipment specifications and operator's manuals shall also be provided. All diagrams, illustrations, instructions and procedures shall be appropriately dated. Draft copies of this manual shall be delivered sufficiently in advance to allow a thirty (30) day prior review, revision and approval period.

Final copies of this manual shall be delivered at least sixty (60) days prior to field installation of Plaza System Components.

ETC/Violation Workstation Manual

Two (2) copies of a ETC/Violation Workstation Manual shall be provided. This manual shall provide complete descriptions of the functions for:

- Assisting operators in the daily use of the ETC/violation system, including generation of reports;
- Processing of Violations; and
- Integration with FasToll processing center.

Final copies and draft copies of this manual shall be delivered according to the same schedule identified above for Toll Collector Manuals.

Maintenance Workstation Manual

Two (2) copies of a Maintenance Workstation Manual shall be provided. This document shall be comprehensive and shall provide complete detailed technical descriptions of system maintenance workstation operations, including but not limited to the following:

- Trouble-Shooting Techniques;
- Corrective Measures, both temporary and permanent;
- System Backup Procedures; and
- System Recovery Procedures.

This manual shall be prepared for technical personnel assigned to the maintenance of the host computer system and workstations and any attached peripherals.

Final copies and draft copies of this manual shall be delivered according to the same schedule identified above for Toll Collector Manuals.

Toll Collection System Maintenance Manual

Two (2) copies of a Toll Collection System Maintenance Manual shall be provided. This document shall be comprehensive and shall provide complete detailed technical descriptions of maintenance operations, including but not limited to the following:

- Preventive Maintenance Schedule;
- Trouble-Shooting Techniques;
- Corrective Measures, both temporary and permanent;
- Maintenance Techniques (routine, preventive, and remedial);
- Location and availability of support services for all major components;
- Point-to-point component wiring schematics and logic signal flows; and
- Assembly and disassembly drawings, including exploded view drawings.

This manual shall be prepared for technical personnel assigned to the maintenance of the toll collection equipment system. This manual shall include a general description, theory of operation, operator instructions, detailed electrical-electronic logic circuit analysis, mechanical functions, installation, test and troubleshooting procedures, preventive and corrective maintenance procedures. The manuals shall also contain diagrams, schematics, layouts and parts lists required to service each component utilized in the toll collection equipment system.

FD/MK shall not sell or otherwise distribute Toll Collection System Maintenance Manuals to contractor competitors. The detailed Toll Collection System Maintenance Manuals and proprietary information shall strictly be used to ensure proper maintenance.

Standard Service Manuals for unmodified commercial products used in the toll collection system shall be acceptable if they contain details and accurate information in order to properly service the specific toll collection equipment supplied under this Contract. Large size diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals.

Toll Collection System Maintenance Manuals shall be delivered in preliminary form to *FD/MK* prior to the commencement of toll collection equipment installation. Draft copies of the final, refined Toll Collection System Maintenance Manuals shall be delivered sufficiently in advance to allow a thirty-day (30) prior review, revision and approval period. Final copies of the Maintenance Manuals shall be delivered no less than ninety (90) days after the system is commissioned.

Parts List and/or Catalogs

Three (3) copies of a comprehensive and detailed parts list for each and every component included in the toll collection equipment system shall be supplied. Parts shall be numerically encoded, with all spare parts permanently encoded with the parts lists number for inventory purposes. Parts lists shall be categorized and related to particular system components (major subassemblies) and toll equipment. The Contractor shall maintain a current inventory file of the location of all components in the system by type of part and component and serial number.

Parts lists with component part numbers without descriptive information shall not be accepted. The parts lists shall contain the source vendor's name, identification numbers and codes or other means to identify the manufacturer of each component. Second sources shall be stated for all standard commercial components.

All parts lists and catalogues shall be provided prior to Final System Acceptance.

As-Built Drawings

The Contractor shall provide two (2) complete sets of reproducible transparencies and two (2) complete sets of blue line prints of As-Built drawings for the toll collection equipment system. The set shall include, but not be limited to, all schematics, logic diagrams, layouts, Wiring Diagrams, assembly drawings, parts detail drawings for mechanical parts design or modified under this Contract, including installation details so as to provide a complete record of the as-built status of the toll collection equipment system.

The Contractor shall incorporate into the As-Built drawings all design modifications, change orders and field installation changes. At the time of submittal, the Contractor shall certify in writing that the above has been accomplished.

Drawings contained in standard catalogues and manuals for unmodified commercial products do not have to be reproduced as part of the As-Built drawing set. All revisions to standard commercial assemblies or components of the toll system shall be included in the As-Built drawings.

The set of As-Built drawings shall consist of a title sheet, an index sheet and the various As-Built drawings. The index sheets shall include a listing of all drawings with headings for Drawing Number, Drawing Title, and the type of drawing, such as assembly, schematic, material list, wiring diagram, wire list, or similar categories.

FD/MK will review the As-Built drawings for content and will accept the drawings only when the Contractor has complied with the requirements set forth herein.

The Contractor shall deliver all required As-Built drawings prior to Final System Acceptance.

Training

The Contractor shall provide formalized training at a location in the Richmond, VA area designated by *FD/MK* for each of the following categories of personnel:

- Toll Collectors;
- Toll Supervisors;
- Auditors;
- Management Personnel;
- ETC enforcement systems processors; and
- Maintenance Personnel.

Training of the above categories of personnel shall take place within the month prior to opening of the project, with the exception of Maintenance Personnel. Maintenance Personnel shall be trained for simple repairs, such as bulb replacements, system resets, etc. prior to opening for work during Warranty Period and any executed Options. Most likely only one person will be trained during this period. Additional Maintenance Personnel will be trained in the month prior to the end of the Warranty Period such that regular maintenance can be

accomplished after Contractor maintenance. This training shall cover all areas in which Contractor maintenance personnel have been trained and have been performing maintenance.

Video enforcement subsystem

The Contractor shall provide a video enforcement subsystem in each of the ETC-only express lanes at the mainline plaza and each of the lanes at the ramp plazas (total 6 lanes). This work item shall include the provision of the video cameras, camera housing, supplemental lighting, and vehicle separation detectors for use in the enforcement process. It further includes all labor material and services necessary to accomplish the design, development, fabrication, integration, testing, installation, and acceptance of the video enforcement subsystem in accordance with these specifications.

The cameras, supplemental lighting and vehicle separation detector shall be mounted on overhead gantries. Two overhead gantries shall be supplied and installed in the toll plaza and ramp plazas by others. Proposals shall specify the distance between the two gantries that the system design proposed requires. The first gantry supports the violation camera housing, the camera and supplemental lighting and the signing required for traffic management. The signs will also be supplied and installed by others. The second gantry supports the ETC antenna and the vehicle separator.

Design Requirements

The video enforcement subsystem (VES) shall comprise a shuttered video camera which shall send non-interlaced images at 30 frames per second to an image recorder. Using a vehicle separation device, the lane controller shall automatically trigger the image recorder to retain the current image of the passing vehicle in memory. If the lane controller sends a violation message to the image recorder, the image shall be transmitted to the Host computer. If no violation message is received from the lane controller by the image recorder, the image shall be discarded or overwritten when the next vehicle activates the vehicle presence detection device.

The lane controller shall also communicate to the image recorder all violation information including the time, date, lane number, plaza location, type of violation and amount of insufficient funds for inclusion into the violation image. The stored violation image shall be sent to the image processing computer in uncompressed format.

The enforcement subsystem shall include, but not be limited to, the following:

- Shuttered camera unit
- Near-infrared strobe lamp
- Anti-glare filter and glare shield
- Image recording computers
- Camera mounting, lens, filter and accessories

- Video cable harness and data line connectors
- Power supply

The enforcement subsystem lane equipment together with the lane controller and the facilities communications network shall form a complete violation monitoring and control system. The enforcement subsystem shall be triggered such that only violating vehicles are identified and sent to the Host computer. The vehicle separation detector and lane controller shall maintain processing speeds allowing enforcement at speeds to 90 MPH.

The camera equipment shall be a high resolution CCD camera. The system shall be capable of providing clear, freeze frame video pictures of license plates under all light and weather conditions. The rate of image capture per camera shall be a minimum of four (4) images per second.

The Contractor shall furnish image recorder units to be incorporated into the plaza subsystems. The recorder shall continuously record images to memory when triggered by a vehicle passing over the vehicle detection device.

The Contractor's image capture system design shall insure that images are captured of vehicles in violation that drive between the ETC only lane (straddle the lanes).

Images recorded with these units shall be transmitted to the Host computer. In the event communication to the Host computer is not available, the Image Recorder must store the images uncompressed until communication is restored. When communication is restored, the Image Recorder shall automatically forward stored images to the Host computer.

Vehicle Separators

Vehicle separators shall be used in each lanes utilizing the VES. In the video enforcement subsystem the primary function of the vehicle separator is to locate accurately the rear of each vehicle in order to synchronize the license image capture camera. Note that the video separator may also be used in the automatic vehicle classification (AVC) subsystem. The vehicle separators shall be capable of detecting the passage of a vehicle under the equipment gantries. The configuration requires one vehicle separator per lane. An additional function of the vehicle separators will be to provide traffic count data. Traffic count data shall be stored in six (6)-minute increments.

The vehicle separators shall be mounted on the gantries and are specified as any vehicle sensor or vehicle classification device capable of determining the longitudinal location of the vehicle as it traverses a particular plane vertical to the roadway. The vehicle separator shall have the capability to detect and locate the trailing edge of all vehicles passing through, and located anywhere on a lane in a multi-lane environment.

The vehicle separators shall provide the trigger signal to the VES image recorder capture the rear view image of the vehicle when the vehicle's rear license plate is within the depth of focus of the camera. Detection of the trailing edge of the vehicle and the subsequent trigger signal must be fast enough to yield clear images for vehicle speeds of 0 to 90 miles per hour.

Captured images and related violation data residing in the Host computer will be sent to FCSC for processing in a batched mode. The Contractor shall provide an automated transmission of this data to FCSC. The Contractor shall develop, with the operator of FCSC, the format and protocol for this transmission.

Electrical Requirements

The video enforcement subsystem shall operate on 115 VAC 60 HZ power. All electrical interconnects shall be achieved by connectors which shall be keyed to ensure correct orientation.

Reliability Requirements

The design life of the video enforcement subsystem shall be at least 15 years. The mean time between failures (MCBF) shall be 6000 hours, minimum. The mean time to repair (MTTR) shall be 2 hours maximum.

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Operations manual reflecting as built condition;
- Performance specifications;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual/trouble shooting procedures including theory of operation; and
- Circuit board pictures, identifying major components.

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Vehicle Enforcement Subsystem Image Processing

The captured images and related violation information shall be sent by the lane controllers to the image processor at the mainline toll plaza administration building location and the images processed by the operator.

The image processor shall have a minimum configuration as follows:

- 200 MHZ processor based CPU
- 64 Mb of RAM
- 2 Gb hard disk drive
- SVGA 15 inch monitor
- keyboard
- mouse
- Microsoft Windows NT operating system
- JPEG compression software

If the image processor is a component of the Lane Controller, Lane Controller peripherals may be substituted for the peripherals listed above. The JPEG compression software would reside on the Host computer under these conditions.

Communication hardware and software to enable vehicle ownership research is not required.

After a violation has been resolved, the violation pictures shall be compressed using JPEG format to minimize archive storage requirements. JPEG image compression software shall provide a variable compression ration of 10:1 with no discernable loss in picture quality.

The image processor unit shall examine the violation database for repeat offenses. If the number of repeat offenses exceeds a programmable number to be determined by the operator, the image processor workstation shall be capable of automatically printing the necessary citation letter to a local or network laser printer. This letter will include a reproduction of the image recorded of the violating vehicle, information regarding the nature of the violation and the appropriate measures the violator should make to amend the violation. The format and content of this letter shall be configured by the operator.

Reports shall be generated from the database and shall include, but not be limited to, number of violations per day per lane, summary of offenders and number of violations, unpaid toll per offender and revenue recovered.

A periodic violator vehicle plaza report shall be available from the host computer. This report shall indicate all violating vehicles. In order to generate this report, the user shall indicate the starting and ending date of the period for which the user wants a violator report, and the plaza for which the report is desired.

As a minimum, the periodic violator vehicle plaza report shall include the following information:

- license plate number for each violation
- time and date of the violation
- lane of the violation
- amount of insufficient payment for the violation

Documentation Requirements

Two complete sets of documentation shall be provided. The documentation shall include at least the following:

- Equipment data sheets;
- Operations manual;
- Performance specifications;
- Complete parts list, including manufacturer and manufacturers part number;
- Maintenance manual/trouble shooting procedures including theory of operation; and

Testing

Contractor shall demonstrate proper functional operation of the integrated units at the factory test, in lane verification testing and during the operational acceptance test.

Project Management

The proposer shall present a detail description of the management technique to be used during all phases of the project. Specific areas of project control to be identified shall include, but are not limited to, the following:

- Primary Project Responsibility;
- General Contractor Coordination;
- On Site Installation;
- Procurement;
- Record Keeping;
- Testing; and
- Sub-Contractor Management (if any).

The Contractor shall identify key personnel and a summary of their duties in each of the areas. A corporate organizational chart shall be included. The project management techniques shall include a recommended schedule of meetings both internally (within the Contractor's team) and with *FD/MK* or *FD/MK*'s representative. The Contractor shall identify the primary contact person authorized to act for the Contractor in discussions with *FD/MK* or *FD/MK*'s representative.

Weekly written progress reports will be submitted to *FD/MK* or *FD/MK*'s representative by the close of business each Monday throughout the duration of the project.

Installation Coordination

The Route 895 Toll System will be installed as the highway is constructed. It is the responsibility of the Contractor to coordinate Toll System installation with either the General Contractor or the sub-contractors providing construction services. Additional costs for construction, Toll System installation, or construction delays as a result of a failure by the Contractor to obtain this cooperation shall be the responsibility of the Toll System Contractor.

Project Schedule

Route 895 is scheduled to open to the public in December 2001. The Contractor shall submit to *FD/MK* within 14 days of notice to proceed a Detailed Progress Schedule defining the order of work to be performed. The Schedule must include specific milestones and dates to be accomplished. The Schedule shall be in CPM format and will be used as a basis for progress tracking throughout the course of work. The schedule will be subject to approval by *FD/MK*.

If a shift in work completion goals occurs, the Contractor, upon request, will submit a revised schedule of work, with revised completion dates. If Contractor falls behind in work, the

Contractor will take such steps as necessary to return to overall project goals and deadlines. In the case of work continuing to fall behind schedule, *FD/MK* can require the Contractor, at no further cost, to increase personnel assigned to project and/or perform overtime work.

Milestones to be included in the schedule include, but are not limited to, the following:

SUBMITTALS	DUE DATE
System requirements review	TBD
Preliminary design review	TBD
Conduit plans	TBD
Final design review	TBD
Preliminary test plan	TBD
List of spare parts	TBD
Software development plan	TBD
Software specifications	TBD
Draft software documentation	TBD
Final software documentation	TBD
Sample of all reports	TBD
Preliminary installation plan	TBD
Final installation plan	TBD
Training plan	TBD
Maintenance plan	TBD
Preventative maintenance plan	TBD
Preliminary maintenance service manual	TBD
Parts list	TBD
System operator manual	TBD
Collector and Supervisor manuals	TBD
Final as-built drawings	TBD

Final maintenance service manual	TBD

The Contractor shall identify tasks to be completed by others that are relevant to meeting the proposed schedule.

System Test and Training Center

The Contractor shall design an area within the Mainline Toll Plaza administration building to serve as a test and training center. Using spare equipment (described in section 4), each of the three lane types (ETC express, manual/ETC, automatic/ETC) shall be simulated in the test and training center.

The simulated lanes shall be fully functional and able to test new hardware, software, and train new toll collection attendants and service technicians. It may be necessary, from time to time, to replace equipment that has failed in the highway lanes with equipment from the test and training center. In such cases, the equipment must be replaced within the time limits set forth in the maintenance section.

Test and training equipment exceptions will be the audio subsystem, the video surveillance subsystem, the video enforcement subsystem, and the vehicle classification subsystem.

System Testing

Three stages of testing will be required of each component of the toll System: Pre-installation, Post-Installation, and Acceptance. Each level of these tests will be broken down as follows:

- Pre-Installation
  - Factory Tests
  - Site Tests
  - Software
- Post-Installation
  - ETC lane test
  - ETC/Manual lane test
  - ETC/Automatic lane test
  - Software
- Acceptance
  - ETC lanes
  - ETC/Manual lanes
  - ETC/Automatic Lanes
  - Software

Pre-Installation

Factory Tests will be performed on samples of all equipment to be installed as part of the System by the Contractor with participation and oversight by *FD/MK*'s personnel and/or its representatives. Tests will include temperature variation, power variation, humidity variation, and operational testing of all functions as given in design and operational specifications. In addition, overall equipment materials, design, construction, markings and workmanship will be examined for compliance with requirements of this RFP. This test shall culminate in the full testing of an example ETC lane, ETC/Manual lane, and ETC/Automatic lane equipment. Video enforcement in ETC lanes shall also be tested. Additional tests of supervisor workstation, host computer system, surveillance system, intercom system, and UPS power system shall be conducted.

Software tests shall be performed at the Contractor's factory for compliance with operational and design requirements. At Factory Tests, all software options, reports, functions, and screens will be tested.

Upon completion of Factory Tests, *FD/MK* will issue an approval and such equipment which has passed Factory Testing can be shipped and installed at the proper locations.

Post-Installation

Post-Installation test will be conducted on all equipment in all lanes. Tests will be similar to Factory Tests, and will verify that the system provides the same acceptable functionality after installation as was demonstrated at the factory. If any deficiencies were identified for correction during factory test these corrections will be tested after installation. In addition, testing of all lanes interacting simultaneously with Host Computer will be conducted to ascertain performance of complete system under worst-case conditions.

Acceptance Tests

Tests of the complete system shall be conducted during regular operations after commissioning. The acceptance test shall demonstrate the complete set of functional requirements described in this document while also meeting the reliability and maintainability criteria for the operational system. The system shall operate for sixty (60) consecutive days without major functional flaws and without equipment failures that exceed the allowable failure rate and without repair times that exceed the required repair time. The Contractor shall redesign, reprogram, retrofit, or modify the equipment at no additional cost to *FD/MK* until the system meets the required performance. Additional tests will include actual account reconciliation with the FasToll office, all aspects and reporting capabilities of system and plaza supervisor workstation, and all aspects and reporting capabilities covered in this document. Final System Acceptance will be issued by *FD/MK* when all problems and defects are resolved to *FD/MK*'s satisfaction.

At any point in the testing process, if a particular component fails a test, the Contractor will take steps to remedy the problem or replace the component with a properly working one. If a particular type of component is noted as failing frequently by the Contractor, *FD/MK* reserves the

right to request a total replacement or redesign of that particular component without further additional cost to *FD/MK* or delaying the schedule of implementation. Specific documentation outlining the particular problem and the corrective action taken will be provided to *FD/MK*.

Path: DOCSOPEN\RICHMOND\04193\47884\000033\4n5g01!.DOC
Doc #: 216628; V. 1

MINORITY BUSINESS ENTERPRISE SUBCONTRACTING PLAN

Minority Business Enterprise (MBE) Subcontracting Plan
I-895 Richmond Connector Project

Policy Statement

The respective corporations of the FD/MK are dedicated to the advancement of minority and women owned business enterprises. This dedication and commitment will be carried through in the development of the I-895 Richmond Connector Project, to the benefit of the state of Virginia and local communities. FD/MK's commitment is emphasized by the following policy to facilitate the advancement of minority business enterprises for this project:

"To encourage the establishment and growth of small, minority, female and disadvantaged business enterprises, we join with government agencies and others to create greater opportunities for these entrepreneurs in the attainment of mutually beneficial social and economic objectives"

This policy provides the guidance in our efforts to meet the objectives of our MBE Subcontracting Plan based on our innovative *"Mentor-Protege Program"*

Plan Objectives (*Mentor-Protege Program*)

The Mentor-Protege Program is a developmental program for Protected Class Enterprises (MBE, WBE, DBE, DB). It is established to assist in the development of such businesses and promote increased utilization. The program is a finite program designed to assist protected class enterprises in advancing their business and technical capabilities. It should enable them to expand their capacity to do business and become more viable entities. The objectives of the Mentor-Protege program are intended to provide general guidance and assistance in establishing mentor-protege agreements, and are not intended to restrict the mentor in providing other types of assistance that may be identified and agreed to by both parties.

The Mentor-Protege program is set to increase Minority/Women Business Enterprise (MBE/WBE) utilization by:

- Expanding the capacity of such businesses to do business with FD/MK
- Developing long term business relationships
- Establishing teaming and or partnering business relationships
- Developing MBE/WBE capacity that would benefit FD/MK and our clients
- Establishing strategic alliances benefiting both the mentor and the protege

- Providing management and technical assistance to protege firms

These objectives are to be met through the self-directed efforts of the FD/MK team. The strategy for implementing our MBE Program which is based on meeting, at a minimum, the requirements of the state of Virginia and federal departments of transportation guidelines for minority business participation. FD/MK's MBE program ensures small, minority, female and disadvantaged businesses are given the maximum practicable opportunity to compete for and participate in subcontracts, purchase orders, and other procurement actions.

Plan Strategy

Organization

An MBE Liaison Officer (MLO) will be designated, together with adequate staff to administer the MBE program. The MLO will report directly to the Project Director. The MLO will be responsible for developing, managing and implementing the MBE program on a day-to-day basis; for carrying out technical assistance activities for MBEs; and for disseminating information on available business opportunities so that MBEs are provided an equitable opportunity to bid on contracts. The MLO will work closely with other departments to define subcontract packages, administer the solicitation and award process, and report on subcontract performance in meeting the requirements of the plan.

One of the first activities is to define and detail the subcontracting goals for the project.

Subcontracting Goals

The method used by FD/MK to develop subcontracting goals for small, minority, female and disadvantaged business enterprises consists of a detailed review and analysis of the items of work to be performed; the complexity of the item of work; an evaluation of the time frame in which the work activities are to be performed; a thorough understanding of the location of the project; and a survey of the availability of small, minority, female and disadvantaged business contractors and suppliers. This process enables FD/MK to identify the areas of work that would lend themselves to subcontracting to small, minority, female and disadvantaged business enterprises.

Once the review and analysis of the project for contracting activities for minority firms is complete, goals will be set that are practical and related to the potential availability of qualified MBEs in desired areas of expertise for each segment of work. Consideration will be given as to the projection of the number and types of contracts to be awarded and the number and types of MBEs likely to be available to compete for contracts in setting goals. Emphasis will be on utilizing MBEs in the same geographic area in which contractors or subcontractors for a given solicitation are sought. If FD/MK cannot meet the goals using MBEs from this geographic area, the search will be expanded to a reasonable wider geographic area.

Goals established by FD/MK will be passed on to prime contractors and subcontractors, as appropriate.

Prime contractors will be required to make good faith efforts to replace an MBE subcontractor

that is unable to perform successfully with another MBE.

For all contracts for which contract goals are established, the following information will be provided/required (as appropriate):

- The names and addresses of MBE firms that will participate in the contract
- A description of the work each named MBE firm will perform
- The dollar amount of participation by each named MBE firm

If the information submitted does not meet the MBE contract goals, the following information will be provided demonstrating that a good faith effort has been made:

- Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled to inform MBEs of contracting and subcontracting opportunities
- Whether the contractor provided written notice to a reasonable number of specific MBEs that their interest in the contract was being solicited, in sufficient time to allow the MBEs to participate effectively
- Whether the contractor advertised in general circulation, trade association, and minority-focus media concerning subcontracting opportunities
- Whether the contractor followed up initial solicitations of interest by contacting MBEs to determine with certainty whether they were interested
- Whether the contractor selected portions of the work to be performed by MBEs in order to increase the likelihood of meeting the MBE goals (including, where appropriate, breaking down contracts into economically feasible units to facilitate MBE participation)
- Whether the contractor provided interested MBEs with adequate information about the plans, specifications and requirements of the contract
- Whether the contractor negotiated in good faith with interested MBEs, not rejecting MBEs as unqualified without sound reasons based on a thorough investigation of their capabilities
- Whether the contractor made efforts to assist interested MBEs in obtaining bonding, lines of credit, or insurance required
- Whether the contractor effectively used the services of available minority community organizations; minority contractors' groups; local, state and Federal minority business assistance offices; and other organizations that provide assistance in the recruitment and placement of MBEs.

MBE participation will be counted toward meeting MBE goals as follows:

Once a firm is determined to be an eligible MBE, the total dollar value of the contract awarded to the MBE is counted toward the applicable MBE goal.

The total dollar value of a contract to an MBE owned and controlled by both minority males and non-minority females is counted toward the goals for minorities and women respectively, in proportion to the percentage of ownership and control of each group in the business. The total dollar value of a contract with an MBE, owned and controlled by minority women, is counted toward either the minority goal or the goal for women, but not both.

A contractor may count only expenditures to MBEs that perform a commerciallyuseful function in the work of a contract. An MBE is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carrying out its responsibilities by actually performing, managing, and supervising the work involved. To determine a commercially useful function, the amount of work subcontracted, industry practices, and other relevant factors will be evaluated. If an MBE subcontracts a significantly greater portion of the work than would be normally expected, the MBE shall be presumed not to be performing a commercially useful function.

Sixty percent of expenditures for materials and supplies obtained from an MBE dealer may be counted, and 100% of such expenditures to an MBE manufacturer. A manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the contractor. A regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. Brokers and packagers shall not be regarded as manufacturers or regular dealers .

The following expenditures may be counted toward MBE goals:

- Fees or commissions charged for providing a bona fide service, such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials or supplies required for performance of the contract, provided that the fee or commission is determined to be reasonable and not excessive as compared with fees customarily allowed for similar services

- Fees charged for delivery of materials and supplies required on a job site when the hauler, trucker or delivery service is not also the manufacturer or a regular dealer of the materials and supplies, and the fee is not excessive

- Fees or commissions charged for providing any bonds or insurance specifically required for the performance of the contract, and the fee is not excessive

Implementation

The ability to implement a successful program for the utilization of small, minority, female and disadvantaged business enterprises includes two elements. First, a list of small, minority, female and disadvantaged business enterprises is developed containing firms that operate internationally and nationally as well as locally.

Information for the MBE lists is obtained from the Procurement Automated Source System (PASS) of the U.S. Small Business Administration, the National Minority Supplier Development Council vendor information service, the and Information Division of the Minority Business Development Agency in the U.S. Department of Commerce, the National Association of Women in Construction, the U. Hispanic Chamber of Commerce, minority trade associations, and a fifty-state database maintained by the corporation of small, minority, female and disadvantaged business enterprises with whom we have done business. Procedures to ensure that MBEs have an equitable opportunity to compete for contracts and subcontracts will include:

- Arranging solicitations, time for the presentation of bids, quantities, specifications and delivery schedules so as to facilitate the participation of MBEs

- Providing assistance to MBEs in overcoming barriers such as the inability to obtain bonding, financing, or technical assistance

- Carrying out information and communications programs on contracting procedures and specific contracting opportunities in a timely manner, with such programs being bilingual if appropriate

We will thoroughly investigate the full extent of services offered by banks owned and controlled by minorities or women in the community and make the greatest feasible use of these banks. We will also encourage prime contractors to use the services of these banks.

We will obtain the Virginia DOT source list to facilitate identifying MBEs with capabilities relevant to contracting requirements and to particular solicitations. We will make the directory available to bidders and proposers in their efforts to meet the MBE requirements.

All minority and women-owned firms will be required to be certified with the Virginia DOT. FD/MK will provide to the Virginia DOT's Equal Opportunity Department such information and documentation available which may be required in order to obtain Virginia DOT certification of all firms listed in the MBE/WBE Plan.

Second, FD/MK routinely sends invitations to bid to these firms whenever price quotations and subcontracts are solicited.

Dissemination of Policy and Program

- Develop and maintain bidders lists of qualified small, minority, female and disadvantaged business enterprises from all possible sources

- Ensure to the fullest extent possible, that all procurement packages are structured to encourage small, minority, female and disadvantaged business

enterprises to participate to the maximum extent possible

- Assure inclusion of small, minority, female and disadvantaged business enterprises in all solicitations for products or services which they are capable of providing

- Review solicitations to remove statements, clauses, etc., which may tend to restrict or prohibit small, minority, female or disadvantaged business enterprise participation

- Ensure that the statement of policy and implementation of the program are communicated to and understood by employees authorized to purchase and subcontract for the corporation

- Advertising for subcontractors and suppliers includes the request for bids from small, minority, female and disadvantaged business enterprises

- Copies of the program are made available to organizations who have as an objective the advancement of small, minority, female and disadvantaged business enterprises

- To ensure understanding and implementation of this program, the subject of small, minority, female and disadvantaged business utilization is routinely discussed at appropriate management and supervisory meetings

Equal Opportunity

All final quotations received will be considered on an equal basis to ensure that small, minority, female and disadvantaged business enterprises have an equal opportunity to compete

Flow-Down

FD/MK will require all subcontractors (except small, minority, female and disadvantaged business enterprises) who receive subcontracts in excess of $100,000.00 to adopt a subcontract plan similar to the subcontracting plan agreed to by FD/MK.

Record Maintenance

FD/MK will maintain records to demonstrate procedures which have been adopted to comply with the requirements set forth herein, to include establishing source lists and a description of efforts made to locate small, minority, female and disadvantaged business enterprises and award them contracts as follows:

- Efforts used to identify and award subcontracts and purchase orders to small, minority, female and disadvantaged business enterprises

- Subcontracts let and purchase orders issued to small, minority, female and disadvantaged businesses, including dollar amounts and type of work, service and/or product provided

- Assistance and aid rendered to small, minority, female and disadvantaged businesses to qualify them for work and service subcontracts

- Records of internal guidance and encouragement to buyers to effectively implement the program and monitoring performance to evaluate compliance with the plan's requirements

Plan Performance

In order to effectively implement this plan to an extent consistent with efficient contract performance, FD/MK will perform the following functions:

- Assist small, minority, female and disadvantaged business enterprises by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules to facilitate participation by such enterprises. Where lists of potential small, minority, female and disadvantaged business enterprises are excessively long, reasonable effort shall be made to give all such small, minority, female and disadvantaged business enterprises an equal opportunity to compete over a period of time

- Provide adequate and timely consideration of the potentialities of small, minority, female and disadvantaged business enterprises in all "make or buy" decisions

- Counsel and discuss subcontracting and supply opportunities with representatives of small, minority, female and disadvantaged business enterprises

A recordkeeping system will be developed to identify and assess MBE contract awards, prime contractors' progress in achieving MBE subcontracting goals, and other MBE affirmative action efforts. The records and reports will provide information relating to firms owned and controlled by minorities separately from information relating to firms owned and controlled by women.

Specifically, the following records will be maintained:

- Procedures which have been adopted to comply with the requirements of this plan

- Awards to MBEs, measured against projected MBE goals
- Specific efforts to identify and award contracts to MBEs

The following reports will be submitted quarterly:

- The number of contracts awarded to MBEs
- A description of the general categories of contracts awarded to MBEs
- The dollar value of contracts awarded to MBEs
- The percentage of the dollar value of all contracts awarded during the period which were awarded to MBEs

DESIGNATION OF INITIAL REPRESENTATIVES

Department Representatives:

- Chief Engineer (currently James G. Browder, Jr.)

Contractor Representatives:

- Herbert W. Morgan

DIVISION 1,
STANDARD SPECIFICATIONS
ROUTE 895 CONNECTOR

TABLE OF CONTENTS

Page

SECTION 101--DEFINITIONS OF ABBREVIATIONS, ACRONYMS, AND TERMS 1
101.01--Abbreviations and Acronyms. 1

SECTION 102--NOT USED 9

SECTION 103--CONTRACT BOND 9
103.01--Not Used 9
103.02--Not Used 9
103.03--Not Used 9
103.04--Not Used 9
103.05--Requirements of Contract Bond. 9
103.06--Not Used 9

SECTION 104--SCOPE OF WORK 9
104.01--Intent of Contract. 9
104.02--Not Used 9
104.03--Not Used 9
104.04--Maintenance During Construction. 9
104.05--Removing and Disposing of Structures and Obstructions 12
104.06--Cleanup. 13

SECTION 105--CONTROL OF WORK 13
105.01--Authority of Engineer. 13
105.02--Plans and Working Drawings. 13
105.03--Conformity With Plans and Specifications. 15
105.04--Furnishing and Erecting Precast Structures. 15
105.05--Coordination of Plans, Standard Drawings, Specifications, and Special Provisions. 15
105.06--Cooperation of Contractor. 16
105.07--Cooperation With Regard to Utilities. 16
105.08--Cooperation Among Contractors 17
105.09--Holidays. 17
105.10--Construction Stakes, Lines, and Grades. 18
105.11--Not Used 18
105.12--Not Used 18
105.13--Removal of Unacceptable and Unauthorized Work. 18
105.14--Size and Weight Limitations. 18
105.15--Not Used 19
105.16--Submission and Disposition of Claims. 19

SECTION 106--CONTROL OF MATERIAL 20
106.01--Source of Supply and Quality Requirements. 20
106.02--Not Used. 21
106.03--Local Material Sources (Pits and Quarries) 21
106.04--Disposal Areas. 22
106.05--Rights for and Use of Materials Found on Project. 23
106.06--Not Used. 23
106.07--Not Used. 23
106.08--Not Used. 23
106.09--Not Used. 23
106.10--Not Used. 23
106.11--Material Furnished by the Department. 23
106.12--Metric Substitutions 24

SECTION 107--LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC 25
107.01--Not Used. 25
107.02--Not Used. 25
107.03--Not Used. 25
107.04--Restoration of Work Performed by Others. 25
107.05--Federal-Aid Provisions. 25
107.06--Sanitary Provisions. 25
107.07--Public Convenience and Safety. 25
107.08--Railway-Highway Provisions. 25
107.09--Construction Over or Adjacent to Navigable Waters. 37
107.10--Barricades and Warning Signs. 37
107.11--Use of Explosives. 37
107.12--Protecting and Restoring Property and Landscape. 37
107.13--Responsibility for Damage Claims. 38
107.14--Environmental Stipulations. 38
107.15--Opening Sections of Projects to Traffic. 41
107.16--Contractor's Responsibility for Work. 42
107.17--Contractor's Responsibility for Utility Property and Services. 42
107.18--Not Used. 43
107.19--Personal Liability of Public Officials. 43
107.20--No Waiver of Legal Rights. 43

SECTION 108--PROSECUTION AND PROGRESS OF WORK 43
108.01--Not Used. 43
108.02--Not Used. 43
108.03--Prosecution of Work. 43
108.04--Not Used. 43
108.05--Limitation of Operations. 43
108.06--Gratuities. 44
108.07--Character of Workers, Work Methods, and Equipment. 44
108.08--Not Used. 45
108.09--Not Used. 45
108.10--Not Used. 45
108.11--Not Used. 45
108.12--Not Used. 45

108.13--Not Used. 45
108.14--Not Used. 45
108.15--Not Used. 45

SECTION 109--MEASUREMENT AND PAYMENT 45
109.01--Measurement of Quantities. 45
109.02--Not Used. 49
109.03--Scope of Payment. 49
109.04--Not Used. 49
109.05--Not Used. 49
109.06--Eliminated Items. 49
109.07--Not Used. 49
109.08--Not Used. 49
109.09--Not Used. 49

SECTION 110--MISCELLANEOUS PROVISIONS 49
110.01--Not Used. 49
110.02--Labor and Wages. 49
110.03--Equal Employment Opportunity. 50
110.04--Use of Minority Business Enterprises. 50
110.05--Construction Safety and Health Standards. 50
110.06--Bulletin Boards and Posting Official Notices. 50
110.07--Certification of Nonsegregated Facilities. 50

SECTION 101--DEFINITIONS OF ABBREVIATIONS, ACRONYMS, AND TERMS

101.01--Abbreviations and Acronyms.

In these specifications and in other Contract Documents, the following abbreviations and acronyms shall be interpreted as follows:

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ABS	Acrylonitrilebutadienestyrene (an elastomer)
AC	Alternating current
ACI	American Concrete Institute
ADT	Annual average daily traffic
AED	Associated Equipment Distributors
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute; American Pipe Institute
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American wire gage
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials and Code Administrators
CBR	California bearing ratio
CRSI	Concrete Reinforcing Steel Institute
DBE	Disadvantaged Business Enterprise
DC	Direct current
DHV	Design hourly volume
EEI	Edison Electric Institute
EEO	Equal employment opportunity
EIA	Electronic Industries Association
EPA	Environmental Protection Agency
EPDM	Ethylenepropylenedienemonomer (an elastomer)
F/A	Filler/asphalt ratio
FHWA	Federal Highway Administration
FS	Federal Specifications, General Services Administration

ICEA	Insulated Cable Engineers Association
IMSA	International Municipal Signal Association
ITE	Institute of Transportation Engineers
LCD	Liquid crystal display
LPG	Liquid petroleum gas
MBE	Minority Business Enterprise
MEKP	Methyl ethyl ketone peroxide
MIL	Military specifications
MSDS	Materials Safety Data Sheet
MUTCD	*Manual on Uniform Traffic Control Devices for Streets and Highways* and the Virginia supplement to same
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
PCI	Prestressed Concrete Institute
PE	Polyethylene
PTL	Plywood Testing Laboratory
PVC	Polyvinylchloride
PVF	Polyvinylfluoride
REA	Rural Electrification Administration
SAE	Society of Automotive Engineers
SI	The International System of Units
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
TAPPI	Technical Association of Pulp and Paper Industry
TFE	Polytetrafluoroethylene
UL	Underwriters' Laboratories, Inc.
VAC	Volts alternating current
VDC	Volts direct current
VDOT	Virginia Department of Transportation
VFA	Voids filled with asphalt
VMA	Voids in mineral aggregate
VOSH	Virginia Occupational and Health Administration
VTM	Virginia test methods; voids in total mix
WBE	Women Business Enterprise

101.02--Terms.

In these specifications and in other Contract Documents, the following terms and pronouns used in place of them shall be interpreted as follows:

- A -

Alkali soil. Soil in which total alkali chlorides calculated as sodium chloride are more than 0.10 percent based on total solids.

- B -

Backfill. Material used to replace or the act of replacing material removed during construction; may also denote material placed or the act of placing material adjacent to structures.

Balance point. The approximate point, based on estimated shrinkage or swell, where the quantity of earthwork excavation and borrow, if required, is equal to the quantity of embankment material plus any surplus excavation material.

Base course. A layer of material of specified thickness on which the intermediate or surface course is placed.

Base flood. The flood or tide having a one percent chance of being exceeded in any given year.

Board. Commonwealth Transportation Board of Virginia.

Borrow. Suitable material from sources outside the roadway that is used primarily for embankments.

Brackish water. Water in which total alkali chlorides calculated as sodium chloride are more than 0.10 percent based on total solids.

Bridge. A structure, including supports, that is erected over a depression or an obstruction, such as water, a highway, or a railway, that has a track or passageway for carrying traffic.

- C -

Calendar day. Any day shown on the calendar.

Camber. A vertical curvature induced or fabricated into beams or girders and a deck slab or slab span formwork; a vertical curvature set in the grade line of a pipe culvert to accommodate differential settlement.

Channel. A water course or drainage way.

Commissioner. Commonwealth Transportation Commissioner.

Composite hydrograph. A graph showing the mean daily discharge versus the calendar day, indicating trends in high and low flow for a one year period.

Construction area. The area where authorized construction occurs.

Construction limits. The intersection of side slopes, including slope rounding, with the original ground, plus slopes for drainage ditches or incidental construction.

Contract time limit. The number of calendar days or calendar date that specifies the time allowed for completion of the work described in the Contract, including authorized extensions.

Contractor. FD/MK Limited Liability Company, a Delaware limited liability company, and its permitted successors and assigns.

Cul-de-sac. An area at the terminus of a dead-end street or road that is constructed for the purpose of allowing vehicles to turn around.

Culvert. A structure that is not classified as a bridge which provides an opening under any roadway.

Cut. The portion of a roadway formed by excavating below the surface of the earth.

- D -

Day. Unless otherwise stated, a calendar day.

Deflection. The vertical movement occurring between the supports of a bridge superstructure or its components (beams, girders, and slabs) that results from their own weight and from dead and live loads. Although all parts of a structure are subject to deflections, usually only those deflections that occur in the superstructure are of significance during construction.

Department. Virginia Department of Transportation.

Deputy Commissioner. The assistant to the Commissioner who performs such of the Commissioner's duties as have been delegated to him by the Commissioner.

Design flood. The magnitude of flood that a given structure can convey without exceeding a designated flood level.

Disposable material. Material generally found to be unsuitable for roadway construction or material that is surplus.

Disposal areas. Areas generally located off the project right of way where unsuitable or surplus material is deposited.

Drainage ditch. An artificial depression constructed to carry off surface water.

- E -

Earthwork. The work consisting of grubbing, drainage, roadway excavation, embankment excavation, borrowing, grading, placing rock, and preparing subgrades.

Easement (Right of way). A grant of the right to use property for a specific use.

Embankment. A structure of soil, soil aggregate, or broken rock between the existing ground and subgrade.

Employee. Any person working on the project specified in the Contract who is under the direction or control of or receives compensation from the Contractor or subcontractor.

Engineer. The Chief Engineer, who acts directly or through his duly authorized representative. The representative acts within the scope of the particular duties assigned to him or the authority given to him.

Equipment. Machinery, tools, and other apparatus, together with the necessary supplies for upkeep and maintenance, that are necessary for acceptable completion of the work.

- F -

Falsework. A framework of wood or steel used to support forms for the construction of concrete slab spans or t-beams, or provide temporary support for structural units during the construction or reconstruction of permanent supports.

Federal agencies or officers. An agency or officer of the federal government and any agency or officer succeeding in accordance with the law to the powers, duties, jurisdictions, and authority of the agency or officer mentioned.

Flood frequency. A statistical average recurrence interval of floods of a given magnitude.

Formwork. A temporary structure or mold used to retain the plastic or fluid concrete in its designated shape until it hardens. Formwork shall be designed to resist the fluid pressure exerted by plastic concrete and additional fluid pressure generated by vibration and temporary construction loads.

Frontage street or road. A local street or road auxiliary to and located on the side of a highway for service to abutting property and adjacent areas and control of access.

- G -

Gage. U.S. Standard Gage.

Grade separation. Any structure that provides a traveled way over or under another traveled way or stream.

- H -

Highway. The entire right of way reserved for use in constructing or maintaining the roadway and its appurtenances.

Historical flood level. The highest flood level that is known to have occurred at a given location.

Hydrologic data sheet. A tabulation of hydrologic data for facilities conveying a 100 year discharge equal to or greater than 14.15 cubic meters per second.

- I -

Invert. The lowest point in the internal cross section of a pipe or other drainage structure.

- M -

Material. Any substance that is used in the work specified in the Contract.

Median. The portion of a divided highway that separates the traveled ways.

- O -

Ordinary high water. A water elevation based on analysis of all daily high waters that will be exceeded approximately 25 percent of the time during any 12 month period.

Overtopping flood. The magnitude of flood that just overflows the traveled way at a given structure and/or on the approach traveled way of such structure.

- P -

Pavement structure. The combination of subbase, base, and surface courses that is placed on a subgrade to support the traffic load and distribute it to the roadbed.

Plans. The "Plans and Specifications" as defined in the Contract.

Profile grade. The line of a vertical plane intersecting the top surface of the proposed wearing surface, usually along the longitudinal center line of the roadbed.

- Q -

QA Manager. The independent consultant responsible for inspecting and testing in accordance with the Quality Assurance and Control Inspection Program as described in Appendix C attached to the Scope of Work attached to the Contract.

- R -

Ramp. A connecting roadway between two highways or traveled ways or between two intersecting highways at a grade separation.

Road. A general term denoting a public way for purposes of vehicular travel including the entire area within the right of way; the entire area reserved for use in constructing or maintaining the roadway and its appurtenances.

Roadbed. The graded portion of a highway within the top and side slopes that is prepared as a foundation for the pavement structure and shoulders.

Roadbed material. The material below the subgrade in cuts, embankments, and embankment foundations that extends to a depth which affects the support of the pavement structure.

Roadside. A general term that denotes the area within the right of way that adjoins the outer edges of the roadway; extensive areas between the roadways of a divided highway.

Roadside development. Items that are necessary to complete a highway that provide for the preservation of landscape materials and features; rehabilitation and protection against erosion of areas disturbed by construction through placing seed, sod, mulch, and other ground covers; and such suitable plantings and other improvements as may increase the effectiveness and enhance the appearance of the highway.

Roadway. The portion of a highway within the limits of construction and all structures, ditches, channels, and waterways that are necessary for the correct drainage thereof.

- S -

Sea water. Water in which total alkali chlorides calculated as sodium chloride are more than 0.10 percent of total solids.

Select borrow. Borrow material that has specified physical characteristics.

Select material. Material obtained from roadway cuts, borrow areas, or commercial sources that is designated or reserved for use as a foundation for the subbase, subbase material, shoulder surfacing, or other specified purposes.

Shoulder. The portion of the roadway contiguous with the traveled way that is for the accommodation of stopped vehicles, emergency use, and lateral support of the base and surface courses.

Sidewalk. The portion of the roadway constructed primarily for the use of pedestrians.

Skew. The acute angle formed by the intersection of a line normal to the center line of the roadway with a line parallel to the face of the abutments or, in the case of culverts, with the center line of the culverts.

Special provision. A document that sets forth specifications or requirements for a particular project.

Specifications. A general term that includes all directions, provisions, and requirements contained herein and those that may be added or adopted as special provisions. All are necessary for the proper fulfillment of the Contract.

Standard drawings. Unless otherwise specified, applicable drawings in VDOT's *Road and Bridge Standards* and such other standard drawings as are referred to on the plans.

State. Commonwealth of Virginia.

Station. When used as a definition or term of measurement, 100 meters.

Street. A general term denoting a public way for purposes of vehicular travel including the entire area within the right of way; the entire right of way reserved for use in constructing or maintaining the roadway and its appurtenances.

Structures. Bridges, culverts, catch basins, inlets, retaining walls, cribs, manholes, end walls, buildings, steps, fences, sewers, service pipes, underdrains, foundation drains, and other features that may be encountered in the work and are not otherwise classed herein.

Subbase. A layer(s) of specified or selected material of designed thickness that is placed on a subgrade to support a base course.

Subgrade. The top surface of a roadbed shaped to conform to the typical section on which the pavement structure and shoulders are constructed.

Subgrade stabilization. The modification of roadbed soils by admixing with stabilizing or chemical agents that will increase the load bearing capacity, firmness, and resistance to weathering or displacement.

Substructure. 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. The portion of a structure that is not defined as substructure.

Surface course. One or more layers of a pavement structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion, and disintegrating effects of weather. The top layer is sometimes called the wearing course.

Surplus material. Material that is present on a project as a result of unbalanced earthwork quantities, excessive swell, slides, undercutting, or other conditions beyond the control of the Contractor.

- T -

Temporary structure. Any structure that is required to maintain traffic while permanent structures or parts of structures specified in the Contract are constructed or reconstructed. The temporary structure shall include earth approaches.

Ton. A metric ton; 1,000 kilograms.

Top of earthwork. The uppermost surface of the embankment excavation, exclusive of select material, that is shaped to conform with the typical section.

Traveled way. The portion of the roadway for the movement of vehicles, exclusive of shoulders.

- W -

Wearing course. See **Surface course.**

Work. The furnishing of all materials, labor, tools, equipment, and incidentals necessary or convenient for the successful completion of the project and the carrying out of the duties and obligations specified in the Contract.

Working Drawings. Drawings needed to show things associated with the construction of something to be constructed, but which will not be part of the permanent construction, e.g. formwork.

SECTION 102--NOT USED

SECTION 103--CONTRACT BOND

103.01--Not Used

103.02--Not Used

103.03--Not Used

103.04--Not Used

103.05--Requirements of Contract Bond.

In lieu of payment or performance bonds, the Contractor may furnish a certified check or cash escrow in the face amount required for each of the bonds, which will be held for the full statutory period as applicable for each bond.

103.06--Not Used

103.07--Not Used

103.08--Not Used

SECTION 104--SCOPE OF WORK

104.01--Intent of Contract.

The intent of the Contract is to provide for completion of the work specified therein.

104.02--Not Used

104.03--Not Used

104.04--Maintenance During Construction.

This Section 104.04 applies to the extent it does not conflict with the Construction Traffic Management Plan.

The Contractor shall maintain the work from the beginning of construction operations until final acceptance. Maintenance shall constitute continuous and effective work prosecuted day by day with adequate equipment and forces to such end that the roadway and structures, including barricades and warning signs as provided for in accordance with the requirements of Section 107.10, are maintained in a satisfactory condition at all times.

When a Contract specifies placing the course on another course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

The road shall be kept open to all traffic while undergoing improvements. The Contractor shall keep the portion of the project being used by public, pedestrian, and vehicular traffic in such condition that traffic will be adequately accommodated. However, removal of snow and control of ice on roads open to public travel will be performed by the Department.

The Contractor shall bear all costs of performing maintenance work before final acceptance and of constructing and maintaining necessary approaches, crossings, intersections, and other features without direct compensation except as provided for herein. However, when the Contractor confines his operation to the surface of the roadway and reasonable width of the shoulder and the surface is not disturbed or damaged by his operations or equipment, he shall not be responsible for the maintenance of the surface that remains undisturbed or undamaged.

The Contractor 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. When directed by the QA Manager, allaying of dust shall be performed and paid for in accordance with the requirements of Section 511. Holes in hard surface pavements shall be filled with approved asphalt patching material.

(a) **Detours:** Detours may be indicated on the plans or in the special provisions or used with the approval of the QA Manager. Detours over existing off-project roadways will be designated and the roadways maintained by the Department except municipalities shall be responsible for roadway maintenance within their own corporate limits. Responsibility for installation and maintenance of the temporary directional sign panels shall be in accordance with Section 512.03(a).

If any project is located wholly or in part within the corporate limits of a municipality and through traffic is to be detoured at the request of the municipality, the municipality will:

1. Provide and maintain the detours within the corporate limits

2. Furnish, install and maintain the temporary directional sign panels

The provision of detours and signing of alternate routes will not relieve the Contractor of the responsibility for ensuring the safety of the public or from complying with any requirements of these specifications affecting the rights of the public, including those concerning lights and barricades. Maintenance of all other detours shall be the responsibility of the Contractor.

(b) **Maintenance of Traffic During Suspension of Work:** During any suspension of work, the Contractor shall temporarily open to traffic such portions of the project and temporary roadways as may be agreed on by the QA Manager.

(c) **Flagging Traffic:** 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 *MUTCD*. Flaggers shall use sign paddles to regulate traffic in accordance with the *MUTCD*.

Certification for flaggers will be awarded upon a candidate's satisfactory completion of an examination. Certification cards shall be carried by flaggers while performing flagging duties. Flaggers found not in possession of their certification card shall be removed from the flagging site

and operations requiring flagging will be suspended by the QA Manager. Further, flaggers performing duties improperly will have their certifications revoked.

(d) **Delays:** Unless otherwise approved, two-way traffic shall be maintained at all times. The Contractor shall not stop traffic without permission.

If one-way traffic is approved, the Contractor shall provide flaggers to direct the traffic. When specified in the Construction Traffic Management Plan, pilot vehicles shall be furnished in accordance with the requirements of Section 512.

(e) **Connections and Entrances:** Connections with other roads and public and private entrances shall be kept in a reasonably smooth condition at all times. Connections or entrances shall not be disturbed by the Contractor until necessary. Once connections or entrances have been disturbed, they shall be maintained and completed as follows:

1. **Connections:** Connections that had an original paved surface shall be brought to final grade through the intersection. At least two lanes shall be paved as soon as possible after connections are disturbed. Other connections shall be brought to final grade through the intersection, and the required material or a temporary aggregate stabilization course shall be placed as soon as possible after connections are disturbed.

   If there are delays in prosecution of work for 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.

2. **Entrances:** 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 salvaged material until the entrance can be completed and the required base and surface or stabilization course can be placed.

When directed by the QA Manager, stabilization or surfacing material shall be applied to connections and entrances. When specified in the Contract, such material will be paid for at the contract unit price. Otherwise, the cost shall be included in the Contract Price.

The Contractor shall schedule construction operations so that approved continuous access is provided for all property adjacent to the construction when the property is shown on the plans to require access. When frontage roads are shown on the plans, they shall be constructed prior to the closing of any access routes unless other approved access is provided and is acceptable to the property owner.

(f) **Grading Operations:** When the Contractor elects to complete the rough grading operations for the entire 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.

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 on sections directly opposite each other.

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 1 meter from the edge of the paved surface.

(g) **Hydraulic Embankment:** Where the Contractor's suction or discharge pipes cross the surface of an existing traveled highway, they shall be bridged as directed by the QA Manager. Traffic shall be protected by the display of warning signals both day and night. If dredging operations damage an existing traveled highway, the Contractor shall cease operations and repair damages to the highway.

(h) **Patching Operations:** 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 3 kilometers. Patching shall be coordinated with excavating so that an area of not more than 1 kilometer 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.

(i) **Temporary Structures:** The Contractor shall construct, maintain, and remove temporary structures and approaches necessary for use by traffic. Unless otherwise specified in the Contract, the cost of these operations shall be included in the Contract Price. After new structures have been opened to traffic, temporary structures and approaches shall be removed. The materials contained therein shall remain the property of the Contractor.

The proposed design of temporary structures shall be submitted to the Engineer prior to the beginning of construction in accordance with the requirements of the Contract Documents.

(j) **Failure To Maintain Roadway or Structures:** If the Contractor fails to remedy unsatisfactory maintenance immediately after receipt of a notice by the QA Manager, the Engineer may proceed with adequate forces, equipment, and material to maintain the project. The cost of the maintenance, plus 25 percent for supervisory and administrative personnel, will be deducted from moneys due the Contractor for the project.

(k) **Haul Route:** The Contractor shall select haul routes between the project and material source(s) that will minimize disturbance to the community. The QA Manager may select alternate haul routes, divide the hauling traffic over several routes, and impose other restrictions deemed necessary to minimize the impact of the hauling operation on local residents.

104.05--Removing and Disposing of Structures and Obstructions.

The Contractor shall remove and dispose of or store, fences, buildings, structures, or encumbrances within the construction limits. Materials so removed, including existing drains or pipe culverts, shall become the property of the Contractor.

(a) **Signs:** The Contractor shall relocate street name signs, no parking signs, and other traffic signs within the construction limits that conflict with construction work as approved by the QA Manager. Signs that are not needed for the safe and orderly control of traffic during construction as determined

by the QA Manager shall be removed and stored at a designated location within the project limits. The removed signs shall be stored above ground in a manner that will preclude damage and shall be reinstalled in their permanent locations prior to final acceptance. If any of the removed signs are not to be reinstalled, the Contractor shall notify the QA Manager at the time the signs have been properly stored. Such signs will be removed from the storage area by the Contractor. Any sign that is damaged or lost because of the fault of the Contractor shall be repaired or replaced at his expense. Costs for removing, storing, protecting, and reinstalling such signs shall be included in the price for the Contract, and no additional compensation will be made.

(b) **Mailboxes and Newspaper Boxes:** When removal of mailboxes and newspaper boxes is made necessary by construction operations, the Contractor shall place them in temporary locations so that access to them will not be impaired. Prior to final acceptance, boxes shall be placed in their permanent locations as designated by the QA Manager and left in as good condition as when found. Boxes or their supports that are damaged through negligence on the part of the Contractor shall be replaced at his expense. The cost of removing and resetting boxes shall be included in the Contract Price.

104.06–Cleanup.

Removal from the project of rubbish, scrap material, and debris caused by the Contractor's personnel or construction operations shall be a continuing process throughout the course of the work. The work site shall have a neat and orderly appearance at all times.

Before final acceptance, the highway, borrow pits, quarries, disposal areas, storage areas, and all ground occupied by the Contractor in connection with the work shall be cleaned of rubbish, surplus materials, and temporary structures. All parts of the work shall be left in a neat and orderly condition.

Within 30 days after final acceptance, the Contractor shall remove his equipment from the right of way and property adjacent to the project that he does not own or control.

SECTION 105–CONTROL OF WORK

105.01–Authority of Engineer.

The Engineer has the authority to suspend the work wholly or in part if the Contractor fails to correct conditions that are unsafe for workers or the general public or carry out the provisions of the Contract. The Engineer may also suspend work for such periods as set forth in the Contract Documents.

105.02—Plans and Working Drawings.

The Contractor shall furnish working drawings as may be required. Working drawings shall not incorporate any changes from the requirements of the Contract unless the changes are specifically denoted, together with justification, and are approved in writing by the Engineer. Working drawings and submittals shall be identified by the complete project identification. Items or component materials shall be identified by the specific contract item number and specification reference in the Contract.

The Contractor may authorize its subcontractor or fabricator in writing to act for him in matters relating to working drawings. Such authorization shall have the force and effect of any other representative of the Contractor's organization.

Working drawings for steel structure, including metal handrails, shall consist of shop detail, erection, and other working drawings showing details, dimensions, sizes of units, and other information necessary for the fabrication and erection of metal work.

Working drawings for falsework supporting a bridge superstructure shall be certified by a Professional Engineer holding a valid license to practice engineering in the Commonwealth of Virginia.

Working drawings for concrete structures and prestressed concrete members shall provide such details as required for the successful prosecution of the work and which are not included in the plans. Drawings shall include plans for items such as prestressing strand details and elongation calculations, falsework, bracing, centering, form work, masonry, layout diagrams, and bending diagrams for reinforcing steel when necessary or when requested.

The Contractor shall submit to the Project Resident Engineer for review three sets of required working drawings. Working drawings shall be submitted in sufficient time to allow discussion and correction prior to the beginning of the work they reference. Work shall not be performed or materials ordered prior to review of the working drawings. One set of working drawings marked with any suggested modifications or comments will be returned to the Contractor. The other sets will be provided to the Department.

Prior to fabrication or construction, the Contractor shall submit for review one original and six copies of each working drawing and design calculation and a Professional Engineer's certification of such design for lighting, signal and pedestal poles, overhead and bridge mounted sign structures, breakaway support systems, anchor bolts, framing units, panels, and foundations. All sheets of these submittals shall include the Professional Engineer's stamp or seal. Certification for foundations will be required only when the designs are furnished by the Contractor. The design shall be in accordance with *AASHTO'S Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals*. The certifications shall be made by a Professional Engineer holding a valid license to practice engineering in Virginia.

When specified, and prior to manufacture of reinforced concrete pipe, the Contractor shall furnish to the Department a certification of the acceptability of the design of such pipe, as determined from a review which shall be made for the Contractor by a Professional Engineer holding a valid license in the Commonwealth of Virginia. Such certification shall cover all design data, supporting calculations, and materials. Pipe designs previously certified or approved by the Department will not require recertification.

The Department's review of the Contractor's working drawings will relate to conformance to the requirements of the Contract. The review shall not be considered as authorization for any deviation from the requirements of the Contract unless the deviation, including explicit supporting justification, is specifically described. The review will not relieve the Contractor from responsibility for errors in the working drawings. If working drawings detailing a change(s) initiated by the Contractor require more than two resubmissions or revisions, the cost of additional reviews by the Department or its designated representative(s) will be assessed to the Contractor.

105.03--Conformity With Plans and Specifications.

Values for materials to be used in the work shall be in close conformity with the specified values or range of values specified in the Contract. Less than complete conformity may be tolerated if obtaining exact or complete conformity would not be feasible and if authorized by the QA Manager.

Permissible tolerances for the elevation of earthwork and thickness of the several courses of select material, subbases, and bases are specified in these specifications. If permissive tolerances are exceeded or if consistent deviations from the plans or abrupt changes in grade occur, even though within the tolerances, the affected areas shall be reconstructed to conform to the specified tolerance and provide a smooth riding surface. When it is not feasible to reconstruct the areas, payment will be made in accordance with the requirements of the applicable specification for each material placed.

When the plans require the finished surface to tie into any structural item whose elevation is fixed, the elevation of the finished surface shall coincide with the elevation of the structural item.

105.04--Furnishing and Erecting Precast Structures.

Precast units will be allowed by the QA Manager for the construction of standard drainage units and minor structures. Precast box culverts, precast arch, and special design precast structures may be used only in accordance with the plans.

The Contractor shall ensure that the precast unit, as installed at each specific location, will possess the specified structural, functional, aesthetic, and serviceability characteristics of the cast-in-place design. If field conditions make the precast unit unsuitable, the Contractor may modify the unit in a manner that will not be detrimental to the structural design, as approved by the QA Manager, or shall replace the unit with the originally designed cast-in-place unit at his own expense.

Submittal of designs for precast items included in the standard drawings will not be required provided fabrication is in accordance with the standard details. Submittal of designs for precast box culverts on the Department's approval list will not be required provided the Contractor submits a certification that it will be fabricated in accordance with the preapproved design drawings.

Requests for approval of a precast design shall include detailed plans and supporting computations that have been reviewed and approved by a registered Professional Engineer having at least 5 years experience in structural design of the type of precast structures or components proposed. Concrete shall have a design strength at 28 days of at least 30 megapascals and an air content of 6±2 percent. The design of the concrete mixture and the method of casting, curing, handling, and erecting shall be subject to review by the QA Manager. Precast units may be shipped after reaching 85 percent of the design compressive strength as determined by control cylinders tested in accordance with the requirements of Section 404. Units shall retain their structural integrity during shipment and shall be subject to inspection at the job site. Approval to use precast units shall not be construed as waiving the size and weight hauling limitations of Section 105.14.

105.05--Coordination of Plans, Standard Drawings, Specifications, and Special Provisions.

The plans, standard drawings, these specifications, special provisions, and supplementary documents are parts of the Contract. A requirement occurring in one is as binding as though occurring in all. They are intended to be

complementary and to describe and provide for a complete work. In case of a discrepancy, the following will apply:

1. Calculated dimensions, unless obviously incorrect, will govern over scaled dimensions.

2. Plans will govern over these specifications and the standard drawings.

3. Special provisions will govern over these specifications and plans.

105.06--Cooperation of Contractor.

The Contractor shall keep one complete set of plans, standard drawings, contract assemblies, and specifications available on the project at all times except for maintenance projects, certain sign projects, and other projects having no field office or on which the Contractor has no office.

The Contractor shall give the work the constant attention necessary to facilitate progress and shall cooperate with the Engineer and other contractors. If any portion of a project is located within the limits of a municipality, military installation, or other federally owned property, the Contractor shall cooperate with the appropriate officials and agents in the prosecution of the work to the same extent as with the Department.

Subcontractors shall have on the project at all times a competent superintendent capable of reading and understanding the plans and specifications and experienced in the type of work being performed who shall receive instructions from the QA Manager or his authorized representatives.

105.07--Cooperation With Regard to Utilities.

The adjustment of utilities consists of the relocation, removal, replacement, rearrangement, reconstruction, improvement, disconnection, connection, shifting, or altering of an existing utility facility in any manner.

The Contractor shall coordinate project construction with planned utility adjustments and take all necessary precautions to prevent disturbance of the utility facilities.

The Contractor shall perform contract utility work in a manner that will cause the least reasonable inconvenience to the utility owner and those being served by the utility owner.

Existing, adjusted, or new utility facilities that are to remain within the right of way shall be properly protected by the Contractor to prevent disturbance or damage resulting from construction operations. If an existing utility that requires adjustment is encountered by the Contractor, he shall not interfere with the utility but shall take the proper precautions to protect the facility and shall promptly notify the QA Manager of the need for adjustment.

If the Contractor desires the temporary or permanent adjustment of utilities for his own benefit, he shall conduct all negotiations with the utility owners and pay all costs in connection with the adjustment.

Except as otherwise specified herein, the Department will not be responsible for any claims for additional compensation from the Contractor resulting from delays, inconvenience, or damage sustained by him attributable to interference by utility appurtenances, or the operation of moving the same

105.08--Cooperation Among Contractors.

The Department may at any time contract or approve concurrent contracts for performance of other work on, near, or within the same geographical area of the work specified in an existing contract. Contractors shall not impede or limit access to such work by others.

When separate contracts are awarded within the limits of one project, contractors shall not hinder the work being performed by other contractors. Contractors working on the same project shall cooperate with each other. In case of dispute, the Engineer shall be the referee, and his decision shall be binding on all parties.

When contracts are awarded to separate contractors for concurrent construction in a common area, the contractors, in conference with the Engineer, shall establish a written joint schedule of operations based on the limitations of the individual contracts and the joining of the work of one contract with the others. The schedule shall set forth the approximate dates and sequences for the several items of work to be performed and shall ensure completion within the contract time limit. The schedule shall be submitted to the Engineer for review and approval no later than 30 days after the award date of the later contract and prior to the first monthly progress estimate. The schedule shall be agreeable to, signed by, and binding on each Contractor. The Engineer may allow modifications of the schedule when benefit to the contractors and the Department will result.

Any modification of the schedule shall be in writing, mutually agreed to and signed by the contractors, and shall be binding on the contractors in the same manner as the original agreement.

If the contractors fail to agree on a joint schedule of operations, they shall submit their individual schedules to the Engineer, who will prepare a schedule that will be binding on each Contractor.

The joint schedule and any modification thereof shall become a part of each contract involved. The failure of any Contractor to abide by the terms of the joint schedule shall be justification for declaring the Contractor in default of his Contract.

Each Contractor shall assume all liability, financial or otherwise, in connection with his Contract and shall protect and save harmless the State from any and all damages and claims that may arise because of any inconvenience, delay, or loss he experiences as a result of the presence and operations of other contractors working in or near the work covered by his Contract. He shall also assume all responsibility for any of his work not completed because of the presence or operation of other contractors.

The Department will not be responsible for any inconvenience, delay, or loss experienced by a Contractor as a result of his failure to gain access to the work at the time contemplated.

The Department will not assume any responsibility for acts, failures, or omissions of one contractor that delay the work of another except as provided herein.

105.09--Holidays.

No work that interferes with traffic shall be performed on Sundays or the following holidays without the permission of the QA Manager: January 1, Memorial Day, July 4, Labor Day, Thanksgiving Day, day after Thanksgiving and Christmas Day.

If any of these holidays occurs on a Sunday, the following Monday shall be considered the holiday.

105.10--Construction Stakes, Lines, and Grades.

The Contractor shall perform all construction and other surveying which the Contractor deems necessary to construct this project in accordance with the Contract Documents. The cost for all surveying performed by the Contractor shall be included in the Contract Price.

105.11--Not Used

105.12--Not Used

105.13--Removal of Unacceptable and Unauthorized Work.

Work that does not conform to the requirements of the Contract will be considered unacceptable work.

Unacceptable work shall be remedied or removed immediately and replaced in an acceptable manner at the Contractor's expense.

No work shall be done until the lines and grades have been established by the Contractor. Work that is done beyond the lines shown on the plans will be considered unauthorized and will not be paid for. Such work may be ordered removed or replaced at the Contractor's expense.

If the Contractor fails to comply immediately with any order of the QA Manager made under the provisions of this section, the QA Manager will have the authority to cause unacceptable work to be removed and replaced and unauthorized work to be removed and to deduct the cost from any moneys due or to become due the Contractor.

105.14--Size and Weight Limitations.

(a) **Hauling or Moving Material and Equipment on Public Roads Open to Traffic:** The Contractor 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 Contractor shall comply with 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 Contractor shall be liable for damage that results from the hauling or moving of material and equipment. The hauling or moving of material and equipment on the pavement structure or across any structure during various stages of construction shall be subject to additional restrictions as specified or directed by the QA Manager.

(c) **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 QA Manager prior to

The Contractor shall inspect erosion and siltation control devices and measures for deficiencies immediately after each rainfall and at least daily during prolonged rainfall. Deficiencies shall be corrected immediately. Failure on the part of the Contractor to maintain erosion and siltation control devices in a functioning condition shall result in the QA Manager notifying the Contractor in writing of specific deficiencies. If the Contractor fails to correct or take appropriate actions to remedy the specified deficiencies within 24 hours after receipt of such notification, the QA Manager shall require the Contractor to discontinue work in other areas and concentrate efforts toward rectifying the specified deficiencies. If the work is not performed by the Contractor, the Department may perform the work and in such event the Contractor shall reimburse the Department the entire cost of performing the work, plus 25 percent for supervisory and administrative personnel. The Department may obtain reimbursement directly from the Bond Trustee and the amount paid to the Department by the Bond Trustee will be deducted from progress payments.

(b) **Pollution:**

1. **Water:** The Contractor shall exercise every reasonable precaution throughout the duration of the project 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.

   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. Temporary construction fills and mats in wetlands and flood plains shall be constructed of approved nonerodible materials and shall be removed by the Contractor to natural ground when the QA Manager so directs.

   If the Contractor dumps, discharges, or spills any oil or chemical that reaches or has the potential to reach a waterway, he shall immediately notify all appropriate jurisdictional state and federal agencies in accordance with the requirements of the Contract and shall take immediate actions to contain, remove, and properly dispose of the oil or chemical.

   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.

   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.

   Construction operations in rivers, streams, or impoundments shall be restricted to those areas where channel changes are shown on the plans and to those that 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 construction operations.

The Contractor shall prevent stream constriction that would reduce stream flows below the minimum, as defined by the State Water Control Board, during construction operations.

If it is necessary to relocate an existing stream or drainage facility temporarily to facilitate construction, the Contractor shall design and provide temporary channels or culverts of adequate size to carry the normal flow of the stream or drainage facility. The Contractor shall submit a temporary relocation design to the QA Manager for review and acceptance in sufficient time to allow for discussion and correction prior to beginning the work the design covers. Costs for the temporary relocation of the stream or drainage facility shall be included in the Contract Price for the related pipe or box culvert.

Temporary bridges or other structures shall be used wherever an appreciable number of stream crossings will be made.

2. **Air:** The Contractor shall comply with the provisions of the Contract and the State Air Pollution Control Law and Rules of the State Air Pollution Control Board, including notifications required therein.

   Burning shall be performed in accordance with all applicable 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 Contractor 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.

   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. **Noise:** The Contractor'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.

   The QA Manager shall monitor construction-related noise if requested by local agencies, the Department or neighboring property owners. If construction noise levels exceed 80 decibels, the Contractor shall take corrective action before proceeding with operations.

The Contractor shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to noncompliance with these requirements.

The QA Manager shall determine whether certain portions of the project any work that produce objectionable noise should be restricted or prohibited between 10 P.M. and 6 A.M. If other hours are established by local ordinance, the local ordinance shall govern.

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 Contractor shall establish haul routes that direct his vehicles away from developed areas and ensure that noise from hauling operations is kept to a minimum.

These requirements are not applicable if the noise produced by sources other than the Contractor's operation at the point of reception is greater than the noise from the Contractor's operation at the same point.

(c) **Forests:** The Contractor shall take all reasonable precautions to prevent and suppress forest fires in any area involved in construction operations or occupied by him as a result of such operations. The Contractor 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 Contractor upon the order of any forest official issued under authority granted the official by law shall not be considered a part of the Contract. The Contractor shall negotiate with the proper forest official for compensation for such labor, tools, or equipment.

(d) **Archeological, Paleontological, and Rare Mineralogical Findings:** In the event of the discovery of prehistoric ruins, Indian or early settler sites, burial grounds, relics, fossils, meteorites, or other articles of archeological, paleontological, or rare mineralogical interest during the prosecution of work, the Contractor shall act immediately to suspend work at the site of the discovery and notify the proper state authority charged with the responsibility of investigating and evaluating such finds. The Contractor shall cooperate and, assist in protecting, mapping, and removing the findings. Findings shall become the property of the State unless they are located on federal lands, in which event they shall become the property of the U.S. government.

107.15–Opening Sections of Projects to Traffic.

When specified in the Contract or when directed by the Engineer, certain sections of the work may be opened to traffic. Such opening shall not constitute acceptance of the work or any part thereof or a waiver of any provision of the Contract.

On any section of the work opened by order of the Engineer where the Contract does not provide for traffic to be carried through the work and the Contractor has not been dilatory in prosecuting the work, the Contractor will not be required to assume any expense entailed in maintaining the road for traffic. Such expense will be borne by the Department or will be compensated for in accordance with the requirements of the Contract. Repair of slides and repair of damage attributable to traffic will be compensated for in accordance with the requirements of the

Contract. The cost of all other repairs shall be borne by the Contractor. Slides shall be removed by the Contractor in accordance with the requirements of Section 303.

On any section of the work opened by order of the Engineer where the Contract does not provide for traffic to be carried through the work, any additional cost for the completion of other items of work that are occasioned because of the changed working conditions will be compensated in accordance with the requirements of the Contract.

If the Contractor is dilatory in completing the work, he shall not be relieved of the responsibility for maintenance during the period the section is opened to traffic prior to final acceptance. Any expense resulting from the opening of such portions under these circumstances, except slides, shall be borne by the Contractor. The Contractor shall conduct the remainder of the construction operations so as to cause the least obstruction to traffic.

107.16–Contractor's Responsibility for Work.

Until final acceptance of the work by the Engineer in accordance with the requirements of the Contract, the Contractor shall have charge and care thereof and shall take every precaution against damage to any part thereof by action of the elements or from any other cause. The Contractor shall rebuild, repair, restore, and make good damage to any portion of the work occasioned by any of the foregoing causes before final acceptance and shall bear the expense thereof.

In case of suspension of work, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the work, provide for erosion control and drainage, and erect any necessary temporary structures, signs, or other facilities at his own expense. During the suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under the Contract and shall take adequate precautions to protect new tree growth and other important vegetation against damage.

107.17–Contractor's Responsibility for Utility Property and Services.

At points where the Contractor's operations are adjacent to the properties of any utility, including railroads, and damage to which might result in considerable expense, loss, or inconvenience, work shall not commence until arrangements necessary for the protection thereof have been completed.

The Contractor shall cooperate with owners of utility lines so that removal and adjustment operations may progress in a reasonable manner, duplication of adjustment work may be reduced to a minimum, and services rendered by those parties will not be unnecessarily interrupted.

If any utility service is interrupted as a result of accidental breakage or of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the authority in the restoration of service. If utility service is interrupted, repair work shall be continuous until service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority. When the Contractor's work operations require the disconnection of "in service" fire hydrants, the Contractor shall notify the locality's fire department or communication center at least 24 hours prior to disconnection. In addition, the Contractor shall notify the locality's fire department or communications center no later than 24 hours after reconnection of such hydrants. The Contractor shall be responsible for any damage to utilities that is attributable to his neglect or methods of performing the work.

Nothing in this section shall be construed to be in conflict with Section 107.12.

107.18--Not Used.

107.19--Personal Liability of Public Officials.

In carrying out any of the provisions of these specifications or in exercising any power or authority granted to them by or within the scope of the Contract, there shall be no liability upon the Board, Commissioner, Engineer, or their authorized representatives, either personally or as officials of the State. In all such matters, they act solely as agents and representatives of the State.

107.20--No Waiver of Legal Rights.

The State shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after final acceptance of the work and payment therefor from showing (1) the true amount and character of the work performed and materials furnished by the Contractor, (2) that any such measurement, estimate, or certificate is untrue or incorrectly made, or (3) that the work or materials do not conform with the provisions of the Contract. The State shall not be precluded or estopped, notwithstanding any such measurement, estimate, or certificate, and payment in accordance therewith, from recovering from the Contractor or his surety, or both, such damage as it may sustain by reason of his failure to comply with the terms of the Contract. Neither the acceptance by the Department or any representative of the Department nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Department shall operate as a waiver of any portion of the Contract or of any power herein reserved or of any right to damages. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

SECTION 108--PROSECUTION AND PROGRESS OF WORK

108.01--Not Used.

108.02--Not Used.

108.03--Prosecution of Work.

Work shall be conducted in such a manner and with sufficient materials, equipment, tools, and labor as are necessary to ensure its completion in accordance with the plans and these specifications within the time limit specified in the Contract and these specifications. Once the Contractor has begun work, it shall be prosecuted continuously and to the fullest extent possible except for interruptions caused by weather or delays authorized or ordered by the Engineer. If approval is given to discontinue the work temporarily, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

108.04--Not Used.

108.05--Limitation of Operations.

The Contractor shall conduct the work in a manner and sequence that will ensure its expeditious completion with the least interference to traffic and shall have due regard for the location of detours and provisions for handling traffic. The Contractor shall not open any work to the prejudice or detriment of work already started. The Engineer may require the Contractor to finish a section of work before work is started on any other section.

108.06--Gratuities.

Gifts, gratuities, or favors shall not be given or offered by the Contractor or its members to personnel of the Department. A gift, gratuity, or favor of any nature whatsoever or offer of such by the Contractor shall be a violation of this provision.

The Contractor shall not employ any personnel of the Department for any services without the prior written consent of the Engineer.

If the Engineer determines that the Contractor or the Contractor's employees, representatives, or agents of any person acting in his behalf have violated this provision, the Contractor and/or its members may, at the discretion of the Engineer, be disqualified from bidding on future contracts with the Department. Any implicated employees, agents, or representatives of the Contractor and/or its members may be prohibited from working on any contract awarded by the Department. The decision of the Engineer shall be binding on all parties. A contractor so disqualified may be reinstated only by petition to and approval by the Chief Engineer.

108.07--Character of Workers, Work Methods, and Equipment.

Workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special or skilled work shall have sufficient experience in such work and in the operation of equipment required to perform it properly and satisfactorily.

Any person employed by the Contractor or any subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor or subcontractor employing the person and shall not be employed again on any portion of the work without the approval of the Engineer. If the Contractor fails to remove the person or furnish suitable and sufficient personnel for proper prosecution of the work, the Engineer may withhold all moneys that are or may become due the Contractor and may suspend the work until the Contractor has complied with the request or order.

Equipment shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and produce a satisfactory quality of work. Equipment shall be such that no damage to the roadway, adjacent property, or other highways will result from its use. The QA Manager shall order the removal and require replacement of unsatisfactory equipment.

When methods and equipment to be used by the Contractor are not prescribed in the Contract, the Contractor is free to use methods or equipment approved by the QA Manager that will accomplish the contract work in conformity with the requirements of the Contract.

When the Contract specifies that construction be performed by the use of particular methods and equipment, they shall be used unless others are authorized by the QA Manager. If the Contractor desires to use a different method or type of equipment, he may request permission from the QA Manager to do so. The request shall be in writing and shall include a full description of the methods and equipment he proposes to use and an explanation of the

reasons for desiring to make the change. If permission is given, it will be on the condition that the Contractor shall be fully responsible for producing construction work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the QA Manager or the Engineer determines that the work produced does not conform to the requirements of the Contract, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining construction with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of the specified quality or take such other corrective action as the QA Manager or the Engineer may direct. No change will be made in the basis of payment for the construction items involved or the contract time limit as the result of authorizing a change in methods or equipment under these provisions.

108.08--Not Used.

108.09--Not Used.

108.10--Not Used.

108.11--Not Used.

108.12--Not Used.

108.13--Not Used.

108.14--Not Used

108.15--Not Used.

SECTION 109--MEASUREMENT AND PAYMENT

109.01--Measurement of Quantities.

[The following section applies only with respect to unit-priced Work.]

Work specified in the Contract will be measured by the QA Manager according to The International System of Units (SI). The methods of measurement and computations to be used to determine quantities of material furnished and work performed will be those generally recognized as conforming to good engineering practice.

Longitudinal measurements for surface computations will be made horizontally, and transverse measurements will be the surface measure shown on the plans or ordered in writing by the QA Manager. Individual utility encroachment areas of 1 square meter or less will not be deducted from surface areas measured for payment.

Structures will be measured according to neat lines shown on the plans.

Items that are measured by the meter will be measured parallel to the base or foundation upon which they are placed.

Allowance will not be made for surfaces placed over a greater area than shown on the plans or for any material moved from outside the area of the cross section and lines shown on the plans.

When standard manufactured items are specified and are identified by weights or dimensions, such identification will be considered nominal. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

(a) **Measurement by Mass:** Materials that are measured or proportioned by mass shall be weighed on accurate scales. When material is paid for on a metric tonnage basis, personnel performing the massing shall be certified by the QA Manager and shall be bonded to the Commonwealth of Virginia in the amount of $10,000 for the faithful observance and performance of the duties of the weighperson required herein. The bond shall be executed on a form having the exact wording as the Weighpersons Surety Bond Form furnished by the Department and shall be submitted to the Department prior to the furnishing of the metric tonnage material. No payment will be made for materials delivered in excess of the legal load limits established for each truck.

The Contractor shall have the weighperson perform the following:

1. Post and furnish a weekly tare mass of each truck used and keep a record of them for 12 months.

2. Furnish a signed shipping ticket for each load that shows the date, truck number, load number, plant name, size and type of material, project, schedule or purchase order number, and the masses specified herein.

3. Maintain sufficient documentation so that the accumulative metric tonnage and distribution of each lot of material, by contract, can be readily identified.

4. Submit by the end of the next working day a summary of the number of loads and total masses for each type of material by contract.

Trucks used to haul material being paid for by mass shall display the truck uniform identification number and legal gross and legal net mass limits. These markings shall be no less than 50 millimeters high and permanently stenciled on each side of the truck with contrasting color and located as to be clearly visible when the vehicle is positioned on the scales and observed from normal position of the weighperson at the scale house.

Trucks used to haul material shall be equipped with a cover suitable to protect the material and to protect the traveling public.

The truck tare to be used in the massing operation shall be the mass of the empty truck determined with full tank(s) of fuel and the operator seated in the cab. The tare mass of trucks shall be recorded to the nearest 10 kilograms. At the option of the Contractor, a new tare may be determined for each load. When a new tare is obtained for each load, the requirement for full tank(s) of fuel will be waived.

Net rail shipment masses may be used for pay quantities when evidenced by railroad bills of lading. However, such masses will not be accepted for pay quantities of materials that subsequently pass through a stationary mixing plant.

Scales shall conform to the requirements for accuracy and sensitivity as set forth by the *National Institute of Standards and Technology Handbook No. 44 for Specification Tolerances and Requirements for Commercial and Weighing Devices*. Scales used in the massing of materials paid for on a metric tonnage basis shall be approved and sealed in accordance with the requirements of the policies of the Bureau of Weights and Measures of the Department of Agriculture and Consumer Services, or other approved agencies, at least once every six months and upon being moved. Hopper and truck scales shall be serviced and tested by a scale service representative at least once every six months. Hopper scales shall be checked with a minimum 225 kilograms of test weights and truck scales shall be checked with a minimum 9,000 kilograms of test weights.

Copies of scale test reports shall be maintained on file at the scale location for at least 18 months, and copies of all scale service representative test reports shall be maintained by the QA Manager.

The quantity of materials paid for on a metric tonnage basis shall be determined on scales equipped with an automatic printer. Truck scale printers shall print the net mass and either the gross or tare mass of each load. Hopper scale printers shall conform to the requirements of Section 211.11 and shall print the net mass of each load. The shipping ticket shall also show the legal gross mass for material massed on truck scales and the legal net mass for material massed on hopper scales.

If the automatic printer becomes inoperative, the massing operation may continue for 48 hours provided satisfactory visual verification of masses can be made. The written permission of the QA Manager will be required for the operation of scales after 48 hours.

If significant discrepancies are discovered in the printed mass, the ultimate mass for payment will be calculated on volume measurements of the materials in place and unit masses determined by the QA Manager or by other methods deemed appropriate to protect the interests of the State.

(b) **Measurement by Cubic Meter**: Material that is measured by the cubic meter, loose measurement or vehicular measurement, shall be hauled in approved vehicles and measured therein at the point of delivery. Material measured in vehicles, except stream bed gravel, will be allowed at the rate of 2/3 the volume of the vehicle. The full volume of the vehicle will be allowed for stream bed gravel. Such vehicles may be of any size or type acceptable to the QA Manager provided the body is of such shape that the actual contents can be readily and accurately determined. Unless all approved vehicles are of uniform capacity, each vehicle shall bear a plainly legible identification mark indicating the specific approved capacity. Each vehicle shall be loaded to at least its water level capacity.

When approved by the QA Manager in writing, material specified to be measured by the cubic meter may be massed and such masses converted to cubic meters for payment purposes. Factors for conversion from mass to volume measurement will be determined by the QA Manager and shall be agreed to by the Contractor before they are used.

(c) **Measurement by Lump Sum:** When used as an item of payment, the term *lump sum* will mean full payment for completion of work described in the Contract. When a complete structure or structural unit (in effect, lump sum work) is specified as the unit of measurement, the unit will be construed to include necessary fittings and accessories. The quantities may be shown on the plans for items for which lump sum is the method of measurement. If shown, the quantities are approximate and are shown for estimating purposes only. Items that are to be measured as complete units will be counted by the QA Manager in the presence of a representative of the Contractor.

(d) **Specific Items:**

1. **Concrete:** Concrete will be measured and computed by dividing the work into simple geometrical figures and adding their volumes.

2. **Excavation, embankment, and borrow:** In computing volumes of excavation, embankment, and borrow, methods having general acceptance in the engineering profession will be used. When the measurement is based on the cross-sectional area, the average end area method will be used.

3. **Asphalt:** Asphalt will be measured by the liter, volumetric measurement, based on a temperature of 15 °C using the following correction factors:

   a. 0.00063 per degree Celsius for petroleum oils having a specific gravity 15/15 °C above 0.966

   b. 0.00072 per degree Celsius for petroleum oils having a specific gravity 15/15 °C between 0.850 and 0.966

   c. 0.00045 per degree Celsius for emulsified asphalt

   Unless volume correction tables are available, the following formula shall be used in computing the volume of asphalt at temperatures other than 15 °C:

$$V^{\lambda} = V/K(T - 15) + 1$$

   where V = volume of asphalt to be corrected; V^{λ} = volume of asphalt at 15 °C; K = correction factor (coefficient of expansion); and T = temperature in degrees Celsius of asphalt to be corrected.

   When asphalt is delivered by weight, the volume at 15 °C will be determined by dividing the net mass by mass per gallon at 15 °C.

   When specified in the Contract, asphalt will be measured by mass. Net certified scale masses, or masses based on certified volumes in the case of rail shipments, will be used as a basis of measurement, subject to correction when asphalt has been lost from the car or the distributor, disposed of, or otherwise not incorporated in the work.

When asphalt is shipped by truck or transport, net certified masses or volumes subjected to correction for loss or foaming may be used to compute quantities.

Only the quantity of asphalt actually placed in the work and accepted will be considered in determining the amount due the Contractor.

4. **Timber:** Timber will be measured in cubic meters actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

5. **Equipment rental:** Equipment rental will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the project or source of supply and the project except when another method of measurement is specified.

109.02--Not Used

109.03--Not Used

109.04--Not Used

109.05--Not Used

109.06--Not Used

109.07--Not Used

109.08--Not Used

109.09--Not Used

SECTION 110--MISCELLANEOUS PROVISIONS

110.01--Not Used

110.02--Labor and Wages.

The Contractor shall comply with the provisions and requirements of the State's workers' compensation law and public statutes that regulate hours of employment on public work. Job orders placed with a State Employment Service shall indicate that employment preference will be given to veterans referred for employment. Advertisements in newspapers or other publications for project employees shall include the notation "Employment Preference to Veterans."

110.03–Equal Employment Opportunity.

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.

Subcontracting: The Contractor shall use best efforts to use minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees in accordance with Appendix 7 of the Contract.

110.04–Not Used

110.05–Construction Safety and Health Standards.

It is a condition of the Contract, and shall be made a condition of each subcontract entered into pursuant to the Contract, that the Contractor and any subcontractor shall not require any worker employed in performance of the Contract 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.

The Contractor shall comply with the Virginia Occupational Safety and Health Standards adopted under Section 40.1-22 of the Code of Virginia and the duties imposed under Section 40.1-51.1 of the Code. Any violation of the requirements or duties that is brought to the attention of the Contractor by the QA Manager or any other person shall be immediately abated.

110.06–Bulletin Boards and Posting Official Notices.

Except for maintenance contracts, the Contractor shall furnish, erect, and maintain at least two bulletin boards having dimensions of at least 1,200 millimeters in width and 900 millimeters in height at locations readily accessible to all personnel concerned with the project. The boards shall be erected immediately upon initiation of the contract 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 will protect posters from weather or damage. The Contractor shall promptly post official notices on the bulletin boards. The costs for such work shall be included in the Contract Price.

110.07–Certification of Nonsegregated Facilities.

The Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order of the Secretary of Labor (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities for highway construction contracts exceeding $10,000 that are not exempt from the provisions of the equal opportunity clause, requires that bidders neither maintain nor provide facilities for employment that are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. If the Contract exceeds $10,000 and is not exempt from the provisions of the equal opportunity clause, the Contractor will be deemed to have signed and agreed to the provisions of the certification. If the Contract exceeds $10,000 and is not exempt from the provisions of the equal opportunity clause, the Contractor shall forward the following notice to prospective subcontractors for construction contracts and material suppliers where the subcontracts or material supply agreements exceed $10,000 and are not exempt from the provisions of the equal opportunity clause:

NOTICE TO PROSPECTIVE SUBCONTRACTORS AND MATERIAL SUPPLIERS OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

1. Subcontractors and material suppliers are cautioned as follows: By signing the subcontract or entering into a material supply agreement, the subcontractor or material supplier will be deemed to have signed and agreed to the provisions of the Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order of the Secretary of Labor (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, prior to the award of the subcontract or consummation of a material supply agreement if such subcontract or agreement exceeds $10,000 and is not exempt from the provisions of the equal opportunity clause. This certification provides that the subcontractor or material supplier does not maintain, or provide for his employees, facilities that are segregated on the basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that the subcontractor or material supplier will not maintain such segregated facilities.

2. Subcontractors or material suppliers receiving subcontract awards or material supply agreements exceeding $10,000, which are not exempt from the provisions of the equal opportunity clause, will be required to provide for the forwarding of this notice to prospective subcontractors for construction contracts and material suppliers where the subcontracts or material supply agreements exceed $10,000 and are not exempt from the provisions of the equal opportunity clause.

INDEX OF ARTICLES

ARTICLE	DESCRIPTION	PAGE NO.
	- WORK QUALITY STANDARDS -	
1.0	GUARANTEES	3
2.0	INSPECTION, TESTING AND QUALITY CONTROL	3,4
3.0	CONDITIONS AND RISKS OF WORK	5
4.0	ISSUED FOR CONSTRUCTION DRAWINGS AND SPECIFICATIONS	5
5.0	INTENT OF SPECIFICATIONS AND DRAWINGS	5,6
6.0	SAFETY	6
7.0	SUBCONTRACTS AND PURCHASE ORDERS	6,7
8.0	TERMINATION FOR DEFAULT	7,8
9.0	STOP WORK ORDERS	8
	- TIMING OF WORK -	
10.0	SCHEDULING, REPORTING AND COORDINATION	9
11.0	OVERTIME	9,10
12.0	DELAYS	10
13.0	POSSESSION PRIOR TO COMPLETION	10
14.0	NOTICE OF COMPLETION AND FINAL ACCEPTANCE	11
	- WORK CHANGES -	
15.0	CHANGES	11,12
16.0	SUSPENSION OF WORK	12
17.0	TERMINATION AT FD/MK OPTION	12,13
18.0	CLAIMS	13,14
	- MATERIALS AND EQUIPMENT -	
19.0	PROTECTION OF MATERIALS, EQUIPMENT AND WORK	14
20.0	CONTRACTOR'S CONSTRUCTION EQUIPMENT	14
21.0	CONTRACTOR'S SHIPMENTS	14,15
22.0	CONTROL OF FD/MK FURNISHED MATERIALS	15
23.0	CARE, CUSTODY, CONTROL AND TITLE TO MATERIALS AND EQUIPMENT	15,16
	- LABOR AND WORK RULES -	
24.0	CONTRACTOR'S PERSONNEL	16
25.0	LABOR HARMONY	16
26.0	EMPLOYMENT CERTIFICATIONS AND PRACTICES	17
27.0	WORK RULES	17
	- INDEMNIFICATION AND INSURANCE -	
28.0	INDEMNITY	17,18,19
29.0	INSURANCE	19,20,21,22. 23
30.0	BONDS	23

FD AMK

- WORK CONDITIONS -

31.0	CONTRACTUAL RELATIONSHIP	24
32.0	PERMITS AND LICENSES	24
33.0	INDEPENDENT CONTRACTOR	24,25
34.0	CONFIDENTIAL INFORMATION	25
35.0	PUBLICITY	25
36.0	OWNERSHIP AND USE OF DRAWINGS	25
37.0	ASSIGNMENTS	25
38.0	LAWS AND REGULATIONS	25,26
39.0	EMERGENCY MEDICAL SERVICES	26

- DOCUMENTATION, LIENS AND OFFSETS -

40.0	DOCUMENTATION AND RIGHT OF AUDIT	26,27
41.0	LIENS	27
42.0	RIGHT TO OFFSET	27
43.0	FINAL PAYMENT CERTIFICATION AND RELEASE	28

- GENERAL -

44.0	ARBITRATION OPTION	28
45.0	VALIDITY OF PROVISIONS	28
46.0	WAIVER	28
47.0	GRATUITIES	28
48.0	INTERPRETATION	29
49.0	SURVIVAL	29
50.0	TRIAL	29
51.0	DRUG SCREENING	29

FD MK

- WORK QUALITY STANDARDS -

1.0 GUARANTEES *Note: See Revised Article 1.1 PART IV SPECIAL TERMS*

~~1.1 Contractor guarantees FD/MK and Owner that the Work shall comply strictly with the provisions of this Contract and all specifications, drawings and standards referred to in this Contract or thereafter furnished by FD/MK, and that the Work shall be first class in every particular and free from defects in materials and workmanship and in any design or engineering furnished by Contractor. Contractor further guarantees FD/MK and Owner that all materials, equipment and supplies furnished by Contractor for the Work shall be new, merchantable, of the most suitable grade and fit for their intended purposes. Without limitation of any other rights or remedies of FD/MK or Owner, if any defect in the Work in violation of the foregoing guarantees arises within the period set forth below, Contractor shall, upon receipt of written notice of such defect, promptly furnish, at no cost to FD/MK or Owner, design and engineering, labor, equipment and materials necessary to correct such defect and cause the Work to comply fully with the foregoing guarantees.~~

1.2 Contractor's guarantees set forth in Section 1.1.shall extend for twenty four (24) months after the date of final written acceptance of the Work by Owner. Any period wherein the Work is not available for use due to defects in materials, workmanship or engineering furnished by Contractor shall extend the guarantee period by an equal period of time.

1.3 Design and engineering, labor, equipment and materials furnished by Contractor pursuant to Section 1.1 to correct defects shall be guaranteed by Contractor in accordance with the guarantees set forth in Section 1.1 for a period of eighteen (18) months from the date of completion of the correction, or for the remainder of the guarantee period set forth in Section 1.2 above whichever is longer.

1.4 In the event Contractor shall have been notified of any defects in the Work in violation of Contractor's foregoing guarantees and shall fail to promptly and adequately correct such defects, FD/MK and Owner shall have the right to correct or to have such defects corrected for the account of Contractor, and Contractor shall promptly pay FD/MK or Owner the costs incurred in correcting such defects.

1.5 Contractor shall include, at a minimum, the foregoing guarantee requirements in any subcontract that it places.

2.0 INSPECTION, TESTING AND QUALITY CONTROL

2.1 Contractor is responsible for the quality of Work performed by Contractor. Contractor will inspect Contractor's Work to insure that specified materials are being used and that the Work is being performed in a workmanlike manner in accordance with this Contract and all specifications, drawings and standards referred to in this Contract or thereafter furnished by FD/MK, and to the satisfaction of Contractor.

2.2 Contractor will submit for approval by FD/MK a Quality Control Plan within thirty (30) days following the effective date of this Contract. Contractor's Quality Control Plan will be in general conformance with the FD/MK Quality Control System. Likewise, within thirty (30) days following the effective date of this

Contract, Contractor will designate a Quality Control representative(s), with a letter of authority and resume(s) for approval by FD/MK. Contractor's Quality Control representative will provide daily reports on forms to be provided by FD/MK, and any other information necessary to assist FD/MK in reporting and ensuring the quality of the Work performed. Prior to beginning significant features of Work, Contractor shall attend any and all preparatory meetings that may be held.

2.3 FD/MK retains the right to perform acceptance inspection and testing of Contractor's Work. Responsibility for workmanship and quality of materials and product shall be the Contractor's. Notwithstanding any inspection and testing performed by authorized representatives of FD/MK, Contractor will be solely and exclusively responsible for the quality of materials used and workmanship performed in the Work. FD/MK will not be held liable for any cost increase resulting from action required by Contractor in correcting deficient or nonconforming Work. By conducting or authorizing this testing of Contractor's Work and materials, FD/MK shall not be deemed to have in any way waived or abrogated any of Contractor's Warranties, Guarantees and/or obligations under this Contract.

2.4 FD/MK and Owner and their representatives, and others as may be required by applicable laws, ordinances and regulations, shall have the right at all reasonable times to inspect the Work and all material, supplies and equipment for the Work at the jobsite and at Contractor's and its subcontractors' shops for conformance with the Contract. Contractor shall provide, or cause to be provided access and sufficient, safe and proper facilities for such inspections. Neither the failure to make such inspection nor to discover defective workmanship, materials or equipment, nor approval of or payment to Contractor for such Work, materials or equipment shall prejudice the rights of FD/MK or Owner.

2.5 If Contractor covers any portion of the Work prior to any inspection or test provided for in the specifications, inspection schedule, or as previously requested by FD/MK, the cost of uncovering and covering the Work to allow for such inspection or test shall be borne by the Contractor. Reexamination of any Work may be ordered by FD/MK. In the event of such reexamination, if any material, equipment or any part of the Work is determined by FD/MK to be defective, Contractor shall not be reimbursed for uncovering, repair or corrective and restoration costs. If such Work is found to be in accordance with the Contract requirements upon such reexamination, FD/MK shall pay Contractor the cost of uncovering and restoration.

2.6 Rejection by FD/MK of any or all parts of defective Work for failure to conform with this Contract shall be final and binding. Such rejected Work shall be promptly corrected or replaced by Contractor at Contractor's expense. If Contractor fails to commence and diligently continue correction or replacement of such rejected Work immediately after receipt of written notice from FD/MK to correct or replace the rejected Work, FD/MK may at its option remove and replace the rejected Work, and Contractor shall promptly reimburse FD/MK for the costs of such removal and replacement of defective Work.

3.0 CONDITIONS AND RISKS OF WORK

3.1 Contractor represents that it has carefully examined the drawings and specifications for the Work and has fully acquainted itself with all other conditions relevant to the Work, and its surroundings, and Contractor assumes the risk of such conditions and will, regardless of such conditions, the expense, difficulty of performing the Work, or negligence, if any, of FD/MK or Owner, fully complete the Work for the stated Contract Price without further recourse to FD/MK or Owner. Information on the site of the Work and local conditions at such site furnished by FD/MK or Owner in specifications, drawings or otherwise is not guaranteed by FD/MK or Owner and is furnished only for the convenience of Contractor.

4.0 ISSUED FOR CONSTRUCTION DRAWINGS AND SPECIFICATIONS

4.1 The Work shall be performed using only drawings and specifications marked "Issued for Construction" or equivalent by FD/MK. Such indication shall not relieve Contractor of any obligations under this Contract, nor constitute FD/MK assumption of responsibility for the accuracy or adequacy of any of Contractor's information or Work incorporated in such documents.

4.2 Contractor shall perform all Work outside of the areas marked "HOLD" on "Issued for Construction" specifications and drawings to maintain the schedule of Work, but shall not perform any Work in the areas or sections marked "HOLD" on "Issued for Construction" specifications and drawings until revised "Issued for Construction" specifications and drawings are received with the "HOLD" markings deleted.

4.3 If Contractor's schedule will be delayed by "HOLD" markings on specifications and drawings, Contractor shall report such delay to FD/MK in writing not less than five (5) working days prior to the start of the delay.

4.4 Contractor shall maintain at the work site a complete and current set of "Issued for Construction" drawings and specifications.

5.0 INTENT OF SPECIFICATIONS AND DRAWINGS

5.1 The Work to be performed under this Contract is part of a Design/Build effort and as such: changes, modifications, revisions, alterations and enhancements to the design and the Work, will occur prior to and during construction.

5.2 The specifications and drawings may not be complete in every detail. Contractor shall comply with their manifest intent and general purpose, taken as a whole, and shall not make use of any errors or omissions therein to the detriment of the Work. Should any conflict, error, omission or discrepancy appear in the drawings, specifications, instructions, in work done by others, or in site conditions. Contractor shall notify FD/MK in writing at once, and FD/MK will issue written instructions to be followed. If Contractor proceeds with any of the Work in question prior to receiving such instructions, then required corrections shall be at Contractor's expense. Contractor shall not deviate from the specifications and drawings without prior written approval from FD/MK.

5.3 Materials shall not be substituted for those specified, nor shall "or equal" items be furnished pursuant to the specifications without FD/MK prior written approval.

6.0 SAFETY

6.1 Contractor shall take necessary safety and other precautions to protect property and persons from damage, injury or illness arising out of the performance of the Work. Contractor shall comply strictly with local, municipal, provincial, state and national laws, orders, and regulations pertaining to health or safety which are applicable to Contractor or to the Work, including without limitation the Occupational Safety and Health Act of 1970 (84 U.S. Statutes 1590), as amended and any state plans approved thereunder, and regulations thereunder, to the extent applicable, and Contractor warrants the materials, equipment and facilities, whether temporary or permanent, furnished by Contractor in connection with the performance of the Work shall comply therewith. At all times while any of Contractor's employees, agents or subcontractors are on Owner's or FD/MK's premises, Contractor shall be solely responsible for providing them with a safe place of employment, and Contractor shall inspect the places where its employees, agents or subcontractors are or may be present on Owner's or FD/MK's premises and shall promptly take action to correct conditions which are or may become an unsafe place of employment for them.

6.2 Accidents, injuries and illnesses requiring medical attention other than first aid, damage to property of FD/MK, Owner, other contractors and Contractor, and fires shall be orally reported to FD/MK at the time of the incident. Written reports, satisfactory in form and content to FD/MK, shall be submitted by Contractor within forty-eight (48) hours after each incident.

6.3 Contractor shall maintain in form and content approved by FD/MK, jobsite accident, injury and illness statistics which shall be available for inspection by, and submitted to, FD/MK upon its written request.

7.0 SUBCONTRACTS AND PURCHASE ORDERS

7.1 Contractor shall not subcontract performance of all or any portion of the Work under this Contract without first notifying FD/MK of the intended subcontracting and obtaining FD/MK acceptance in writing of the subcontracting and the subcontractor. If requested by FD/MK, Contractor shall furnish FD/MK a copy of the proposed subcontract (with price deleted if the subcontracted work is part of fixed price Work of Contractor under this Contract) for FD/MK review of the terms and conditions thereof and shall not execute such subcontract until FD/MK has accepted such terms. Failure of Contractor to comply with this Section may be deemed by FD/MK to be a material breach of this Contract.

7.2 Contractor guarantees that its subcontractors will comply fully with the terms of this Contract applicable to the portion of the Work performed by them. If any portion of the Work which has been subcontracted by Contractor is not prosecuted in accordance with this Contract, on request of FD/MK the subcontractor shall be replaced at no additional cost to FD/MK and shall not be employed again on the Work.

7.3 Contractor shall include a provision in every subcontract that it places authorizing assignment of such subcontract to FD/MK or Owner without requiring further consent from such subcontractor or supplier.

7.4 FD/MK shall have the right from time to time to contact Contractor's subcontractors to discuss their progress.

7.5 As used in this Contract, the term "subcontract" shall also include purchase orders and rental agreements for materials or equipment, and the term "subcontractor" shall also include vendors or suppliers of such material or equipment.

7.6 Contractor shall not be relieved of its responsibility for the Work by virtue of any subcontracts it may place regardless of FD/MK's acceptance of such subcontract.

7.7 The United Nations Convention on Contracts for the International Sale of Goods does not apply to this Contract and shall be disclaimed and excluded from any subcontracts placed by Contractor.

8.0 TERMINATION FOR DEFAULT (Superceded See Article 1.0 Part IV Special Terms)

~~8.1 In the event that Contractor shall default in the performance of any obligation to be performed by Contractor under this Contract and shall fail to correct such default within five (5) working days following written notice thereof from FD/MK, FD/MK may, without prejudice to any other rights or remedies FD/MK may have, hold in abeyance further payments to Contractor and/or terminate Contractor's right to continue performance of this Contract by written notice to Contractor specifying the date of termination. In the event of such termination, FD/MK may take possession of the Work at the jobsite and any or all materials and plant equipment (whether delivered to the jobsite or on order therefor by Contractor), tools and construction equipment at jobsite and finish the Work by whatever method FD/MK may deem expedient.~~

~~8.2 In the event of termination by FD/MK under Section 8.1, Contractor shall, upon request by FD/MK, promptly advise it of all outstanding subcontracts, rental agreements and purchase orders which Contractor has with others pertaining to performance of the Work and furnish FD/MK with complete copies thereof. Upon request by FD/MK, Contractor shall assign to FD/MK or Owner, in form and content satisfactory to FD/MK, Contractor's title to materials and plant equipment for the Work and those subcontracts designated by FD/MK.~~

~~8.3 In the event of termination by FD/MK under Section 8.1, Contractor shall not be entitled to receive any further payment until the Work is completed. Upon completion and final acceptance of the Work, FD/MK will determine the total cost incurred in completing the Work including, without limitation, additional overhead, legal and other costs incurred by FD/MK to effect such termination and to complete the Work, plus a markup for profit in the amount of 10 percent (10%) on the total cost of the Work performed by FD/MK. If the total costs noted above exceed the balance of the Contract price unpaid at the time of the termination, Contractor shall, promptly after receipt of an invoice, pay to FD/MK the amount of such excess. FD/MK shall have the right and is authorized to set off against and deduct from any excess payable to Contractor any other damages suffered by FD/MK or Owner due to said default or event giving rise to the termination or due to other defaults of Contractor in complying with the terms of this Contract. Contractor shall continue to be fully liable for all such other damages to FD/MK and Owner. A waiver by FD/MK of one default by Contractor shall not be~~

~~considered to be a waiver of any subsequent default by Contractor, nor be deemed to amend or modify the terms of this Contract. Contractor expressly waives any formal notice by FD/MK of Contractor's failure to perform, or passive breach of, Contractor's express obligations under this Contract.~~

~~8.4 Contractor agrees that upon commencement of a case, receivership, civil action or other proceeding by or against Contractor under state, federal or other applicable insolvency law, or upon any general assignment by Contractor for the benefit of its creditors, FD/MK may, in its sole discretion, treat Contractor as in default under Section 8.1 and may exercise any of the remedies of this article. In the event FD/MK's remedies under this Section 8.4 are limited by the commencement by or against the Contractor of a case under any chapter of the United States Bankruptcy Code, Contractor stipulates, acknowledges and agrees that time is of the essence in determination of whether this contract should be "assumed" or "rejected," within the meaning of 11 U.S.C. e 365; and Contractor therefore further stipulates and agrees that subject only to calendaring constraints of the Bankruptcy Court having jurisdiction, it will take all necessary action to cause the assumption or rejection of this contract on or before the thirtieth day filing the Petition commencing any such case. In such event, if Contractor seeks to "assume" this contract, Contractor expressly stipulates, acknowledges and agrees that "adequate assurance of future performance" within the meaning of 11 U.S.C. e 365 (b)(1)(C) means a determination that there is no foreseeable likelihood that there will be any further interruption of Contractor's performance under this Contract following its assumption.~~

~~8.5 Contractor shall be considered in default from complying with the obligations of this Contract whenever by reason of strikes, picketing or disputes of any nature between Contractor and any individual, group or organization, Contractor persistently, repeatedly, or for any period of five (5) consecutive working days, should be unable to supply enough properly skilled workers or proper materials or equipment to execute the Work.~~

~~8.6 If any termination for default is determined to have been made in error, the provisions of Article 17, TERMINATION AT FD/MK'S OPTION, shall apply.~~

~~8.7 In the event Contractor abandons the Work or otherwise repudiates this Contract, the notice requirements of Section 8.1 shall not apply.~~

9.0 STOP WORK ORDERS

Upon failure of Contractor or its subcontractor(s) to comply with any of the requirements of this Contract, FD/MK shall have the authority to stop any operations of Contractor or its subcontractors affected by such failure until such failure is remedied or to terminate this Contract in accordance with Article 8.0. No part of the time lost due to any such stop work orders shall be made the subject of a claim for extension of time or for increased costs or damages by Contractor.

- TIMING OF WORK -

10.0 SCHEDULING, REPORTING AND COORDINATION

10.1 Contractor shall schedule and coordinate the details of the Work being performed to meet the schedule requirements set forth in PART I of this Contract. Within

thirty (30) calendar days after award of this Contract and before submittal of the first progress payment invoice, Contractor shall submit to FD/MK for approval, a detailed schedule showing the sequence in which Contractor proposes to perform the Work, the start and completion dates of all separable portions of the Work, manpower forecasts, materials procurement and delivery plans and any other information specified by FD/MK. Contractor agrees to adhere to the schedule approved by FD/MK and attend and participate in scheduled progress and coordination meetings called by FD/MK.

10.2 During the performance of Work, Contractor shall submit to FD/MK periodic progress reports on the actual progress and updated schedules as may be required by this Contract or requested by FD/MK. In the event Contractor's performance of the Work is not in compliance with the schedule established for such performance, FD/MK may, in writing, require the Contractor to submit its plan for schedule recovery, or specify in writing the steps to be taken to achieve compliance with such schedule, and/or exercise any other remedies under this Contract. Contractor shall thereupon take such steps as may be directed by FD/MK or otherwise necessary to improve its progress without additional cost to FD/MK.

10.3 Contractor recognizes that FD/MK, Owner, other contractors and subcontractors may be working concurrently at the jobsite. Contractor agrees to cooperate with FD/MK, Owner and other contractors so that the project as a whole will progress with a minimum of delays. FD/MK reserves the right to direct Contractor to schedule the order of performance of its Work in such manner as not to interfere with the performance of others.

10.4 If any part of Contractor's Work is dependent upon the quality and/or completeness of work performed under another contract, Contractor shall inspect such other work and promptly report to FD/MK any defects therein which render such work unsuitable for the proper execution of the Work under this Contract. Failure to make such inspections or to report any such defects to FD/MK shall constitute Contractor's acceptance of such other work as suitable to receive Contractor's Work; provided however, that Contractor shall not be responsible for defects which could not have reasonably been detected.

11.0 OVERTIME

Unless expressly stated elsewhere in this Contract, Work at the jobsites shall be compatible with FD/MK's starting and quitting times, or other times approved by FD/MK. Scheduled overtime work by Contractor must be approved in advance and in writing by FD/MK. Contractor shall notify FD/MK in advance of any incidental spot overtime which Contractor elects to work due to such operations as concrete placement, nondisruptable work activities, any Work requiring inspection or testing and emergencies to protect life and/or property. Overtime work, whether scheduled or incidental, shall be to Contractor's account unless the compensation therefor is specifically authorized in writing by FD/MK. In the event FD/MK approves compensation of Contractor's overtime in advance, such compensation as separately authorized shall be limited to the actual cost to Contractor of the premium portion only of all applicable wages, craft fringe benefits, and payroll burdens imposed by any governmental authority and measured by the compensation payable to employees. To establish the amount of payment,

Contractor shall submit supporting documents satisfactory in form and content to FD/MK for its verification and approval.

12.0 DELAYS

12.1 In the event Contractor or FD/MK is delayed in performing any of their respective obligations in this Contract and such delay is caused by acts of God, war, riots, civil insurrection, acts of the public enemy, accidents, acts of civil or military authority, fires, floods, or earthquakes, beyond the reasonable control of the party delayed, such delay will be excused and the period of such delay will be added to the time for performance of the obligation delayed, unless the date, schedule or time period for performance of the obligation is expressly stated in this Contract to be guaranteed. In the event any delay due to the foregoing causes or events occurs or is anticipated, the party delayed or anticipating delay shall promptly notify the other party in writing of such delay or expected delay and the cause and estimated duration of such delay. In the event of a delay due to the foregoing causes or events, the party delayed shall, at no cost to the other party, exercise due diligence to shorten and avoid the delay and shall keep the other party advised as to the continuance of the delay and steps taken to shorten or terminate the delay.

12.2 Contractor shall, within five (5) working days of the commencement of any delay, give to FD/MK written notice thereof and of the anticipated effects thereof. Within two (2) working days of the termination of any delay, Contractor shall file a written notice with FD/MK specifying the actual duration of the delay. If FD/MK determines that a delay was beyond the control and without the fault or negligence of Contractor or its subcontractors and not foreseeable by Contractor at the effective date of this Contract, FD/MK shall determine the duration of the delay and shall extend the time of performance of this Contract thereby. Any extension of the time of performance shall be subject to restrictions contained in this Section 12.0 DELAYS.

12.3 Contractor shall not be entitled to, and hereby expressly waives recovery of, any damages suffered by reason of delays of any nature, and extension of time shall constitute the sole liability of FD/MK and Owner and Contractor's sole remedy for delays.

13.0 POSSESSION PRIOR TO COMPLETION

FD/MK and/or Owner shall have the right to move into Contractor's working and storage areas and the right to take possession of or use any completed or partially completed part of Contractor's Work as FD/MK or Owner deem necessary for their operations. In the event FD/MK or Owner desire to exercise the foregoing right, FD/MK will so notify Contractor in writing. Such possession or use shall not constitute acceptance of Contractor's Work.

14.0 NOTICE OF COMPLETION AND FINAL ACCEPTANCE

14.1 When Contractor deems the Work fully completed, including satisfactory completion of such inspections, tests and documentation as are specified in this Contract, Contractor shall, within ten (10) working days thereafter, give a written

Notice of Completion of the Work to FD/MK, specifying the Work completed and the date it was completed. Within thirty (30) calendar days after receipt of said Notice of Completion, FD/MK may inspect the Work and shall either reject the Notice of Completion and specify defective or uncompleted portions of the Work, or shall give the Contractor a written Notice of Acceptance of the Work either for the purpose of final payment only, or for the purposes of final payment and final acceptance.

14.2 In the event FD/MK rejects the Notice of Completion and specifies defective or uncompleted portions of the Work, Contractor shall within five (5) working days, provide for FD/MK review and approval, a schedule detailing when all defects will be corrected and/or the work will be completed and shall proceed to remedy such defective and uncompleted portions of the Work. Thereafter, Contractor shall again give FD/MK a written Notice of Completion of the Work, specifying a new date for the completion of the Work based upon the date such defective or uncompleted portions of the Work were corrected. The foregoing procedure shall apply again and successively thereafter until FD/MK has given Contractor written Notice of Acceptance for purposes of final payment and final acceptance.

14.3 Any failure by FD/MK to inspect or to reject the Work or to reject Contractor's Notice of Completion as set forth above, shall not be deemed to be acceptance Of the Work for any purpose by FD/MK or Owner nor imply acceptance of, or agreement with, said Notice of Completion.

- WORK CHANGES -

15.0 CHANGES

15.1 The Scope of Work shall be subject to change by additions, deletions or revisions thereto by FD/MK. Contractor will be notified of such changes by receipt of additional and/or revised drawings, specifications, exhibits or other written notification.

15.2 Contractor shall submit to FD/MK within (10) ten working days after receipt of notice of a change, a detailed takeoff with supporting calculations and pricing for the change together with any requested adjustments in the schedule. The pricing shall be itemized as required by FD/MK and shall be in sufficient detail to permit an analysis of all labor, material and equipment and shall cover all work involved in the change, whether such work was deleted, added or modified. Amounts related to subcontracts shall be supported in similar detail. In addition, if the proposal includes a time extension, justification therefor shall also be furnished.

15.3 Contractor shall not perform changes in the Work in accordance with Sections 15.1 and 15.2 until FD/MK has approved in writing the pricing for the change and any adjustment in the schedule for performance of the Work, except as set forth in Section 15.4. Upon receiving such written approval from FD/MK, Contractor shall diligently perform the change in strict accordance with this Contract.

15.4 Notwithstanding Section 15.3 FD/MK may expressly authorize Contractor in writing to perform the change prior to such approval by FD/MK. Contractor shall not suspend performance of this Contract during the review and negotiation of

any change, except as may be directed by FD/MK pursuant to Article 16.0, SUSPENSION OF WORK. In the event FD/MK and Contractor are unable to reach timely agreement regarding any change, Contractor shall then comply with Article 18.0, CLAIMS.

15.5 Contractor shall not comply with oral changes in the Work. If Contractor believes that any oral notice or instruction received from FD/MK will involve a change in the cost, time to perform or integrity of the work, it shall require that the notice or instruction be given in writing and shall comply with the provisions of Sections 15.2, 15.3 and 15.4. Any costs incurred by Contractor to perform oral changes shall be for Contractor's account, and Contractor waives any and all rights to claim from FD/MK or Owner for such costs or additional time to perform the Work as a result of compliance by Contractor with such oral changes.

16.0 SUSPENSION OF WORK

16.1 FD/MK may at any time, and from time to time, by written notice to Contractor suspend further performance of all or any portion of the Work by Contractor. Said notice of suspension shall specify the date of suspension and the estimated duration of the suspension. Such suspensions shall not exceed one hundred eighty (180) consecutive calendar days each nor aggregate more than two hundred seventy (270) calendar days. Upon receiving any such notice of suspension, Contractor shall promptly suspend further performance of the Work to the extent specified, and during the period of such suspension shall properly care for and protect all Work in progress and materials, supplies, and equipment Contractor has on hand for performance of the Work. Upon the request of FD/MK, Contractor shall promptly deliver to FD/MK copies of outstanding subcontracts of Contractor, and shall take such action relative to such subcontracts as may be directed by FD/MK. Contractor shall use its best efforts to utilize its material, labor and equipment in such a manner as to mitigate costs associated with suspension. FD/MK may at any time withdraw the suspension of performance of the Work as to all or part of the suspended Work by written notice to Contractor specifying the effective date and scope of withdrawal, and Contractor shall resume diligent performance of the Work for which the suspension is withdrawn on the specified effective date of withdrawal.

16.2 If Contractor believes that any such suspension or withdrawal of suspension justifies modification of the Contract price or time of completion, Contractor shall comply with the provisions of the procedure set forth in Article 15.O, CHANGES. Contractor shall not be entitled to any prospective profits or any damages because of such suspension or withdrawals of suspension.

17.0 TERMINATION AT FD/MK'S OPTION

17.1 FD/MK may, with or without cause, terminate further performance of all or part of the Work by written notice to Contractor specifying the date of termination. On the date of such termination stated in said notice, Contractor shall discontinue performance of the Work and shall preserve and protect tools, construction equipment and facilities on jobsite, materials and plant equipment purchased for or committed to the Work (whether delivered to the jobsite or on order), Work in progress and completed Work (whether at jobsite or other locations) pending FD/MK instructions and, if requested by it, shall turn over the same to FD/MK, or

Owner, including title to said materials and plant equipment, or dispose of same in accordance with FD/MK instructions.

17.2 Upon receipt of said notice, Contractor shall advise FD/MK of its outstanding subcontracts pertaining to performance of the terminated work and, upon request, furnish FD/MK with complete copies. Contractor shall place no further subcontracts except as may be necessary for completion of such portion of the Work as is not terminated; Contractor shall promptly make every reasonable effort to procure cancellation, upon terms satisfactory to FD/MK, of all subcontracts to the extent they relate to the performance of Work terminated; or, as directed by FD/MK, shall assign to FD/MK or Owner in form satisfactory to FD/MK such of its subcontracts as are designated by FD/MK, or shall take such other action relative to such subcontracts as may be directed by FD/MK.

17.3 If Contractor has fully and completely performed all obligations under this Contract up to the date of termination, Contractor shall recover from FD/MK as complete and full settlement for such termination for Work to be performed under this Contract, the actual costs of all such Work satisfactorily executed to the date of termination, plus an allowance for reasonable overhead and profit on such costs incurred prior to termination (but not to exceed a pro rata portion of such Contract Price for such Work based on the percentage of Work properly completed to the date of termination), together with reasonable costs occasioned by such termination and not previously paid for, less such sums as Contractor has already received on account of the Work performed. In no event shall total payment to Contractor exceed the Contract Price.

17.4 All requests for compensation under any of the foregoing provisions of Section 17.3 shall be submitted to FD/MK in accordance with the provisions of Article 15.0, CHANGES. In no event shall Contractor be entitled to any prospective profits or any damages.

18.0 CLAIMS

18.1 Contractor shall give FD/MK written notice within five (5) working days after the happening of any event which Contractor believes may give rise to a claim by Contractor for additional time or money. Within ten (10) working days after the happening of such event, Contractor shall supply FD/MK with a statement supporting Contractor's claim, including but not limited to, Contractor's detailed estimate of the change in Contract Price and scheduled time occasioned thereby.

18.2 Contractor shall substantiate its claim with payroll documents, paid invoices, receipts, records of performance and other documents satisfactory to FD/MK and subject to its verification. Neither FD/MK nor Owner shall not be liable for, and Contractor hereby waives, any claim or potential claim of Contractor which was not reported by Contractor in accordance with the provisions of this Article. The parties shall negotiate diligently to reach an agreement, but in no case, except with FD/MK prior written consent, shall any work be halted pending such agreement, whether or not the claim can be resolved to Contractor's satisfaction, and Contractor shall be bound by the terms and conditions of this Contract to prosecute the Work without delay to its successful completion. FD/MK shall not be bound to any adjustments in the Contract Price or scheduled time unless

expressly agreed to by FD/MK in writing. No claim hereunder by Contractor shall be allowed if asserted after final payment under this Contract. Contractor's remedies are limited to those expressly set forth in this Contract.

- MATERIALS AND EQUIPMENT -

19.0 PROTECTION OF MATERIALS, EQUIPMENT AND WORK

Contractor shall at all times in accordance with the best practices and at no additional cost to FD/MK, preserve and protect material and equipment used by Contractor in the execution of the Work from damage or loss due to weather, fire, theft, unexplained disappearance or other similar casualty.

19.1 Contractor shall at all times in accordance with the best practices and at no additional cost to FD/MK, protect from damage due to Contractor's operations, equipment and materials (whether stored or installed), paving, structures and any and all other items on jobsite belonging to Owner, FD/MK or others.

19.2 Neither FD/MK or Owner shall be responsible for any loss suffered by Contractor, or damage to the Work, or to materials, tools and equipment of Contractor or of any other contractor, and Contractor assumes responsibility for any such loss or damage and for any cost of repairing, making good, or replacing any such loss or damage that may be directed by FD/MK or Owner.

20.0 CONTRACTOR'S CONSTRUCTION EQUIPMENT

Construction equipment obtained or furnished by Contractor which is to be used by Contractor on the jobsite shall be in first-class operating condition, safe, fit for the uses for which intended, and suitable for the safe, legal and efficient performance of the Work. Such equipment shall be subject to inspection from time to time by FD/MK. Any such equipment of Contractor which is rejected by FD/MK as not conforming with the foregoing shall be promptly removed by Contractor and replaced with equipment acceptable to FD/MK, without additional cost to FD/MK and without delaying the schedule for performance of the Work by Contractor.

21.0 CONTRACTOR'S SHIPMENTS

21.1 Contractor shall be responsible for arranging all shipments of Contractor supplied materials and equipment to the site of the Work and shall consign such shipments to itself as Consignee at the project shipping address, freight fully prepaid. Contractor shall be responsible for making demurrage agreements and settlement with carriers for its shipments.

21.2 Contractor shall advise FD/MK in writing in advance of major shipments of Contractor's materials and equipment and shall coordinate with FD/MK the arrival, unloading and release of carriers' equipment. Contractor shall promptly unload its shipments and promptly release carrier's equipment.

21.3 In the event Contractor may be unable to promptly unload its shipment, Contractor shall notify FD/MK of such inability not less than ten (10) working days in advance of arrival. FD/MK, at its option, may unload or make arrangements for others to unload such shipments for the account and risk of Contractor. Contractor will promptly pay FD/MK for such costs of unloading.

22.0 CONTROL OF FD/MK FURNISHED MATERIALS

22.1 Materials and equipment furnished by FD/MK shall be received by Contractor in the presence of FD/MK authorized representative and quantities thereof shall be checked jointly by Contractor and FD/MK. The delivery and acceptance of all such materials and equipment shall be recorded in writing, and Contractor shall evidence receipt and acceptance of such materials and equipment by signing forms satisfactory to FD/MK.

22.2 Contractor shall carefully note any visible damage to FD/MK furnished materials and equipment prior to Contractor's acceptance of delivery. After Contractor has accepted delivery of such materials and equipment, Contractor shall assume full responsibility for any loss of or damage to such materials and equipment. Contractor shall notify FD/MK of any materials and equipment supplied to Contractor by FD/MK which are surplus and, without additional compensation, shall cooperate with FD/MK and Owner in the disposition of such surplus as directed by FD/MK.

22.3 Contractor shall notify FD/MK of any lack of, or requirement for, materials and equipment required under this Contract to be supplied by FD/MK in sufficient time for FD/MK to furnish said materials or equipment in advance of Contractor's need. In the event of misfit of FD/MK furnished materials or equipment, Contractor shall promptly notify FD/MK of such misfit. Contractor shall take all reasonable steps to avoid standby time due to such misfit or lack of FD/MK furnished materials or equipment and to continue progress of other portions of Work pending correction of such misfit and/or the furnishing of materials or equipment.

23.0 CARE, CUSTODY, CONTROL AND TITLE TO MATERIALS AND EQUIPMENT

23.1 Good and clear title to all materials and equipment furnished by Contractor under this Contract for the Work shall, except as expressly provided otherwise, elsewhere in this Contract, pass to Owner upon incorporation into the permanent plant. Contractor shall ensure that subcontractors from whom Contractor obtains materials and equipment do not retain, encumber or reserve title to such items, and Contractor shall defend, indemnify and hold FD/MK and Owner harmless from any such claims by its subcontractors.

23.2 Notwithstanding the provisions of Section 23.1, the care, custody and control of Contractor's Work incorporated into the permanent plant shall remain with Contractor until such Work has been finally accepted in writing by the Owner and shall thereupon pass to Owner unless FD/MK or Owner notify Contractor in writing that such care, custody, and control is assumed by FD/MK or Owner at an earlier date. The taking of possession of such Work pursuant to Article 13.0, POSSESSION PRIOR TO COMPLETION, shall not constitute the assumption of care, custody and control of such Work until such time as such Work has either been accepted in writing by Owner or Contractor has been notified as set forth herein.

23.3 Contract revenues representing payments to subcontractors shall not be considered to be earned by Contractor unless and until Contractor has paid the current invoices of such subcontractor. In the event FD/MK determines, in its sole discretion, that Contractor has become insolvent or is in danger of becoming

insolvent, then FD/MK is authorized, but not required, to make direct payment to Contractor's subcontractors with respect to any current or past-due invoices then outstanding. Alternatively, FD/MK may, in its sole discretion, require that contracts between Contractor and any such subcontractor be assigned to Owner or FD/MK, and Contractor hereby authorizes and consents to any such assignment. Owner and FD/MK shall be entitled to full credit against any obligations to Contractor for any payments made to any subcontractor under this Section 23.3, whether made pursuant to assigned subcontracts or otherwise. Title to any materials or equipment for which such direct payment is made shall pass directly from such subcontractor to FD/MK or Owner.

- LABOR AND WORK RULES -

24.0 CONTRACTOR'S PERSONNEL

24.1 At all times during the course of the Work, Contractor shall provide at the jobsite a qualified, competent and responsible supervisor who shall be satisfactory to FD/MK. The supervisor shall have authority to represent Contractor and directions given to him shall be binding on Contractor. Upon FD/MK written request, Contractor shall give the supervisor, in writing, complete authority to act on behalf of, and to bind Contractor in all matters pertaining to the Work and this Contract. Contractor shall furnish FD/MK a copy of the authorization. Contractor shall not transfer or remove any of its supervisory or key personnel from performance of Work without the prior written approval of FD/MK.

24.2 Any employee of Contractor deemed by FD/MK or Owner, in their sole judgment, to be objectionable shall be removed from the jobsite immediately upon FD/MK request and shall be promptly replaced by Contractor at no extra expense to FD/MK or Owner. Contractor shall nevertheless retain all authority and control over its employees, including responsibility for all costs arising from providing reasonable accommodations for its employees.

24.3 If requested by FD/MK, Contractor shall furnish it with the names and addresses of Contractor's subcontractors, field employees of Contractor and its subcontractors, and others who have performed or are performing the Work hereunder.

25.0 LABOR HARMONY

Contractor agrees that all labor employed by it, its agents, and/or subcontractor's for Work on the jobsites shall be in harmony with and be compatible with all other labor used by FD/MK or other Contractors. Whenever Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work. Contractor shall immediately give notice thereof including all relevant information to FD/MK.

26.0 EMPLOYMENT CERTIFICATIONS AND PRACTICES

26.1 Contractor certifies that it has an affirmative action policy ensuring equal employment opportunity without regard to race, color, national origin, sex, age, religion or handicap, that it maintains no employee facilities segregated on the basis of race, color, religion or national origin and that it is not debarred or suspended from being awarded Federal or Federally assisted contracts.

26.2 If applicable to this Contract, the following laws, orders and regulations, as amended, are hereby incorporated by reference: Executive Order 11246; Vietnam Era Veterans Readjustment Act; Rehabilitation Act of 1973; Veterans Compensation, Education and Employment Act; 41 CFR 60-1.4 (Equal Employment Opportunity); 41 CFR 60-250.4 (Veterans Affirmative Action); 41 CFR 60-741.4 (Handicap Affirmative Action); 41 CFR 601.40 (Affirmative Action Plans); 41 CFR 601.7 (EE01 Reports); 41 CFR 61650 (Veterans Employment Reports); 40 U.S. C. 276a (Davis-Bacon Act); 29 CFR 3 (Copeland Regulations).

26.3 Unless otherwise informed in writing by FD/MK, all work performed under this Contract shall comply with FHWA-1273 REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION PROJECTS, including all amendments, rulings, and interpretations.

26.4 Upon request of FD/MK, Contractor will furnish it with a certificate satisfactory in form to FD/MK that goods furnished by Contractor in performance of this Contract were produced in full compliance with the requirements of Sections 6, 7, and 12 of the Fair Labor Standards Act of 1938, as amended, and the regulations and orders of the U.S. Department of Labor issued under Section 14 thereof.

27.0 WORK RULES

Contractor shall comply strictly with FD/MK and Owner's rules governing the conduct of Contractor and Contractor's employees, agents and subcontractors at and about the job-site. Contractor agrees that it shall ensure that its supervisory personnel, employees, agents and subcontractors at the job-site comply strictly with such rules. FD/MK and Owner reserve the right to, from time to time, revise any such rules, and Contractor shall comply fully with such rules as revised in accordance with the foregoing provisions.

- INDEMNIFICATION AND INSURANCE -

28.0 INDEMNITY

Contractor agrees to defend, indemnify and hold harmless FD/MK and Owner, the affiliated companies of each, and all of their directors, officers, employees, agents and representatives, from and against:

28.1 Any claim, demand, cause of action, liability, loss or expense arising by reason of Contractor's actual or asserted failure to comply with any law, ordinance, regulation, rule or order, or with this Contract. This Section 28.1 includes, but is not limited to, fines or penalties by government authorities and claims arising from Contractor's actual or asserted failure to pay taxes.

28.2 Any claim, demand, cause of action, liability, loss or expense arising from actual or asserted violation or infringement of rights in any patent, copyright, proprietary information, trade secret or other property right caused or alleged to be caused by the use or sale of goods, materials, equipment, methods, processes, designs or information, including construction methods, construction equipment and temporary construction facilities, furnished by Contractor or its subcontractors in performance of the Work. Should any goods or services provided by Contractor become, or appear likely to become, the subject of a claim of infringement of a

patent, copyright or other property right, Contractor shall, at FD/MK's option, either procure for FD/MK and Owner the right to continue using such goods or services, replace same with equivalent, non-infringing goods or services, or modify the goods or services so that the use thereof becomes non-infringing, provided that any such modification or replacement is of equal quality and provides equal performance to the infringing goods or services.

28.3 Any claim, demand, cause of action, liability, loss or expense arising from injury to or death of persons (including employees of FD/MK, Owner, Contractor and Contractor's subcontractors) or from damage to or loss of property (including the property of FD/MK or Owner) arising directly or indirectly out of this Contract or out of any acts or omissions of Contractor or its subcontractors. Contractor's defense and indemnity obligations hereunder include claims and damages arising from non-delegable duties of FD/MK or Owner or arising from use by Contractor of construction equipment, tools, scaffolding or facilities furnished to Contractor by FD/MK or Owner.

28.4 Any claim, demand, cause of action, liability, loss or expense for actual or alleged contamination, pollution, or public or private nuisance, arising directly or indirectly out of this Contract or out of any acts or omissions of Contractor, or subcontractors.

28.5 Contractor's indemnity obligations shall apply regardless of whether the party to be indemnified was concurrently negligent, whether actively or passively, excepting only where the injury, loss or damage was caused solely by the negligence or willful misconduct of, or by defects in design furnished by, the party to be indemnified. Contractor's defense and indemnity obligations shall include the duty to reimburse any attorneys' fees and expenses incurred by FD/MK or Owner for legal action to enforce Contractor's indemnity obligations.

28.6 In the event that the indemnity provisions in this Contract are contrary to the law governing this Contract, then the indemnity obligations applicable hereunder shall be construed to be to the fullest extent allowed by applicable law.

28.7 With respect to claims by employees of Contractor or its subcontractors, the indemnity obligations created under this Article 28.0 shall not be limited by the fact of, amount, or type of benefits or compensation payable by or for Contractor, its subcontractors or suppliers under any workers' compensation, disability benefits, or other employee benefits acts or regulations, and Contractor waives any limitation of liability arising from workers' compensation or such other acts of regulations.

28.8 FD/MK shall be entitled to retain from payments otherwise due Contractor such amounts as shall reasonably be considered necessary to satisfy any claims, suits or liens for damages that fall within Contractor's indemnity obligations under this Article 28.0, until such claims suits or liens have been settled and satisfactory evidence to that effect has been furnished to FD/MK.

28.9 Contractor acknowledges specific payment of $10.00 incorporated into the Contract Price as legal consideration for Contractor's indemnity obligations as may be provided in this Contract.

29.0 INSURANCE

29.1 Contractor shall, at its sole cost, obtain and maintain in force insurance of the following types, with limits not less than those set forth below:

29.1.1 Workers' Compensation Insurance, including occupational illness or disease coverage, in accordance with the laws of the nation, state, territory or province having jurisdiction over Contractor's employees and Employer's Liability Insurance with a minimum limit of $1,000,000 per accident and, for bodily injury by disease, $1,000,000 per employee. Contractor shall not utilize occupational accident or health insurance policies, or the equivalent, in lieu of mandatory Workers' Compensation Insurance, or otherwise attempt to opt out of the statutory Workers' Compensation system.

29.1.2 Commercial General Liability Insurance ("Occurrence Form") with a minimum combined single limit of liability of $1,000,000 each occurrence for bodily injury and property damage; with a minimum limit of liability of $1,000,000 each person for personal and advertising injury liability; and a minimum limit of liability of $1,000,000 each occurrence for products/completed operations liability. Such policy shall have a general aggregate limit of not less than $2,000,000, which general aggregate limit will be provided on a per project basis by means of ISO Endorsement CG 25 03 11 85. The products/ completed operations liability coverage shall be maintained in full force and effect for not less than three years following completion of Contractor's Services. The policy shall be endorsed to name FD/MK and Owner, including their respective affiliates, directors and employees, as additional insureds. Such endorsement shall be made upon ISO Endorsement CG 20 10 11 85, "Additional Insured - Owners, Lessees or Contractors (Form B)."

29.1.3 Automobile Liability Insurance covering use of all owned, non-owned and hired automobiles with a minimum combined single limit of liability for bodily injury and property damage of $1,000,000 per occurrence. This policy shall be endorsed to name FD/MK and Owner, including their respective affiliates, directors and employees, as additional insureds.

29.1.4 If Contractor will utilize tools or equipment in the performance of its services under the Contract, Equipment Floater Insurance (Tools and Equipment Insurance) covering physical damage to or loss of all major tools and equipment, construction office trailers and their contents, and vehicles for which Contractor is responsible, throughout the course of the Work.

29.2 Contractor hereby releases FD/MK and Owner, including their respective affiliates, directors and employees, and shall cause Contractor's Insurers to waive their rights of subrogation against such released parties, for losses or claims for bodily injury, property damage or other insured claims arising out of Contractor's performance under the Contract.

29.3 Certificates of Insurance satisfactory in form to FD/MK (ACCORD form or equivalent) shall be supplied to FD/MK evidencing that the insurance required

above is in force, that not less than thirty days written notice will be given to FD/MK prior to any cancellation or restrictive modification of the policies, and that the waivers of subrogation are in force. Contractor shall also provide with its Certificate of Insurance executed copies of the additional insured endorsements and dedicated limits endorsements required in this Article 29.0. At FD/MK's request, Contractor will provide a certified copy of each insurance policy required under this Contract.

29.4 The foregoing insurance coverages shall be primary and non-contributing with respect to any other insurance or self insurance which may be maintained by FD/MK or Owner. Contractor's General and Automobile Liability Insurance policies shall contain a Cross Liability or Severability of Interest clause. The fact that Contractor has obtained the insurance required in this Article shall in no manner lesson nor affect Contractor's other obligations or liabilities set forth in this Contract.

29.5 Builder's Risk Insurance covering loss or damage to materials and equipment furnished by FD/MK or Owner that are to be incorporated into the completed facility shall be provided by FD/MK or Owner. Contractor shall be responsible for the payment of the applicable deductible (which will not exceed $5,000 per occurrence) for each loss to such materials or equipment which are in the care, custody and control of Contractor.

~~29A. Alternate Contractor Controlled Insurance Program Provisions. If FD/MK elects at its discretion to implement a Contractor Controlled Insurance Program, the following provisions shall apply and be substituted for Article 29 hereof.~~

~~FD/MK maintains a Contractor Controlled Insurance Program ("CCIP") which is described in that document known as the CCIP Insurance Manual covering operations conducted at designated project sites. Contractors and subcontractors designated by FD/MK to participate in the CCIP (CCIP Participants) will be provided insurance coverage under this program. CCIP Participants will receive a copy of the CCIP Insurance Manual at the time they are enrolled in the program. The essential insurance requirements listed below will be further detailed in the CCIP Insurance Manual and, should there be a conflict in such requirements, the terms of this Agreement shall prevail.~~

~~1. Contractor Provided Insurance. Contractor agrees to procure and maintain all insurance required below, including insurance covering the obligations assumed by Contractor under Sections 28.3 of the General Terms. Such insurance shall be primary with respect to any other similar insurance available to FD/MK or Owner notwithstanding the provisions of such insurance, and with the exception of Workers' Compensation and Employer's Liability Insurance shall name FD/MK and Owner as additional insureds. Contractor shall furnish to FD/MK certificates of insurance and additional insured endorsements evidencing the specified insurance coverages are in force prior to beginning Work and, if required by FD/MK, copies of the insurance policies themselves. Certificates of Insurance shall provide that at least thirty (30) days prior written notice of any policy cancellation or material change in coverage be given to FD/MK and Owner.~~

~~(a) Workers' Compensation and Employer's Liability Insurance, for operations conducted away from the Project Site as required by~~

~~the Law of the State(s) exercising jurisdiction over the workplace and Employer's Liability Insurance with limits of $1,000,000 each accident, $1,000,000 disease - policy limit and $1,000,000 disease - each employee.~~

~~(b) Commercial General Liability Insurance, under which FD/MK and Owner shall be named as additional insureds, covering bodily injury and property damage arising from operations performed by Contractor at premises or locations other than the Project Site, including contractual liability covering the obligations assumed in this Agreement, with a combined single limit of liability not less than $1,000,000 per occurrence for bodily injury and property damage.~~

~~(c) Comprehensive Automobile Liability Insurance, covering all owned and non-owned automobiles or trucks used by or on behalf of Contractor, in connection with the Work, with combined single limits not less than $1,000,000 per occurrence for bodily injury and property damage.~~

~~Contractor shall likewise require subcontractors, if any, to maintain all such insurance as set forth above, and to provide certificates of insurance, additional insured endorsements, and if, requested, certified copies of the policies themselves, to FD/MK. The failure of the Contractor to comply with the requirements of this paragraph prior to the commencement of the Work shall be grounds for cancellation of the Contract.~~

~~2. FD/MK Provided Insurance.~~

~~(a) At FD/MK's cost, FD/MK shall procure and maintain for the benefit of FD/MK, Owner, and CCIP Participants while engaged in Work at the Project Site the insurance specified below:~~

~~(i) Worker's Compensation and Employer's Liability Insurance, statutory coverage as required by the Law of the State(s) exercising jurisdiction over the project site and Employers' Liability Insurance with limits of $1,000,000 each accident, $1,000,000 disease-policy limit and $1,000,000 disease-each employee~~

~~(ii) Commercial General Liability Insurance covering personal injury, bodily injury and property damage arising from the Work, with a combined single limit of liability of not less than $ 1,000,000 per occurrence, $ 2,000,000 general aggregate and $2,000,000products-completed operations aggregate including:~~

~~"Broad Form Property Damage" coverage without exclusions for "explosion, collapse and underground" exposures,~~

~~contractual liability coverage,~~

~~products and completed operations liability coverage for a term extending two (2) years after the completion of Contractor's Work,~~

~~contractor's protective liability,~~

~~railroad protective liability, and~~

~~(iii) Excess Liability Insurance providing coverage limits excess of (i) Employer's Liability and (ii) Commercial General Liability, with a combined single limit of liability of not less than $24,000,000 per occurrence for bodily injury and property damage subject, however, to an aggregate limit for all insureds equal to the per occurrence limit.~~

~~(iv) "All Risk" Builder's Risk Insurance covering the value of property to be incorporated into the completed Work while such property is in the course of inland transit to the Project Site, while in temporary storage off site, while awaiting installation at the Project Site and while in the course of construction until transfer of care, custody and control of the completed Work to Owner. Coverage shall be in an amount, subject to specified policy exclusions and applicable deductibles, sufficient to cover the replacement value of the Work.~~

~~The builder's risk insurance provided under part (iv) above shall not cover Contractor's tools, equipment, personal property or other facilities that are not to become part of the completed Work. Contractor shall be responsible for builder's risk insurance deductible payments of $5,000 per occurrence with respect to losses caused by or resulting from the negligent acts or omissions of Contractor or its subcontractor's. Should FD/MK secure a higher deductible, the risk on the portion over the amount specified shall be FD/MK's. Contractor shall pay FD/MK for any loss not covered by such insurance to the extent such loss is the result of Contractor's intentional, gross or willful negligent act or failure to act.~~

~~(v) Open Marine Cargo Insurance covering equipment and materialsto be incorporated into the Work while such property is in the course of transit to the Project Site.~~

~~(b) FD/MK, Owner and all CCIP Participants shall be named as insureds on all of the policies referred to in 2.(a), (i), (ii), (iii) (iv) and (v) above and such insurance shall be primary with respect to the work performed by CCIP Participants at the Project Site. FD/MK shall be the loss payee with respect to the insurance described in 2.a (iv) and (v) above.~~

~~(c) The insurance referred to in the foregoing subparagraphs 2.a. (i), (ii), (iii) and (iv) shall cover all work being performed by CCIP Participants at the Project Site. Insurance covering work~~

~~performed away from the Project Site shall remain the responsibility of Contractor and its subcontractors.~~

~~(d) FD/MK may, upon 60 days written notice to Contractor, require Contractor to secure and maintain the insurance described in this Section 29 A.2 (i), (ii) and (iii), and to cause its subcontractors to do likewise.~~

~~3. General Provisions.~~

~~(a) All insurance provided by Contractor under this Article 29A shall include a waiver of subrogation by the insurers in favor of FD/MK and Owner and all insurance provided by FD/MK under this Article 29A shall include a wavier of subrogation by the insurers in favor of Contractor and its subcontractors.~~

~~(b) Contractor and subcontractors designated to participate in the CCIP shall eliminate from their contract price and invoices the cost of all insurance premiums, self-insured retentions and deductibles for coverages which are similar to or which duplicate the coverages provided CCIP Participantsunder the CCIP. Said insurance costs have been identified on the "Contractor CCIP Questionnaire" completed by Contractor and its subcontractors. FD/MK reserves the right to audit Contractor's andits subcontractors' records and insurance policies to confirm that no charges have been made for these insurance coverages.~~

~~(c) The CCIP is not intended to provide all the insurance coverages that may be required to protect the individual interests of all CCIP Participants. Contractors and subcontractors should review their insurance needs with their professional insurance agents, brokers or consultants to determine if other coverages should be maintained. However, FD/MK will not pay for the cost of any insurance coverage not required to be provided by Contractors or subcontractors under this agreement.~~

30.0 BONDS

Contractor shall obtain payment and performance bonds, each in an amount equal to 100% of the Contract Price. The bonds shall be written on forms satisfactory to FD/MK. Contractor's sureties shall be only those approved by the Department of Treasury, as indicated in Circular 570, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies."

- WORK CONDITIONS -

31.0 CONTRACTUAL RELATIONSHIP

Contractor represents that it is fully experienced and properly qualified to perform the class of Work provided for herein, and that it is properly equipped, organized and financed to perform such Work. Contractor represents that at the time of submission of its quotation for performance of the Work, it was properly licensed and qualified to do business in all governmental jurisdictions in which the Work is to be performed. Upon written request by FD/MK, Contractor shall furnish to it such evidence as FD/MK may require relating to the Contractor's ability to fully perform this Contract. Nothing

contained in this Contract or any subcontract awarded by Contractor shall create any contractual relationship between any subcontractor and FD/MK or Owner. Contractor agrees that Contractor is an independent contractor and an employer subject to all applicable unemployment compensation, occupational safety and health, workers' compensation, or similar statutes so as to relieve FD/MK of any responsibility or liability for treating Contractor's employees as employees of FD/MK for the purpose of their safety or of keeping records, making reports or paying of any payroll taxes or contribution; and Contractor agrees to defend, indemnify and hold FD/MK harmless and reimburse it for any expense or liability incurred under said statutes in connection with employees of Contractor, including a sum equal to any unemployment benefits paid to those who were Contractor's employees, where such benefit payments are charged to FD/MK under any merit plan or to FD/MK reserve account pursuant to any statute. The Contractor further agrees, as regards the items set forth below and for Work under this Contract, that it will keep and have available all necessary records and make all payments, reports, collections and deductions and otherwise do any and all things so as to fully comply with all federal, state and local laws, ordinances and regulations as they affect performance of this Contract, so as to fully relieve and protect FD/MK and Owner from any and all responsibility or liability therefore or in regard thereto: (1) the production, purchase and sale, furnishing and delivering, pricing, and use or consumption of materials, supplies and equipment; (2) the hire, tenure or conditions of employment of employees and their hours of work and rates of the payment of their work, and (3) the keeping of records, making of reports, and the payment, collection and/or deduction of federal, state, commonwealth and local taxes, contributions, pension funds, welfare funds, or similar assessments.

32.0 PERMITS AND LICENSES

Contractor shall promptly apply for and procure without additional compensation all permits (except for such permits as may be specifically set forth as FD/MK responsibility elsewhere in this Contract), certificates and licenses required by governmental authorities having jurisdiction over the Work, Contractor or the location of the Work.

33.0 INDEPENDENT CONTRACTOR

Nothing in this Contract shall be deemed to represent that Contractor, or any of Contractor's employees or agents, are the agents, representatives or employees of FD/MK or Owner. Contractor shall be an independent contractor and shall have responsibility for and control over the details and means for performing the Work, provided that Contractor is in compliance with the terms of this Contract. Anything in this Contract which may appear to give FD/MK the right to direct Contractor as to the details of the performance of the Work or to exercise a measure of control over Contractor, shall mean that Contractor shall follow the desires of FD/MK only as to the intended results of the Work.

34.0 CONFIDENTIAL INFORMATION

Drawings, specifications, and other information obtained by Contractor from FD/MK or Owner in connection with the Work shall be held in confidence by Contractor and shall not be disclosed to third parties or used by Contractor for any purpose other than for the performance of Work or as authorized in writing by FD/MK. All such documents furnished by FD/MK or Owner to Contractor shall remain their property, and upon completion of the Work Contractor shall, as requested by FD/MK, either destroy or return such documents including any copies thereof.

35.0 PUBLICITY

Contractor shall not make news releases, publicize or issue advertising pertaining to the Work or this Contract without first obtaining the written approval of FD/MK.

36.0 OWNERSHIP AND USE OF DRAWINGS

Drawings, technical documents and data prepared or developed by Contractor and furnished to FD/MK in performance of the Work shall be the property of FD/MK and may be used by FD/MK or Owner without restriction.

37.0 ASSIGNMENTS

Contractor shall not assign this Contract wholly or in part, voluntarily, by operation of law, or otherwise without first obtaining the written consent of FD/MK. Any assignment of this Contract in violation of the foregoing shall be, at the option of FD/MK, void. Subject to the foregoing, the provisions of this Contract shall extend to the benefit of and be binding upon the successors and assigns of the parties hereto. FD/MK reserves the right at its sole option to assign this Contract to Owner, Owner's designated agent, or to FD/MK affiliates.

38.0 LAWS AND REGULATIONS

38.1 Contractor shall comply strictly with local, municipal, state, federal and governmental laws, orders, codes and regulations applicable to Contractor's operations in the performance of the Work hereunder.

38.2 Contractor shall not, under any circumstances apply to or enter into negotiations with any governmental authority or agency for acceptance of variations from or revisions to safety or health, or air, water or noise pollution laws or regulations relating to this Contract or to the performance thereof, without FD/MK and Owner's prior written approval.

38.3 Contractor shall not, under any circumstances, cause or permit, in connection with the Work to be performed hereunder, the discharge, emission or release of any hazardous substance and/or waste, pollutant, contaminant or other substance in violation of any applicable laws, rules or regulations which are now or hereafter promulgated by any governmental authorities having jurisdiction over the Work. Contractor shall comply with all legal regulatory requirements applicable to the Work performed under this Contract and shall be responsible for compliance with all hazardous waste, health and safety, notice, training, and environmental protection laws, rules, regulations and requirements. "Hazardous waste" includes all substances which are or may be identified as such in 40 C.F.R. Part 261 or other applicable laws or regulations. Contractor shall submit to FD/MK material safety data sheets (OSHA Form 20) as required by applicable regulation. As an inducement to award of this Contract, Contractor warrants full compliance and that it will adhere to all applicable project hazardous waste procedures and if necessary, obtain or arrange for at its expense all identification numbers, permits, applications and other things required in connection with the activities under this Contract. Contractor agrees that it will not store any hazardous wastes at the job-site for periods in excess of ninety (90) days or in violation of the applicable site storage limitations imposed by law, the Owner or FD/MK, whichever shall be more restrictive. Contractor further agrees that it will

not permit any accumulation in excess of the small quantity generator exclusion of 40 C.F.R. Part 261 or other applicable law, as amended. Contractor agrees to take, at its expense all actions necessary to protect third parties, including without limitation, employees and agents of Owner and FD/MK from any exposure to, or hazards of, hazardous and/or toxic wastes or substances generated or utilized in Contractor's operations. Contractor agrees to report to the appropriate governmental agencies all discharges, releases and spills of hazardous substances and/or wastes required to be reported by law and to immediately notify Owner and FD/MK of same.

38.4 This Contract shall be subject to the law and jurisdiction of the Commonwealth of Virginia, unless expressly designated otherwise within this Contract.

39.0 EMERGENCY MEDICAL SERVICES

FD/MK or Owner may furnish emergency medical treatment or related services to Contractor's employees in the case of job connected illness or injury occurring at the job-site. In the event that such services are available, all such treatment or services, if any, are furnished on a Good Samaritan basis and not as a contractual obligation. In consideration of any such treatment or services, Contractor acknowledges that it assumes full and complete responsibility and liability for all injuries and damages to any of its employees arising out of or allegedly attributable in any way thereto. Nothing herein contained shall be construed as imposing any duty upon FD/MK or Owner to provide facilities necessary to furnish emergency medical treatment or related services to Contractor's employees or to make such facilities and/or services available to Contractor's employees.

- DOCUMENTATION, LIENS AND OFFSETS -

40.0 DOCUMENTATION AND RIGHT OF AUDIT

40.1 Where Contractor's Invoice includes compensation for Work performed at a unit price, Contractor shall submit its determination of units of Work performed, determined in accordance with the provisions of this Contract, and substantiated by documents satisfactory in form and content to FD/MK. Upon verification by FD/MK of said documents, FD/MK will advise Contractor in writing of either acceptance of Contractor's determination of units or of FD/MK determination of such units. If Contractor believes that FD/MK has incorrectly determined the units of Work performed, Contractor shall comply with the provisions of Article 18.0, CLAIMS.

40.2 Where Contractor's invoice includes compensation for Work performed for a reimbursable Contract Price, all costs, expenses and other amounts so invoiced shall be substantiated and supported by equipment time slips, paid invoices, time sheets, receipts and other documents satisfactory to and verified by FD/MK.

40.3 Contractor shall maintain for a period of two (2) years after final payment under this Contract, all records and accounts pertaining to Work performed by Contractor under this Contract for a unit price, a reimbursable price, or otherwise authorized in writing by FD/MK for performance on a reimbursable basis. FD/MK and/or Owner shall have the right to audit, copy and inspect said records and accounts at all reasonable times during the course of such Work and for the

above two (2) year period for the purpose of verifying units furnished and/or costs incurred, as applicable.

41.0 LIENS

41.1 To the full extent permitted by applicable law, Contractor hereby waives and releases any and all rights of mechanic's lien and similar rights for payment for services, labor, equipment, or materials furnished by Contractor in performance of the Work and granted by law to persons supplying materials, equipment, services and other things of value to approve or modify land or structures hereon, which Contractor may have against Owner's premises, property belonging to FD/MK and Owner, or to either of them, or funds payable by Owner to FD/MK.

41.2 Contractor shall at all times promptly pay for all services, materials, equipment and labor used or furnished by Contractor in the performance of the Work under this Contract and shall, to the fullest extent allowed by law, at its expense keep Owner's premises and all property belonging to FD/MK and Owner, or to either of them, free and clear of any and all of the above mentioned liens and rights of lien arising out of services, labor, equipment or materials furnished by Contractor or its employees, materialmen or subcontractors in the performance of the Work. If Contractor fails to release and discharge any lien or threatened lien against Owner's premises or the property of FD/MK and Owner, or of either of them, arising out of performance of the Work within five (5) working days after receipt of written notice from FD/MK to remove such claim of lien, FD/MK may, at its option, discharge or release the claim of lien or otherwise deal with the lien claimant, and Contractor shall pay FD/MK any and all costs and expenses of FD/MK in so doing, including reasonable attorneys' fees incurred by FD/MK.

42.0 RIGHT TO OFFSET

FD/MK, without waiver or limitation of any rights or remedies of FD/MK or Owner, shall be entitled from time to time to deduct from any amounts due or owing by FD/MK to Contractor in connection with this Contract (or any other contract with FD/MK), any and all amounts owed by Contractor to FD/MK or Owner in connection with this Contract.

43.0 FINAL PAYMENT CERTIFICATION AND RELEASE

FD/MK shall not be obligated to make final payment to Contractor until Contractor has delivered to FD/MK a certificate and release satisfactory to FD/MK that Contractor has fully performed under this Contract and that all claims of Contractor for the Work are satisfied upon the making of such final payment, that no property of Owner or property used in connection with the Work is subject to any unsatisfied lien or claim as a result of the performance of the Work, that all rights of lien against Owner's property in connection with the Work are released (including without limitation, if FD/MK requests, releases of lien satisfactory in form to FD/MK executed by all persons who by reason of furnishing material, labor or other services to Contractor for the Work or potential lienors against Owner's property), and that Contractor has paid in full all outstanding obligations against the Work.

- GENERAL -

44.0 ARBITRATION OPTION

In the event that FD/MK is required to arbitrate a dispute with a third party, which dispute arises out of or is directly related to this Contract, Contractor agrees to join in such arbitration proceeding as FD/MK may direct and shall submit to such jurisdiction and be finally bound by the judgment rendered in accordance with the arbitration rules as may be established therein.

45.0 VALIDITY OF PROVISIONS

In the event any section, or any part or portion of any section of this Contract shall be held to be invalid, void or otherwise unenforceable, such holding shall not affect the remaining part or portions of that section, or any other section hereof.

46.0 WAIVER

FD/MK's failure to insist on performance of any term, condition, or instruction, or to exercise any right or privilege included in this Contract, or its waiver of any breach, shall not thereafter waive any such term, condition, instruction, and/or any right or privilege No asserted waiver of any right or benefit by FD/MK shall be valid unless such waiver is in writing, signed by FD/MK, supported by consideration and specifies the extent and nature of the rights or benefits being waived.

47.0 GRATUITIES

47.1 Contractor, its employees, agents or representatives shall not offer or give to an officer, official or employee of FD/MK or Owner, gifts, entertainment, payments, loans or other gratuities to influence the award of a contract or obtain favorable treatment under a contract.

47.2 Violation of this Article may be deemed by FD/MK to be a material breach of this Contract and any other contract with FD/MK and subject all contracts with Contractor to Termination for Default, as well as any other remedies at law or in equity.

48.0 INTERPRETATION

Headings and titles of Articles, Sections, paragraphs or other subparts of this Contract are for convenience of reference only and shall not be considered in interpreting the text of this Contract. No provision in this Contract is to be interpreted for or against any party because that party or its counsel drafted such provision.

49.0 SURVIVAL

The provisions of this Contract which by their nature are intended to survive the termination, cancellation, completion or expiration of this Contract shall continue as valid and enforceable obligations of the parties notwithstanding any such termination, cancellation, completion or expiration.

50.0 TRIAL

Contractor hereby knowingly, voluntarily and intentionally waives (to the extent permitted by applicable law) any right it may have to a trial by jury of any dispute arising under or relating in any way to this Contract and agrees that any such dispute may, at FD/MK's option, be tried before a judge sitting without a jury.

51.0 DRUG SCREENING

Contractor agrees to provide for Work on the property of FD/MK or Owner, only those personnel who understand the requirement of this Article and who will comply. Contractor agrees that such personnel shall be chemically screened, at its expense. Prior to having employees perform Work, Contractor shall provide documentation that employees assigned for more than two (2) weeks have undergone and passed a screening test for illegal/unauthorized substances not more than thirty (30) days prior to their initial assignment for Work on FD/MK's or Owner's property. Initial screening and confirmation levels will be developed at a later date.

END OF PART III – GENERAL TERMS - STANDARD