STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
Bureau of Turnpikes

ORT Toll System RFP

RFP 2016-041

RFP Issued	May 12th, 2016
Contractor Conference	8:00 AM (EDT) June 1st, 2016
Location	John O. Morton Building (JOMB) 7 Hazen Drive Concord NH 03301 Room 114
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Contract Type	Firm Fixed Price
Proposals Due	2:30 PM, July 28, 2016

Table of Contents

1 Introduction 20
2 Contract Award 20
2.1 Non-Exclusive Contract 20
2.2 Award 20
2.3 Contract Term 20
2.4 Order of Precedence 21
2.5 Subcontractors 21
2.6 High Level Scope of Work 22
2.7 Schedule of Events 22
3 Terms and Definitions 22
4 System, Work, Requirement and Deliverables 23
4.1 Software 23
4.2 System 23
4.2.1 Work, Services and Requirements 23
4.3 Technical Requirements 23
4.3.1 Appendix B: Minimum Standards for Proposal Consideration. 23
4.3.2 Appendix C: Requirements and Deliverables. 23
4.3.3 Appendix D: Topics for Mandatory Narrative Responses. 23
4.3.4 Appendix E: Standards for Describing Contractor Qualifications. 24
4.3.5 Appendix F: Pricing Sheets. 24
4.3.6 Appendix G: Security and Certificates. 24
4.3.7 Appendix H: State of New Hampshire Terms and Conditions. 24
4.3.8 Appendix I: Terms and Definitions. 24
4.3.9 Appendix J: Forms. 24
4.3.10 Appendix K: Inventory List. 24
4.3.11 Appendix L: Interface Control Documents (ICD's). 24
5 Instructions 24
5.1 Proposal Submission, Deadline, and Location Instructions 24
5.2 Proposal Inquiries 25

5.2.1 Restriction of Contact with Agency Employees 26
5.3 Contractor Conference 26
5.3.1 Contractor Site Tour 27
5.4 Alteration of RFP 27
5.5 RFP Addendum 27
5.6 Non-Collusion 27
5.7 Validity of Proposal 27
5.8 Property of the Agency 27
5.9 Confidentiality of a Proposal 28
5.10 Security 28
5.11 Public Disclosure 28
5.12 Non-Commitment 29
5.13 Proposal Preparation Cost 29
5.14 Oral Presentations/Interviews and Discussion 29
5.15 Required Contract Terms and Conditions 29
5.16 Proposal Submission Requirements 29
5.17 Proposal Format 29
5.18 Proposal Organization 30
5.19 Proposal Content 30
5.19.1 Cover Page 31
5.19.2 Proposal Transmittal Letter 31
5.19.3 Table of Contents 31
5.19.4 Section I: Executive Summary 31
5.19.5 Section II: Glossary of Terms and Abbreviations 31
5.19.6 Section III: Responses to Requirements and Deliverables 31
5.19.7 Section IV: Narrative Responses 32
5.19.8 Section V: Corporate Qualifications 32
5.19.9 Section VI: Qualifications of Key Staff 32
5.19.10 Section VII: Forms 32
5.19.11 Section VIII: Price Proposal 32

5.19.12 Section IX: Copy of Addendum and Original RFP 32
5.19.13 Section X: Attachments 32
5.19.14 Attachment A: Project Organization Charts 33
5.19.15 Attachment B: Preliminary Project Schedule 33
6 PROPOSAL EVALUATION PROCESS 33
6.1 Scoring Proposals 33
6.2 Rights of the Agency in Evaluating Proposals 33
6.3 Planned Evaluations 34
6.3.1 Initial Screening 34
6.3.2 Preliminary Technical Scoring of Proposals and Reference and Background Checks 34
6.3.3 Oral Interviews and Product Demonstrations 34
6.3.4 Price Proposal Review – Scoring Detail 35
6.3.5 Best and Final Offer (BAFO) 35
6.3.6 Final Selection 36
6.3.7 Procedure After Selection 36
6.4 Proposal Evaluations 36
6.4.1 Calculation of Technical Scores 36
6.4.2 Scoring of the Proposed ORT System Design and Technical Approach 36
6.4.3 Scoring of Contractor's Ability to Execute and Meet the Project Schedule 37
6.4.4 Scoring of Contractor's System Maintenance and Warranty 38
6.4.5 Scoring of Contractor Qualification, Project Team, Capabilities and References 38
6.4.6 Calculation of the Price Proposal Score 39
APPENDIX A: BACKGROUND INFORMATION 40
A. New Hampshire Department of Transportation (NHDOT) 40
A-1.1 Department of Information Technology and Technology 41
A-1.2 Technical Architecture 41
A-1.3 Future Systems Environment 41
A-1.3.1 Description of Existing Turnpike System 41
A-1.3.2 Vehicle Classification 42
A-1.3.3 Existing ORT System Description 42

A-1.3.4 NHDOT Statistics 44
A-1.3.5 Current Interfaces 44
A-2 Related Documents Required 44
A-3 Agency Project Team 45
A-3.1 Project Sponsor 45
A-3.2 Contract Manager 45
A-3.3 Agency Project Manager 45
B-1 Proposal Submission 46
B-2 Compliance with Requirements 46
B-3 Contractor Experience 46
B-4 The Contractor key staff must have the following experience: 46
C-1 Scope of Work 48
C-1.1 Project Goals 48
C-1.2 Definition & Understanding of the Term Configurable 49
C-1.3 Project Overview 49
C-1.3.1 Existing ORT System Maintenance Requirements 51
C-1.3.2 Existing Software and Firmware Maintenance 52
C-1.4 Project Schedule, Phases and Milestones 52
C-1.4.1 Project Phases 52
C-1.5 General Requirements 53
C-1.6 Legal Requirements 54
C-1.6.1 FCC License 54
C-1.7 Interoperability Requirements 54
C-1.8 General Lane and Plaza Modifications Description 54
C-1.9 Scope of Work 55
C-1.9.1 Remove Existing Infrastructure 55
C-1.9.2 Integrate/Reuse Existing Infrastructure 55
C-1.9.3 Furnish New Infrastructure 56
C-1.10 Scope of Maintenance for System 56
C-1.11 Responsibility Matrix 56

C-1.12 Pricing Framework 56
C-1.13 Project Deliverables 56
C-1.13.1 General 56
C-1.14 Deliverable Payment Schedule 60
C-2 Functional Requirements 62
C-2.1 ORT Toll Collection System Hardware 62
C-2.1.1 General Requirements 62
C-2.1.2 Maintainability 62
C-2.1.3 Diagnostics 63
C-2.2 Customized Hardware 63
C-2.2.1 Equipment and Computer Enclosures 64
C-2.2.2 Environmental 64
C-2.2.3 Assembly 65
C-2.2.4 Bill of Materials (BOM) 65
C-2.2.5 Asset Inventory 65
C-2.2.6 Spare Parts 66
C-2.2.7 Hardware Warranty 66
C-2.2.8 ORT Toll Collection System Software 66
C-2.3 ORT Toll Collection System Security and Access Control Requirements 67
C-2.3.1 Enclosure Access 67
C-2.3.2 ORT Toll Collection System Lock Requirements 67
C-2.3.3 ORT Toll Collection System Software Security 67
C-2.4 Toll Collection In-lane Subsystems 67
C-2.4.1 Automatic Vehicle Identification (AVI) System 67
C-2.4.2 Automatic Vehicle Detection and Classification System (AVDC) 68
C-2.4.3 Violation Enforcement System (VES) 69
C-2.4.4 VES Cameras and Associated In-lane Equipment 70
C-2.4.5 Toll Zone Controller 71
C-2.5 Optical Character Recognition - License Place Processing Functionality 80
C-2.6 Roadway Pavement, Toll Gantries and Equipment Shelter Design Support 80

C-2.6.1 General Design Requirements 80
C-2.6.2 Toll Gantries 81
C-2.6.3 Roadway Pavement 81
C-2.7 Digital Video Audit System (DVAS) 81
C-2.7.1 DVAS Architecture and Network Video Management Server 82
C-2.7.2 DVAS Cameras 82
C-2.7.3 DVAS Audit Application 82
C-2.8 ORT Plaza/Host System Functions 83
C-2.8.1 ORT Plaza/Host System Hardware 83
C-2.8.2 General ORT Plaza/Host Software Requirements 88
C-2.8.3 ORT Plaza/Host Software Functionality 88
C-2.8.4 ORT Plaza/Host System Application Software 90
C-2.8.5 Maintenance On-line Management System (MOMS) 97
C-2.8.6 Disaster Recovery and Business Continuity 98
C-2.9 Performance Requirements 99
C-2.9.1 Accuracy Requirements 99
C-2.9.2 Transponder Read Accuracy 100
C-2.9.3 Transponder Reporting Accuracy 100
C-2.9.4 Vehicle Detection Accuracy 100
C-2.9.5 Vehicle Classification Accuracy 100
C-2.9.6 Transponder Association Accuracy 101
C-2.9.7 Image Capture Reporting Accuracy 101
C-2.9.8 Image Quality Reporting Accuracy 101
C-2.9.9 Transaction Processing Requirements 101
C-2.9.10 False Read Processing 101
C-2.9.11 Image Transmission Requirements 102
C-2.10 Mean Time Between Failure (MTBF) 102
C-2.11 Availability 102
C-2.12 Chargeable and Non-Chargeable Failures 103
C-2.12.1 Chargeable Failures 103

C-2.12.2 Non-Chargeable Failures 104
C-3 System Schedule and Transition 104
C-3.1 ORT System Implementation 104
C-3.2 General Schedule Requirement and Associated Penalties 104
C-3.2.1 Master Test Plan 105
C-3.2.2 ORT Lanes Deployment 105
C-3.3 Transition to Open Road Toll Lanes 105
C-4 Project Delivery 105
C-4.1 Project Management Plan 105
C-5 Installation Requirements 105
C-5.1 Installation Program 105
C-5.1.1 Installation Plan 105
C-5.1.2 Installation and Construction Coordination and Meetings 106
C-5.2 Installation Scope of Work and Requirements 107
C-5.2.1 Compliance to Standards 107
C-5.2.2 In-Lane Toll System Installation Requirements 108
C-5.2.3 ORT Host CPS Installation 111
C-5.3 Design and Documentation During Construction and Installation 111
C-5.3.1 Engineering Design 111
C-5.3.2 Installation Design and Drawings 111
C-5.3.3 As-built Drawings/Documents 112
C-6 Testing Requirements and System Acceptance 112
C-6.1 Overview 112
C-6.2 General Testing Requirements 113
C-6.3 ORT System/Existing Central Lane Host and/or E-ZPass CSC Interface Testing 113
C-6.4 Factory Acceptance Test (FAT) 114
C-6.4.1 FAT Travel Costs 114
C-6.4.2 Hardware Production Testing 115
C-6.4.3 Functionality Testing 115
C-6.5 On-site First Installation Test 116

C-6.5.1 ORT Lane Operations and Functional Test 117
C-6.5.2 ORT Host CPS 117
C-6.5.3 AVI Interoperability 118
C-6.5.4 Disaster Recovery Test 118
C-6.6 Commissioning Test 118
C-6.7 Extended Operational Test (EOT) 118
C-6.7.1 Security Test 119
C-6.8 ORT Project Acceptance 120
C-6.8.1 Final Provisional Project Acceptance 120
C-6.8.2 Final Project Acceptance 121
C-7 Project Management System 121
C-7.1 Overview 121
C-7.2 Project Schedule 121
C-7.3 Monthly Report and Progress Meeting 121
C-7.4 Project Meetings 122
C-7.5 Staffing 122
C-7.5.1 Key Personnel 123
C-7.5.2 Staffing Plan 123
C-7.6 Project Management Plan 123
C-7.6.1 Deliverables 125
C-7.6.2 Quality Assurance Plan 125
C-7.7 Software Design and Development Requirements 126
C-7.7.1 System Requirements Review (SRR) 126
C-7.7.2 System Detailed Design Review (SDDR) and Business Rules Development 126
C-7.7.3 Software Development and Walkthrough 126
C-7.8 Documentation 126
C-7.8.1 Document Delivery and Control 127
C-7.8.8 Third Party Documentation 131
C-7.8.8.1 Third Party Software Documentation 132
C-7.8.9 As-Built Documentation 134

C-7.9 Quality Assurance Program and Quality Control 134
C-7.9.1 Configuration Management System 135
C-7.9.2 Change Control Process 135
C-7.9.3 Records 135
C-7.9.4 Control of Purchase 135
C-7.9.5 Inspection and Verification 135
C-7.9.6 Handling, Storage and Delivery 136
C-7.9.7 Inspection at Subcontractor and Contractor Facilities 136
C-7.9.8 Access to/Inspection of Contractor's Facilities 136
C-7.10 Training 136
C-7.10.1 Overview of Training Program 136
C-7.10.2 Training Plan 137
C-7.10.3 Training Requirements 137
C-7.10.4 Training Facilities 138
C-7.10.5 Scheduling and Preparation for Training 138
C-7.10.6 Training Materials 139
C-8 Maintenance Scope of Work 140
C-8.1 General Description of Maintenance and Software Support Services 140
C-8.2 ORT System Maintenance and Software Continuous Support Services 140
C-8.2.1 Summary Scope of Work 140
C-8.2.2 Maintenance and Software Support Services/Requirements 141
C-8.3 Warranty Program 144
C-8.3.1 Hardware System Warranty 144
C-8.3.2 Software Warranty 144
C-8.3.3 Third Party Warranties 145
C-8.3.4 Warranty Obligations 145
C-8.4 Maintenance Support 146
C-8.5 Maintenance Plan 146
C-8.6 Maintenance Requirements 147
C-8.6.1 Maintenance Coverage and Response Times 147

C-8.6.2 Maintenance On-Line Management System (MOMS) 148
C-8.6.3 Preventive Maintenance 151
C-8.6.4 Predictive Maintenance 152
C-8.6.5 Corrective Maintenance 152
C-8.6.6 Upgrades and Enhancements 152
C-8.6.7 Notifications 153
C-8.6.8 Recording of Maintenance Activities 153
C-8.7 Spare Parts 154
C-8.7.1 Spare Part Inventory and Tracking 154
C-8.7.2 Procurement and Control of Spare Parts 155
C-8.7.3 Inventory Management 155
C-8.8 Audits 156
C-8.9 Cooperation with Other Contractors and Providers 156
C-8.10 Emergency Response Management 156
C-8.11 Incident and Revenue Loss Reporting 157
C-8.12 Maintenance Staffing, Materials and Training 157
C-8.12.1 Maintenance Staffing Requirements 157
C-8.12.2 Tools and Materials 158
C-8.12.3 Personnel Training 158
C-8.12.4 Training Materials and Ongoing Education 159
C-8.12.5 Training Program 159
C-8.12.6 Training Records 160
C-8.13 Safety 160
C-8.14 Maintenance and Protection of Traffic 160
C-8.15 Reporting Requirements 161
C-8.15.1 Field and Shop Maintenance Records 161
C-8.16 On-Site Documentation 161
C-8.17 Maintenance Performance Requirements 162
C-8.17.1 Maintenance Coverage and Response Times 162
C-8.17.2 Performance Reviews 163

C-8.17.3 Required Performance Measures and Liquidated Damages Summary 163
C-8.17.4 Detailed Description of Performance Liquidated Damages 165
C-8.17.5 Annual ORT System Certification 167
C-8.18 Security 167
C-8.18.1 Services and Work 167
C-8.19 Confidentiality 168
C-8.20 Data Migration 168
C-8.20.1 Legacy System Data Migration Support 168
C-8.20.2 Data Migration Plan 168
C-8.20.3 Data Migration Management 169
C-8.20.4 Data Migration Team 169
C-8.20.5 Migration Approach 170
C-8.20.6 Data Migration Required Deliverables 170
C-8.20.7 Data Migration Tasks 171
C-9 Information Technology Requirements 173
C-9.1 Operations 173
C-9.1.1 Secure Hosting Environment 173
C-9.1.2 State Access 173
C-9.1.3 Third Party Access 173
C-9.1.4 Browser Version 174
C-9.1.5 Internet Connectivity at the State 174
C-9.1.6 State Internet Service Provider 174
C-9.1.7 Class A Data Center 174
C-9.1.8 Data Center Air Conditioning 174
C-9.1.9 Data Center Humidity 174
C-9.1.10 Data Center Back-Up Power 174
C-9.1.11 Data Center Generator 174
C-9.1.12 Data Center Floor 175
C-9.1.13 Data Center Fire Protection System 175
C-9.1.14 Data Center Physical Security 175

C-9.1.15 Monitoring of Applications and Servers 175
C-9.1.16 Management of Databases and Services 175
C-9.1.17 Server Patches 175
C-9.1.18 Monitoring System, Security and Application Logs 175
C-9.1.19 Sharing Data Resources 175
C-9.1.20 Daily Back-Ups 175
C-9.1.21 Physical Hardware Monitoring 175
C-9.1.22 Security Breach Notification to the State 175
C-9.2 Disaster Recovery 176
C-9.2.1 Disaster Recovery Procedures 176
C-9.2.2 Disaster Recovery-Recovery of Lost State Data 176
C-9.2.3 Disaster Recovery Methods-Procuring Additional Hardware 176
C-9.2.4 Back-Up Schedule/Procedure 176
C-9.2.5 Back-Up Copies 176
C-9.2.6 Server Back-Up 176
C-9.2.7 Frequency of Back-Up 176
C-9.2.8 Back-Up Devices 176
C-9.2.9 Data Encryption 176
C-9.2.10 Data Recovery 177
C-9.2.11 Network Architecture 177
C-9.2.12 Hosting Services 177
C-9.2.13 Redundant Network Connections 177
C-9.2.14 Internet Service Provider 177
C-9.2.15 Redundant Network Architecture 177
C-9.2.16 Remove Access 177
C-9.3 Hosting Security 177
C-9.3.1 Security Measures 177
C-9.3.2 Encryption 177
C-9.3.3 Servers and Device Requirements 178
C-9.3.4 Component Infrastructure 178

C-9.3.5 Development/Maintenance of Code 178
C-9.3.6 Notification of Security Breaches 178
C-9.3.7 Security Vulnerability Cooperation 178
C-9.3.8 Security Breach 178
C-9.3.9 Scheduled and Unscheduled Security Audits 178
C-9.3.10 System Security 178
C-9.4 Service Level Agreement 179
C-9.4.1 System Support and Maintenance 179
C-9.4.2 Hardware/Software Specifications 179
C-9.4.3 System Hardware/Software 179
C-9.4.4 Hosting Server Availability 179
C-9.4.5 System Functionality 179
C-9.4.6 Regularly Scheduled Maintenance 179
C-9.4.7 Training, Upgrades and Changes 179
C-9.4.8 Maintenance Window 179
C-9.4.9 Change Management Policy 179
C-9.4.10 Critical Outages 179
C-9.4.11 Hosting Infrastructure 180
C-9.4.12 Maintenance Records 180
C-9.5 Application Requirements – Technical and Application Security 180
C-9.5.1 Graphical User Interface Technologies 180
C-9.5.2 Client Solution 180
C-9.5.3 Version Control 180
C-9.5.4 JAVA 180
C-9.5.5 Authentication of System Client Application 180
C-9.5.6 Authentication of System Users 180
C-9.5.7 User Names 180
C-9.5.8 Password Complexity for Administrator Accounts 180
C-9.5.9 Password Complexity for General Users 181
C-9.5.10 Password Encryption 181

C-9.5.11 Password Expire Requirement 181
C-9.5.12 Client Application Security 181
C-9.5.13 Authorization Credentials 181
C-9.5.14 Enforcement of Session Timeouts 181
C-9.5.15 Prevention of Critical Application Security Flaws 181
C-9.5.16 Authentication of Credentials 181
C-9.5.17 Audit Attempted Access 181
C-9.5.18 Application Log Activities 181
C-9.5.19 Application Termination of Session 181
C-9.5.20 Software and System Use 181
C-9.5.21 Application Data 182
C-9.5.22 Data Communications 182
C-9.5.23 Application Enhancements 182
C-9.5.24 Change Management Documentation and Procedures 182
C-9.6 End of Contract Term Transition 182
C-9.6.1 End of Term Transition 182
C-9.6.2 Transition Requirements 182
C-9.6.3 End of Term Transition Plan 183
D-1 Equipment Reuse/Transition Plan 186
D-2 Data Migration Strategy 186
D-3 ORT System 186
D-4 Roadway Design 187
D-5 Physical Changes 189
D-6 Integration with Readers 189
D-7 Degraded mode operation 189
D-8 DVAS Solution 189
D-9 MOMS Implementation 189
D-10 Network Architecture Drawings 189
D-11 Test 189
D-12 Software Ownership 190

D-13 Timely Delivery 190
D-14 Security 190
D-15 End-User System Access 191
D-16 Project Delivery Approach 191
D-17 Ad-Hoc Reporting 192
D-18 Warranty & Maintenance 192
D-19 Architecture & Design 192
D-20 Backup and Disaster Recovery 193
D-21 Availability 193
APPENDIX E: STANDARDS FOR DESCRIBING CONTRACTOR QUALIFICATIONS 194
E-1 Required Information on Corporate Qualifications 194
E-2 Contractor and Subcontractors 194
E-2.1.1 Contractor and Subcontractor Overview 194
E-2.1.2 Financial Strength 194
E-2.1.3 Past Performance 194
E-2.1.4 Reference Projects 194
E-2.1.5 Key Staff References 194
E-3 Team Organization and Designation of Key Contractor Staff 195
E-4 Candidates for Project Manager, Installation Manager and Maintenance Manager 195
Candidates for Key Contractor (Excluding Project Manager) Staff Roles 196
APPENDIX F: PRICING WORKSHEETS 197
F-1 General Instructions 197
F-2 General Instructions on Completing the Price Proposal Forms 198
F-3 Pricing Worksheets 199
APPENDIX G: SECURITY AND CERTIFICATES 200
G-1 SECURITY 200
G-1.1 Application Security 200
G-1.2 PCI DSS Payment Application Data Security Standard (PA DSS) 201
G-2 CERTIFICATES 201
G-2.1 Certificate of Good Standing 201

G-2.2 Certificate of Authority/Vote 202
APPENDIX H: STATE OF NEW HAMPSHIRE TERMS AND CONDITIONS 204
H-1 Identification 204
H-25 General Contract Requirements 208
H-25.1 State of NH Terms and Conditions and Contract Requirements 208
H-25.2 Contractor Responsibilities 208
H-25.3 Project Budget/Price Limitation 208
H-25.4 State Contracts 208
H-25.5 Contractor Staff 208
H-25.6 Change Orders 209
H-25.7 Licenses 209
H-25.7.1 Software and Documentation Copies 210
H-25.7.2 Restrictions 210
H-25.7.3 Title 210
H-25.7.4 Third Party 210
H-25.8 Warranty 210
H-25.8.1 Warranty Period 210
H-25.8.2 Warranties 210
H-25.8.3 Warranty Services 212
H-25.9 Ongoing Software Maintenance and Support Levels 213
H-25.9.1 Maintenance Releases 214
H-25.9.2 Maintenance and Support Levels 214
H-25.10 Administrative Specifications 214
H-25.10.1 Travel Expenses 214
H-25.10.2 Shipping and Delivery Fee Exemption 214
H-25.10.3 Access/Cooperation 214
H-25.10.4 State-Owned Documents and Data 215
H-25.10.5 Intellectual Property 215
H-25.10.6 DoIT Required Work Procedures 215
H-25.10.7 Computer Use 215

H-25.10.8 Email Use 216
H-25.10.9 Internet/Intranet Use 216
H-25.10.10 Regulatory/Governmental Approvals 216
H-25.10.11 Force Majeure 216
H-25.10.12 Confidential Information 216
H-25.10.13 Contractor's Relation to the State 218
H-25.10.14 Insurance 218
H-25.10.14.1 Standard Policy Forms 219
H-25.10.14.2 Insurance Certificates 219
H-25.10.14.3 Waiver of Rights of Recovery and Waiver of Rights of Subrogation 219
H-25.10.14.4 Claims Made Policy Forms: 220
H-25.10.14.5 Review of Insurance Requirements by the Covered Party's Insurance Representative: 220
H-25.10.14.6 Licensed Sureties and Insurers; Certificates of Insurance 220
H-25.10.15 Waiver of Event of Default 220
H-25.10.16 Notice 221
H-25.10.17 Amendment 221
H-25.10.18 Construction of Contract and Terms 221
H-25.10.19 Third Parties 221
H-25.10.20 Headings 221
H-25.10.21 Exhibits 221
H-25.10.22 Special Provisions 222
H-25.10.23 Severability 222
H-25.10.24 Venue and Justification 222
H-25.10.25 Survival 222
H-25.10.26 Entire Agreement 222
H-25.11 Pricing 222
H-25.11.1 Activities/Deliverables/Milestones Dates and Pricing 222
H-25.11.2 Software Licensing, Maintenance, Enhancements, and Support Pricing 222
H-25.11.3 Invoicing 222

H-25.11.4 Overpayments to the Contractor 223
H-25.11.5 Credits 223
H-25.11.6 Records Retention and Access Requirements 223
H-25.11.7 Accounting Requirements 224
H-25.11.8 Contract Security/Performance Bond 224
H-25.12 Termination 225
H-25.12.1 Termination for Default 225
H-25.12.2 Termination for Convenience 226
H-25.12.3 Termination for Conflict of Interest 226
H-25.12.4 Termination Procedure 226
H-25.13 Limitation of Liability 227
H-25.13.1 State 227
H-25.13.2 The Contractor 227
H-25.13.3 State's Immunity 227
H-25.13.4 Survival 227
H-25.14 Change of Ownership 228
H-25.15 Assignment, Delegation and Subcontracts 228
H-25.16 Dispute Resolution 228
H-25.17 Venue and Jurisdiction 228
H-25.18 Project Holdback 228
H-25.19 Escrow of Code 229
APPENDIX I: TERMS AND DEFINITIONS 230
APPENDIX J: FORMS 239
APPENDIX K: Inventory List 240
K-1. Inventory List 240
K-2. Spare Parts List 240
APPENDIX L: Interface Control Documents (ICD's) 241
L-1. Final ICD ORT to Host- v1.3 241
Appendix M: Agreement for Existing ORT Toll Collection System 242
Appendix N: Bedford Main Plaza Drawing 243

1 Introduction

The State of New Hampshire, acting through the New Hampshire Department of Transportation (NHDOT) Bureau of Turnpikes ("The Bureau") is releasing this RFP to procure an Open Road Tolling (ORT) System at the Bedford Mainline Toll Plaza, with an option to include ORT at additional designated Plazas and maintain existing ORT system at Hampton Mainline and Hooksett Mainline plazas. This is a continuation of the modernization of the ORT toll collection system, resulting in reduced congestion periods at mainline plazas and an enhanced service level by allowing Turnpikes' *E-ZPass* customers to maintain highway speeds through the tolling zone.

The NHDOT Bureau of Turnpikes operates a Turnpike System that is comprised of three (3), non-contiguous, limited-access highways: the Blue Star Turnpike (I-95) and the Spaulding Turnpike (collectively referred to the Eastern Turnpike) and the F.E. Everett Turnpike (also known as the Central Turnpike). The Turnpike System is a standard barrier toll collection system providing both slow speed electronic and cash payment. In addition there are existing ORT lanes on Hooksett and Hampton. Our system uses a separate vendor for the *E-ZPass* Customer Service (CSC) to process *E-ZPass* (AVI) transactions which will continue to be used on the Agency toll lanes.

2 Contract Award

2.1 Non-Exclusive Contract

Any resulting Contract from this RFP will be a non-exclusive Contract. The State reserves the right, at its discretion, to retain other Contractors to provide any of the Services or Deliverables identified under this procurement or make an award by item, part or portion of an item, group of items, or total Proposal.

2.2 Award

If a Contract is awarded, the Contractor must obtain written consent from the State before any public announcement or news release is issued pertaining to any Contract award. Such permission, at a minimum, will be dependent upon approval of the Contract by Governor and Executive Council of the State of New Hampshire.

The Agency plans to execute a Firm Fixed Price Contract, as a result of this RFP. If an award is made, it shall be made based upon evaluation of the submitted proposals in accordance with the review process outlined in Section 5 below. The award will be based upon criteria, standards, and weighting identified in this RFP.

2.3 Contract Term

Time is of the essence in the performance of a Contractor's obligations under the Contract.

The Contractor shall be fully prepared to commence work after full execution of the Contract by the parties, and the receipt of required governmental approvals, including, but not limited to, Governor and Executive Council of the State of New Hampshire approval ("Effective Date").

The Contractor's initial term will begin on the Effective Date and Maintenance will begin on July 1, 2018 and extend through five (5) years ("Initial Term") and expire no later than June 30, 2023. The contract term may be extended by three (3) additional three (3) year terms ("Extended Term") at the sole option of the State, subject to the parties' prior written agreement on applicable fees for each extended term.

The Contractor shall commence work upon issuance of a Notice to Proceed (NTP) by the State.

The State does not require the Contractor to commence work prior to the Effective Date; however, if the Contractor commences work prior to the Effective Date and a Notice to Proceed, such work shall be performed at the sole risk of the Contractor. In the event that the Contract does not become effective, the State shall be under no obligation to pay the Contractor for any costs incurred or Services performed; however, if the Contract becomes effective, all costs incurred prior to the Effective Date shall be paid under the terms of the Contract.

2.4 Order of Precedence

In the event of conflict or ambiguity among any of the text of the Contract Documents, the following Order of Precedence shall govern:

1. The State of New Hampshire Terms and Conditions, as stated in Appendix H: State of New Hampshire Terms and Conditions of this RFP.
2. The State of New Hampshire, Department of Transportation Contract 2016-041 (resulting Contract from this RFP, once executed)
3. RFP 2016-041 and all related attachments, appendices, exhibits and addendum (if applicable)
4. Final State Responses to Contractor Inquiries
5. The Contractor Proposal to RFP 2016-041 including any responses to State requested inquiries or clarifications.

2.5 Subcontractors

The Contractor shall remain wholly responsible for performance of the entire Contract regardless of whether a Subcontractor is used. The State will consider the Contractor to be the sole point of contact with regard to all contractual matters, including payment of any and all charges resulting from any Contract.

The Contractor shall identify all Subcontractors to be provided to deliver required Services subject to the Terms and Conditions of this RFP, including but not limited to, in Appendix H: State of New Hampshire Terms and Conditions of this RFP.

2.6 High Level Scope of Work

The Contractor will be responsible for all aspects of the Project, including, but not limited to:

The Agency's ORT System Project will be implemented at the Bedford Mainline Plaza and maintenance of the existing ORT lanes at the Hampton Mainline and Hooksett Mainline Plazas. The cash collection portions of the mainline plaza will be physically split into two (2) separate collection areas; one (1) northbound (NB) and one (1) southbound (SB), in order to accommodate the projected installation of four (4) ORT Lanes (two (2) in each direction) in the center of the existing plaza. The ORT Lanes will be equipped with automatic vehicle identification (AVI), automatic vehicle detection (AVDC), and violation enforcement system (VES) equipment to allow the Agency to collect tolls electronically and identify and pursue toll evaders.

Additional ORT locations may be implemented as options to this Contract as further specified herein.

2.7 Schedule of Events

The following table provides the Schedule of Events for this RFP through contract finalization and Notice to Proceed. The State reserves the right to amend this Schedule through a published Addendum.

EVENT	DATE	LOCAL TIME
RFP Released to Contractors (Advertisement)	5/12/2016	
Contractors Submit Letter of Intent to Bid/RSVP for Conference	5/26/2016	5 PM
Contractor Conference	6/1/2016	8 AM
Site Tour; Day and time of the visit to be scheduled prior to the Contractor Conference. The Contractor must request a site tour.	6/1/2016 6/2/2016 6/3/2016	
Contractor Inquiry Period Ends	6/17/2016	5 PM
Final State Responses to Contractor Inquiries	7/7/2016	5:00 PM
Contractors Submit Proposals	7/28/2016	2:30 PM
NHDOT Initial Review Period Complete, Questions to Proposers	8/19/2016	
Contractor Oral Presentations and Interviews	Week of 9/12/2016	TBD
Notification of Contractor Selection and Begin Contract Negotiations	Week of 9/19/2016	
Governor and Executive Council Approval	Nov. 2016	
Notice to Proceed	Nov. 2016	
Updated civil requirements	Dec. 2016	
Complete ORT System "Go Live"	5/31/2018	

3 Terms and Definitions

The Terms and Definitions, located in Appendix I: Terms and Definitions, apply to this RFP and any resulting Contract.

4 System, Work, Requirement and Deliverables

Each Proposal must present the total ORT System Solution and must address the following areas.

4.1 Software

The State seeks to purchase either directly or by license the Software for this Contract. Each Proposal must present Software that can fully support the required functionality listed in Appendix C: System Requirements and Deliverables.

If software is licensed, it shall be provided to the state on an unlimited basis.

All desktop software shall be web-browser based and not require desktop installation.

4.2 System

Each Proposal must present a System development Solution that can fully support the required functionality listed in Appendix C: Requirements and Deliverables.

4.2.1 Work, Services and Requirements

The State seeks to procure the following Work as described in Section 1 herein and further described in the Appendix C as follows:

- ORT Implementation Phase Work as described in the Appendix C: Requirements and Deliverables
- ORT System Maintenance Phase Work as described in Appendix C: Requirements and Deliverables

4.3 Technical Requirements

The technical requirements for submission of Proposals are discussed in more detail in the following sections:

4.3.1 Appendix B: Minimum Standards for Proposal Consideration.

Compliance with Requirements, use of proposed System, Contractor implementation experience, and proposed Contractor project team.

4.3.2 Appendix C: Requirements and Deliverables.

Detailed description of the Technical Requirements, Performance Requirements, Work and Deliverables for the Implementation and Maintenance of the ORT System.

4.3.3 Appendix D: Topics for Mandatory Narrative Responses.

Mandatory narrative descriptions of questions and topics to be discussed in the Proposals, which will expound on the Contractors' understanding of the implementation and maintenance requirements and the proposed ORT System Solution.

4.3.4 Appendix E: Standards for Describing Contractor Qualifications.

Contractor corporate qualifications, team organization and key staff, Project Manager, and other key staff candidates' qualifications.

4.3.5 Appendix F: Pricing Sheets.

Pricing and scheduling information requirements and forms.

4.3.6 Appendix G: Security and Certificates.

4.3.7 Appendix H: State of New Hampshire Terms and Conditions.

4.3.8 Appendix I: Terms and Definitions.

4.3.9 Appendix J: Forms.

4.3.10 Appendix K: Inventory List.

4.3.11 Appendix L: Interface Control Documents (ICD's).

5 Instructions

5.1 Proposal Submission, Deadline, and Location Instructions

Proposals submitted in response to this RFP must be received by the Department of Transportation, Bureau of Turnpikes, no later than the time and date specified in the Schedule of Events section, herein. Proposals must be addressed to:

State of New Hampshire
Department of Transportation
Bureau of Turnpikes
c/o
John Corcoran
Administrator, Bureau of Turnpikes
36 Hackett Hill Road
Hooksett, NH 03106

Note: You must use a ground service (e.g. UPS, FEDEX, etc.) for delivery to the address shown above. The US Mail does not deliver to this location.

Cartons containing Proposals must be clearly marked as follows:

STATE OF NEW HAMPSHIRE
BUREAU OF TURNPIKES
RESPONSE TO RFP 2016-041
ORT Toll System

Late submissions will not be accepted and will be returned to the proposers unopened. Delivery of the Proposals shall be at the Contractors' expense. The time of receipt shall be considered when a Proposal has been officially documented by the State, in accordance with its established policies, as having been received at the location designated above. The State accepts no responsibility for mislabeled mail. Any damage that may occur due to shipping shall be the Contractor's responsibility.

All Proposals submitted in response to this RFP must consist of:

a) One (1) original and eight (8) copies clearly identified copies of the Proposal, including all required attachments;
b) One (1) original of the Price Proposal, as described in Section 5.19.11, must be packaged separately, labeled clearly and sealed;
c) One (1) copy of the Proposal Transmittal Letter (Appendix J, Form 1, herein) shall be signed by an official authorized to legally bind the Contractor and shall be marked "ORIGINAL"; and
d) One (1) electronic copy of response on CD ROM or thumb-drive in PDF format.

The original and all copies shall be bound separately, delivered in sealed containers, and permanently marked as indicated above. A Contractor's disclosure or distribution of its Proposal other than to the State will be grounds for disqualification.

5.2 Proposal Inquiries

All inquiries concerning this RFP, including but not limited to, requests for clarifications, questions, and any changes to the RFP, shall be submitted via email to the following RFP designated Points of Contact:

Contact Bureau of Turnpikes by email only, please contact:
TO: Renee Dupuis, rdupuis@dot.state.nh.us
CC: Laura Marriott, lmarriott@dot.state.nh.us

Using Form 2, *Contractor Inquiry Form*, the inquiry shall cite the RFP title, RFP number, Page, Section, and Paragraph being referenced in the inquiry. Prior to the commencement of the Contractor Inquiry Period the Agency shall include on its web-site a form for submitting inquiries. All inquiries shall be in that form. The State assumes no liability for assuring accurate/complete email transmission. The State will acknowledge receipt of the email transmission.

Inquiries must be received by the State's RFP Points of Contact no later than the conclusion of the Contractor Inquiry Period (see Schedule of Events section, herein). Inquiries received later than the

conclusion of the Contractor Inquiry Period shall not be considered properly submitted and may not be considered.

The Agency intends to issue official responses to properly submitted inquiries on or before the date specified in the Schedule of Events section, herein; however, this date is subject to change at the Agency's discretion. The Agency may consolidate and/or paraphrase questions for sufficiency and clarity. The Agency may, at its discretion, amend this RFP on its own initiative or in response to issues raised by inquiries, as it deems appropriate. Oral statements, representations, clarifications, or modifications concerning the RFP shall not be binding upon the Agency. Official responses by the Agency will be made only in writing by the process described above.

5.2.1 Restriction of Contact with Agency Employees

From the date of release of this RFP until an award is made and announced regarding the selection of a Contractor, all communication with personnel employed by or under contract with the Agency regarding this RFP is forbidden unless first approved by the RFP Points of Contact listed in the Proposal Inquiries section, herein. Agency employees have been directed not to hold conferences and/or discussions concerning this RFP with any Contractor during the selection process, unless otherwise authorized by the RFP Points of Contact.

5.3 Contractor Conference

A mandatory Contractor Conference will be held at the following location as identified in the Schedule of Event section, herein:

John O. Morton Building (JOMB)
7 Hazen Drive
Concord NH 03301
Room 114

All Contractors who intend to submit Proposals as a prime must attend the Contractor Conference. Contractors are requested to RSVP via email by the date identified in the Schedule of Event section, indicating the number of individuals who will attend the Contractor Conference.

Contractors are allowed to send a maximum number of three (3) representatives.

Contractors will have an opportunity to ask questions about the RFP and the State will make a reasonable attempt to answer questions it deems appropriate. Questions may include, without limitation, a request for clarification of the RFP; a request for changes to the RFP; suggestions or changes to the RFP that could improve the RFP competition or lower the offered price; and to review any applicable documentation. All questions shall be submitted formally using Form 2, Contractor Inquiry Form.

Contractors are encouraged to email inquiries at least seventy-two (72) business hours prior to the Contractor Conference. No responses will be given prior to the Contractor Conference. Oral answers will not be binding on the State.

All Contractors will be required to sign an attendance sheet indicating their presence. A copy of the attendance sheet will be provided via email (to email addresses provided on the attendance sheet) and on the NHDOT's website.

5.3.1 Contractor Site Tour

Contractors will be allowed to have a site tour with NHDOT and their team as identified in Section 2: Schedule of Events. The Contractor shall contact Renee Dupuis and Laura Marriott via email prior to the Contractor Conference to schedule the site visit. The Contractor must request a site tour. The request must be submitted no later than the day of the Contractor Conference. The Contractor may take pictures of the lanes, tunnels, lane controller cabinets, and booths during this tour. The Contractor may ask questions, but oral answers are not binding on the agency. The Contractor must submit questions in writing as described in Section 5.2.

5.4 Alteration of RFP

The original RFP document is on file with the State of New Hampshire, Department of Transportation, Bureau of Turnpikes. Contractors are provided an electronic version of the RFP. Any alteration to this RFP or any file associated with this RFP is prohibited. Any such changes may result in a Proposal being rejected.

5.5 RFP Addendum

The Agency reserves the right to amend this RFP at its discretion, prior to the Proposal submission deadline. In the event of an addendum to this RFP, the Agency, at its sole discretion, may extend the Proposal submission deadline, as it deems appropriate.

5.6 Non-Collusion

The Contractor's signature on a Proposal submitted in response to this RFP guarantees that the prices, Terms and Conditions, and work quoted have been established without collusion with other Contractors and without effort to preclude the Agency from obtaining the best possible competitive Proposal.

5.7 Validity of Proposal

Proposals must be valid for one hundred and eighty (180) days following the deadline for submission of Proposals in Schedule of Events, or until the Effective Date of any resulting Contract, whichever is later.

5.8 Property of the Agency

All material received in response to this RFP shall become the property of the State and will not be returned to the Contractor. Upon Contract award, the State reserves the right to use any information presented in any Proposal.

5.9 Confidentiality of a Proposal

The substance of a proposal must remain confidential until the Effective Date of any resulting Contract as a result of this RFP. A Contractor's disclosure or distribution of Proposals other than to the Agency will be grounds for disqualification.

5.10 Security

The State must ensure that appropriate levels of security are implemented and maintained in order to protect the integrity and reliability of its information technology resources, information, and services. State resources, information, and services must be available on an ongoing basis, with the appropriate infrastructure and security controls to ensure business continuity and safeguard State networks, Systems and data.

The State will evaluate the degree to which the proposed System is designed and architected to ensure the confidentiality and integrity of its valued asset, Data.

5.11 Public Disclosure

Pursuant to the relevant statutes and regulations, all responses to this RFP shall be considered confidential until the award of a contract. At the time of receipt of proposals, the State will post the number of responses received with no further information. No later than five (5) business days prior to submission of a Contract to Governor and Council pursuant to this RFP, the State will post the name, rank and score of each proposer.

The content of each Contractor's Proposal shall become public information upon the Effective Date of any resulting Contract. Any information submitted as part of a response to this request for proposal (RFP) may be subject to public disclosure under RSA 91-A. In addition, in accordance with RSA 9-F:1, any Contract entered into as a result of this RFP will be made accessible to the public online via the website Transparent NH (http://www.nh.gov/transparentnh/). Accordingly, business financial information and proprietary information such as trade secrets, business and financials models and forecasts, and proprietary formulas may be exempt from public disclosure under RSA 91-A:5, IV. If you believe any information being submitted in response to a request for proposal, bid or information should be kept confidential as financial or proprietary information; you must specifically identify that information in a letter to the agency, and should mark/stamp the materials as such. Marking of the entire Proposal or entire sections of the Proposal (e.g. pricing) as confidential will neither be accepted nor honored. Notwithstanding any provision of this RFP to the contrary, Contractor pricing will be subject to disclosure upon approval of the Contract by the Governor and Council. The State will endeavor to maintain the confidentiality of portions of the Proposal that are clearly and properly marked confidential. If a request is made to the State to view portions of a Proposal that the Contractor has properly and clearly marked confidential, the State will notify the Contractor of the request and of the date and the State plans to release the records. A designation by the Contractor of information it believes exempt does not have the effect of making such information exempt. The State will determine

the information it believes is properly exempted from disclosure. By submitting a Proposal, Contractors agree that unless the Contractor obtains a court order, at its sole expense, enjoining the release of the requested information, the State may release the requested information on the date specified in the State's notice without any liability to the Contractors.

5.12 Non-Commitment

Notwithstanding any other provision of this RFP, this RFP does not commit the Agency to award a Contract. The Agency reserves the right, at its sole discretion, to reject any and all Proposals, or any portions thereof, at any time; to cancel this RFP; and to solicit new Proposals under a new acquisition process.

5.13 Proposal Preparation Cost

By submitting a Proposal, a Contractor agrees that in no event shall the Agency be either responsible for or held liable for any costs incurred by a Contractor in the preparation of or in connection with the Proposal, or for Work performed prior to the Effective Date of a resulting Contract.

5.14 Oral Presentations/Interviews and Discussion

The Agency reserves the right to require Contractors to make oral presentations of their Proposals and/or to make available for oral presentations/interviews/demos the key staff proposed. Any and all costs associated with oral presentations/interviews/demos shall be borne entirely by the Contractor.

5.15 Required Contract Terms and Conditions

By submitting a Proposal, the Contractor agrees that the State of New Hampshire Terms and Conditions, contained in APPENDIX H: STATE OF NEW HAMPSHIRE TERMS AND CONDITIONS Section, herein, shall form the basis of any Contract resulting from this RFP. In the event of any conflict between the State's Terms and Conditions and any portion of the Contractor's Proposal, the State's Terms and Conditions shall take precedence and supersede any and all such conflicting Terms and Conditions contained in the Contractor's Proposal.

5.16 Proposal Submission Requirements

Contractors are permitted to submit only one (1) Proposal in response to this RFP.

5.17 Proposal Format

Proposals shall follow the following format:

- A Proposal shall be provided in a three-ring binder.
- A Proposal shall be printed on white paper with dimensions of 8.5 by 11 inches with right and left margins of one (1) inch.
- A Proposal shall use Times New Roman font with a size of eleven (11).

Exceptions for paper and font sizes are permissible for: Graphical exhibits, which may be printed on white paper with dimensions of 11 by 17 inches; and material in appendices, including schedules and organization charts.

- Each page of a Proposal shall include a page number and the number of total pages and identification of the Contractor in the page footer. Each page shall be numbered consecutively within each Section (i.e., 1-1, 1-2…; 2-1, 2-2…; 3-1, 3-2…, etc.), and the page numbers shall be centered at the bottom of each page.
- The proposal shall be printed double-sided.
- Tabs shall separate each Section of the Proposal.

5.18 Proposal Organization

Proposals shall adhere to the following outline and shall have a total page limit of fifty (50) pages, excluding the items identified in the table below as not applying to the page limit.

Technical Proposal Page Limit Applicability

Section	Page Limit Applies? (Y/N)
Cover Page	No
Proposal Transmittal Letter	No
Table of Contents	No
Section I: Executive Summary	Yes
Section II: Glossary of Terms and Abbreviations	No
Section III: Responses to Requirements and Deliverables – Compliance Matrix	No
Section IV: Narrative Responses	Yes
Section V: Corporate Qualifications	Yes
Section VI: Qualifications of Key Staff	No
Section VII: Forms	No
Section IX: Copy of Addendum and Original RFP (initial each page)	No
Section X: Attachments	No
Attachment A: Project Organization Charts	No
Attachment B: Preliminary Project Schedule	No

Price Proposal Page Limit Applicability:

Section	Page Limit Applies?(Y/N)
Section VIII: Price Proposal	No (Excel Sheets)

5.19 Proposal Content

Proposals must contain the following:

5.19.1 Cover Page

The first page of the Contractor's Technical Proposal must be a cover page containing the following text:

STATE OF NEW HAMPSHIRE
New Hampshire Department of Transportation Bureau of Turnpikes

RESPONSE TO NHDOT Bureau of Turnpikes RFP 2016-041
ORT Toll System

The cover page must also include the Contractor's name, contact person, contact telephone number, address, city, state, zip code, fax number, and email address.

5.19.2 Proposal Transmittal Letter

The Contractor shall submit a hand written and signed Proposal Transmittal Form Letter with their Proposal using the Proposal Transmittal Letter Template provided in Appendix J. Any electronic alteration to this Transmittal Form Letter is prohibited. Any such changes may result in the Proposal being rejected.

5.19.3 Table of Contents

The Contractor shall provide a table of contents with corresponding page numbers relating to its Proposal. The table of contents must conform to the outline provided in the Proposal Organization section, herein, but should provide detail, e.g., numbering, level of detail.

5.19.4 Section I: Executive Summary

The Executive Summary shall identify how the Contractor satisfies the minimum standards for consideration, which are described in Appendix B: Minimum Standards for Proposal Consideration, to this Request for Proposals. The Executive Summary shall also provide an overview of the Contractor's proposed Solution, System and Work. Contractors are encouraged to highlight those factors that they believe distinguish their Proposal.

5.19.5 Section II: Glossary of Terms and Abbreviations

The Contractor shall provide a glossary of all terms, acronyms, and abbreviations used in its Proposal.

5.19.6 Section III: Responses to Requirements and Deliverables

Requirements are provided in Appendix C: Requirements and Deliverables, included in this RFP. All requirements are considered mandatory features of the proposed solution. All Proposers shall be required to complete and submit Form 8: Compliance Matrix included in Appendix J, which covers all requirements of Appendix C. Proposers are encouraged to utilize the "comment column" to further explain their system.

If the Proposer does not comply with any requirement(s) of the Scope of Work, the specific requirement(s) to which exception is taken must be identified on the Compliance Matrix and briefly

explained in the comments column. Failure to take exception in the manner set forth above will be deemed a waiver of any objection. Exceptions may be considered during the Proposal evaluation process at the sole discretion of the Agency; however, the Agency is under no obligation to accept such exceptions.

5.19.7 Section IV: Narrative Responses

Section IV solicits narrative responses to questions and topics specific to the Project. Appendix D: Topics for Mandatory Narrative Responses is organized into sub-sections, which correspond to the different Deliverables of the Proposal.

5.19.8 Section V: Corporate Qualifications

Section V shall provide corporate qualifications of all firms, including Subcontractors, proposed by the Proposer to participate in the Project. Specific information to be provided is described in Appendix E.

5.19.9 Section VI: Qualifications of Key Staff

To evaluate qualifications of key staff, the Agency will consider three (3) factors:

- Proposed team organization and designation and identification of key staff;
- Qualification of the Project Manager; and
- Qualifications of key Contractor staff.

Section VI shall be used to provide required information on these topics. Specific information to be provided is described in the required forms in Appendix J.

5.19.10 Section VII: Forms

Forms to be completed by Proposers to be included in Section VII.

5.19.11 Section VIII: Price Proposal

The Price Proposal, separate from the Technical Proposal, must be completed in Excel format in accordance with the instructions and must be provided in accordance with the instructions set forth in Appendix F.

The Contractor shall not provide any narrative or other additional text (i.e. exceptions, clarifications, assumptions, etc.) in the Price Proposal. Doing so shall be regarded as grounds for disqualification of their proposal.

5.19.12 Section IX: Copy of Addendum and Original RFP

Section IX shall contain copies of any addendums and the original RFP with initials and date.

5.19.13 Section X: Attachments

Section X shall include all required attachments.

5.19.14 Attachment A: Project Organization Charts

This section shall contain an Organization chart indicating personnel that are part of the proposal and their role.

5.19.15 Attachment B: Preliminary Project Schedule

This section shall contain a Preliminary Project Schedule indicating the proposed timeline for the project.

6 PROPOSAL EVALUATION PROCESS

6.1 Scoring Proposals

Each Proposal will be evaluated and considered with regard to the Solution and Services proposed, qualifications of the Contractor and any Subcontractors, experience and qualifications of proposed candidates, and cost.

If the State, determines to make an award, the State will issue an "intent to award" notice to a Contractor based on these evaluations. Should the State be unable to reach agreement with the selected Contractor during Contract discussions, the State may then undertake Contract discussions with the second preferred Contractor and so on. Such discussions may continue at the sole option of the State, until an agreement is reached, or all Proposals are rejected.

The Agency will use a scoring scale of 100 points, a maximum of 30 points awarded based on the Price Proposal and a maximum of 70 points awarded for the Technical Proposal. The maximum points that will be awarded are shown in the table below.

CATAGORIES	POINTS
TECHNICAL PROPOSAL with the following potential maximum scores for each Technical Proposal category;	**70**
ORT System Design and Technical Approach (30%)	21
Ability to Execute and Meet the Project Schedule (30%)	21
System Maintenance and Warranty Approach (20%)	14
Firms Qualifications, Project Team, Capabilities and References (20%)	14
PRICE PROPOSAL POTENTIAL MAXIMUM POINTS	30
TOTAL POTENTIAL MAXIMUM POINTS AWARDED	100

6.2 Rights of the Agency in Evaluating Proposals

The Agency reserves the right to:

- Consider any source of information in evaluating Proposals;

- Omit any planned evaluation step if, in the Agency's view, the step is not needed;
- At its sole discretion, reject any and all Proposals at any time; and
- Open Contract discussions with the second highest scoring Contractor and so on, if the Agency is unable to reach an agreement on Contract terms with the higher scoring Contractor(s).

6.3 Planned Evaluations

The Agency plans to use the following process:

- Initial screening;
- Preliminary evaluation of the Proposals and reference and background checks;
- Oral interviews;
- Final evaluation of Proposals and scoring;
- Price proposals and final scoring; and
- Best and final offer (BAFO) if appropriate.

6.3.1 Initial Screening

The Agency will conduct an initial screening step to verify Contractor compliance with submission requirements and to confirm that the Proposal satisfies the following:

- The proposal is date and time stamped as received by the Agency before the deadline.
- The Contractor has sent the proper number of copies as set forth in accordance with requirements herein.
- The original version of the Technical and Price Proposals are marked "ORIGINAL".
- The original Proposal includes a signed Transmittal Letter accepting all Terms and Conditions of the RFP without exception.
- The proposed Solution meets the requirements as specified in Appendix B of the RFP: *Minimum Standards for Proposal Evaluation*.

A Proposal that fails to satisfy either submission requirements or minimum standards may be rejected without further consideration.

6.3.2 Preliminary Technical Scoring of Proposals and Reference and Background Checks

The State will establish an evaluation team to initially score the Technical Proposals. This evaluation team will review proposal and preliminary score the technical proposals. Price Proposals will remain sealed during the preliminary technical review.

6.3.3 Oral Interviews and Product Demonstrations

Preliminary scores from the initial technical review and evaluation of the Proposals will be used to identify a "short list" of the top four to five Contractors. Contractors on the "short list" shall be invited to oral interviews and product demonstrations.

The purpose of oral interviews and product demonstrations is to clarify and expound upon information provided in the written Proposals. Contractors are prohibited from altering the basic substance of their

Proposals during the oral interviews and product demonstrations. NHDOT may ask the Contractor to provide written clarifications of elements in their Technical Proposal in preparation for Oral Interviews and Demonstrations.

For each Contractor invited, the oral interview and product demonstrations will be three hours for the interview and demonstration. The Contractor shall prepare and provide an agenda for the interview. Information gained from oral interviews and product demonstrations will be used to refine technical review scores assigned from the initial review of the Proposals.

6.3.4 Price Proposal Review – Scoring Detail

Price proposals will be opened upon completion of the revised technical scores and oral interviews. Price proposals will be scored per the method described in Section 6.4.

6.3.5 Best and Final Offer (BAFO)

Upon completion of the scoring process outlined in Sections 6.1 and 6.4 , the State may, at its sole option, invite the highest scoring Contractors to submit a "Best and Final Offer" for the State's consideration. The State reserves the right to select the Contractor based solely on the initial proposals and is under no obligation to solicit or accept a BAFO from any proposers. As the State may not request a Best and Final Offer, Proposers are encouraged to provide their most competitive prices in their initial proposals.

The Best and Final Offer (BAFO) is a one-time invitation only process for a proposer to submit its lowest priced offer for the State's consideration. In its invitation to submit a BAFO, the State will provide a deadline submission date for the BAFO. The State may communicate in writing any price/cost targets that the State is seeking in the BAFO.

Any inquiries made to the State during the BAFO period will be handled in the same manner as Proposal Inquiries pursuant to Section 5.2. All restrictions on contact with State employees outlined in Section 5.2.1 shall remain in effect for the BAFO period.

Each invited Proposer may only make one BAFO. The BAFO may not alter the substance of the Contractor's technical proposal. The BAFO may only amend the Contractor's initial price proposal.

To the extent the State solicits and receives a BAFO pursuant to this section, the State will re-score the Contractor's price proposals after review of the BAFO in accordance with Section 6.4.6 (Calculation of the Price Proposal Score). The State will not select a Contractor based on the lowest priced BAFO proposal. A final selection, if any, shall be based on the combined score of the technical proposal and BAFO price proposal. Only those Contractors who were invited to submit a BAFO will be considered for the award.

6.3.6 Final Selection

The State will conduct a final selection based on the final evaluation of the initial proposals or, if requested, as a result of the Best and Final Offer.

6.3.7 Procedure After Selection

Pursuant to RSA 21-G:37, proposers that question an agency's identification of the selected proposal may request that the agency review its selection process. Such request shall be made in writing and be received by the agency within 5 business days after the rank or score is posted on the agency website. The request shall specify all points on which the proposer believes the agency erred in its process and shall contain such argument in support of its position as the bidder seeks to present. In response, the issuing agency shall review the process it followed for evaluating responses and, within 5 business days of receiving the request for review, issue a written response either affirming its initial selection of a proposer or canceling the RFP. In its request for review, a proposer shall not submit, and an agency shall not accept nor consider, any substantive information that was not included by the proposer in its original RFP response. No hearing shall be held in conjunction with a review. The outcome of the agency's review shall not be subject to appeal.

6.4 Proposal Evaluations

The Agency will select a Contractor based upon the criteria and standards contained in this RFP and from applying the weightings in this section. Oral interviews and reference checks will be used to refine and finalize preliminary scores.

6.4.1 Calculation of Technical Scores

a. In the Technical Evaluation Contractors will be evaluated based on the criteria outlined in the Sections below. Actual evaluator scores based on the potential maximum points shown in the section entitled Scoring will be added for a total of Technical points for each Contractor and then the Technical points for each Contractor will be divided by the number of evaluators to determine the Technical Score for each Contractor.
b. The minimum acceptable Technical Score will be forty-nine (49) points out the possible total of 70 points. Any proposals that do not receive a Technical Score of forty-nine (49) or higher will be removed from further consideration and the corresponding Price Proposal will not be opened and shall be returned unopened to the applicable Contractor.

6.4.2 Scoring of the Proposed ORT System Design and Technical Approach

When evaluating the Contractors' <u>ORT System Design and Technical Approach</u> the evaluation will center on:

a. Design of the System/Solution to meet the specified requirements: including the documentation of the proposed System design architecture and approach to Work; demonstration of a logical

and thorough approach to design and development; and thoroughness in addressing System requirements.

b. Proposed Hosting solution of the ORT: Design, architecture, configuration of the proposed hosting for the ORT. Specifically addressing reliability, redundancy, business continuity, location. Also addressing scalability, end of term transition to other hosting platforms/locations.
c. Transactional and Financial Tracking, Reporting and Reconciliation: Demonstration of capability to efficiently design, develop, test, and implement a flexible, fault tolerant and auditable System that addresses the Agency's tracking, reporting and reconciliation requirements; and further, demonstration that the proposed System will be easy for the Agency to understand, operate and modify as necessary to ensure and facilitate ongoing and seamless tracking, reporting and reconciliation of all data related to the ORT System operation.
d. System Performance and Reliability: Understanding and ability to meet the overall requirements of the RFP. Specifically addressing the on-going KPI requirements, maintainability, redundancy and long term sustainability of the System.
e. Ability to work and perform in a multi-solution, multi-Contractor, environment such as the State environment and to cooperate with other Contractors in the development and implementation of necessary system interfaces.
f. Flexibility of the proposed Software Solution with regard to the Agency's right to use and operate after the conclusion of the Contract.
g. Software Architecture – Can the Proposed Solution adapt to our organization or does our organization have to adapt to the Proposed Solution? How does the Proposed Solution fit with our organization's other products and business strategies? Can the Proposed Solution adapt to future organizational changes? Does the Proposed Solution support organizational technical strategies? Can the Proposed Solution easily accommodate any planned or possible growth?
h. Ad-hoc Reporting – Is there an ability to access data and generate Ad-hoc reports? Are there any limitations on data access or tools that can be utilized?
i. System Security – How and to what degree is the system protected from compromise?
j. Efficiency of use - How quickly can a user perform a needed task?
k. Vehicle classification – how effective is the vehicle classification, framing and transaction processing.
l. Digital Video Audit System – quality of video, and auditing solution.

6.4.3 Scoring of Contractor's Ability to Execute and Meet the Project Schedule

When evaluating the Contractors' Ability to Execute and Meet the Project Schedule the evaluation will center on:

a. Demonstration of ability to meet or exceed the scheduling requirements of the Project, including meeting the required Live Date.
b. Demonstration of ability to implement the System safely and with a minimum disruption to the traveling public.

c. Contractors shall present a feasible and Preliminary Project Management Plan that addresses the program requirements within the prescribed timeframe. Focus shall be on:
    i. Logic, clarity and specificity according to Appendix C: *Requirements and Deliverables*.
    ii. Organization, logic, quality and appropriateness of labor distribution relative to scope of work.
d. Logical approach to Project phasing and transition.
e. Demonstration of plan for coordination with the civil work Contractor, the CSC Contractor and the existing Lane System maintainer.

6.4.4 Scoring of Contractor's System Maintenance and Warranty

When evaluating the Contractors' System Maintenance and Warranty Approach the evaluation will center on:

a. Demonstration of ability to meet or exceed all Maintenance Services and Warranty requirements as specified in Appendix C: *Requirements and Deliverables*.
b. Demonstration of innovation in the approach to Maintenance will be evaluated. Innovation means providing materials, operating efficiencies, and equipment that will reduce the long-term Maintenance and operating expenses of the Project and enhances System performance and equipment component life. The evaluation will consider innovative and thoughtful approaches on how to provide efficient and productive maintenance on the System which includes multiple locations, while balancing the need for quick response time in an ORT environment will be considered.
c. Maintenance Coordination – Demonstrated ability and willingness to maintain Contractor's System and to coordinate the delivery of maintenance services with the existing Lane System maintenance Contractor and the CSC operator in a manner that benefits the Agency.
d. Serviceability – Demonstrated serviceability of components and the overall System. Serviceability is defined as the ease with which maintainers can remove, replace and repair components without affecting traffic.
e. Provide a solution that allows the Agency the viable option to monitor and potentially maintain or assist in the maintenance of the ORT System.
f. Provide a solution that is able to meet Key Performance Indicators (KPIs).
g. Provide a solution that can work with the ORT existing system as well as the vendor solution.

6.4.5 Scoring of Contractor Qualification, Project Team, Capabilities and References

When evaluating the proposers Qualification, Project Team, Capabilities and References the evaluation will center on:

a. Evidence of experience with projects (including design, implementation, and maintenance) of similar size and nature.
b. Time commitment of key Contractor personnel to this Project.

c. Local presence of key Contractor personnel.
d. Demonstrated relevant experience of the project manager, task managers and other key personnel. Resume and Reference Form 7: *Key Staff References* must be completed for each key staff member as defined in Appendix B of the RFP: *Minimum Standards for Proposal Consideration*.
e. Evidence of key Contractor personnel in similar roles in example projects.
f. References based on reference forms and subsequent follow-up by the Agency.
g. Experience, technical competence and role of Subcontractors, including but not limited to Subcontractors' prior working relationships with the Contractor.

6.4.6 Calculation of the Price Proposal Score

The Contractor's Price Proposal will be allocated a maximum potential score of 30 points. The Agency will consider the costs of the Implementation Phase and the subsequent five (5) year Maintenance Phase costs identified in Appendix F: Pricing Worksheets. The basis for the Price Proposal evaluation will be the Total Contract Cost (Sheet 1 entitled "Project Summary Sheet") from the Price Proposal. Cost information required in a Proposal is intended to provide a sound basis for comparing costs.

The following formula will be used to assign points for costs:

Contractor's Price Score = (Lowest Proposed Price / Contractor's Proposed Price) x 30

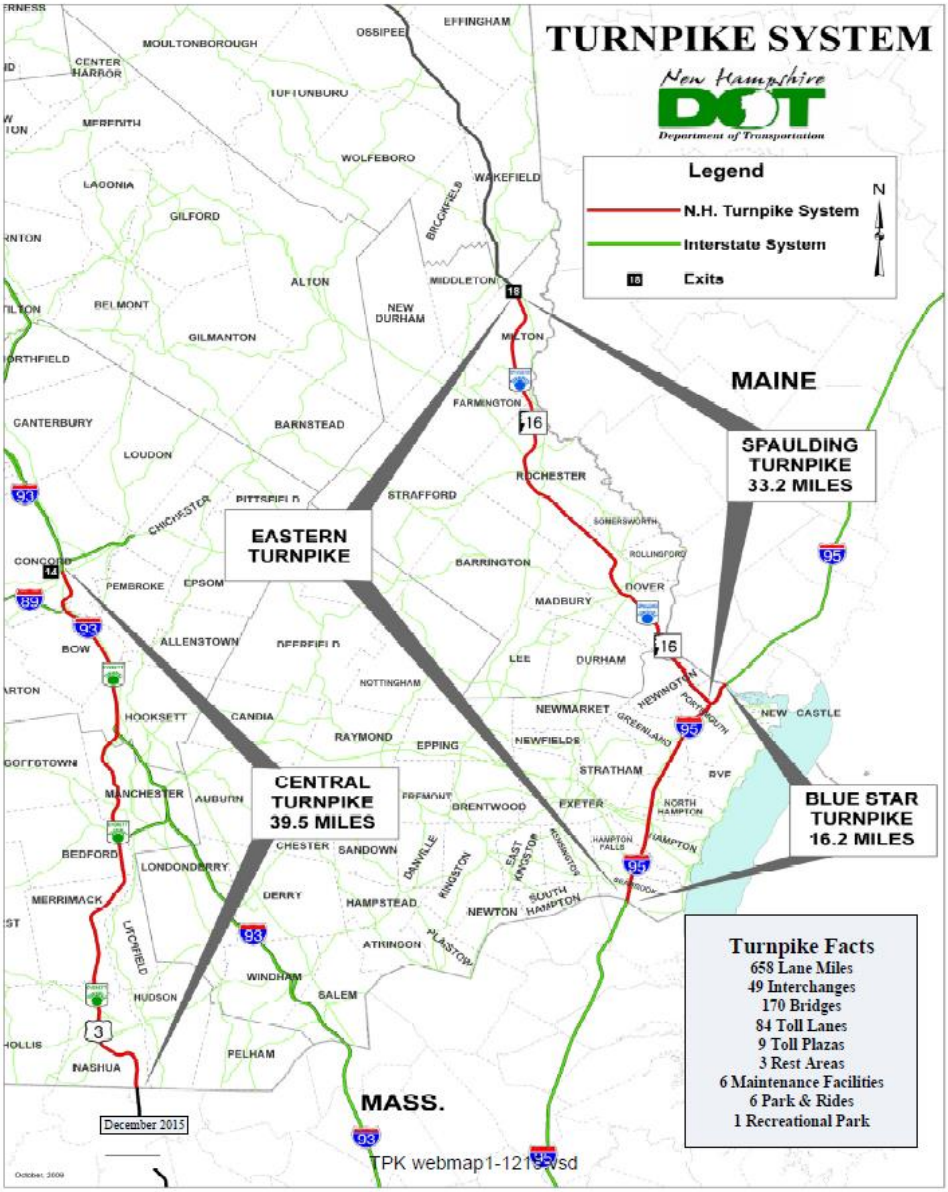
For the purpose of use of this formula, the lowest proposed price is defined as the lowest price proposed by a Contractor who has scored forty-nine (49) or higher on the Technical Score.

APPENDIX A: BACKGROUND INFORMATION

A. New Hampshire Department of Transportation (NHDOT)

The NHDOT is responsible for providing safe and secure mobility and travel options for all of the state's residents, visitors, and goods movement, through a transportation system and services that are well maintained, efficient, reliable, and provide seamless interstate and intrastate connectivity.

The mission of the Department is: Transportation Excellence enhancing the quality of life in New Hampshire.



A-1.1 Department of Information Technology and Technology

The Project will be conducted in cooperation with the New Hampshire Department of Information Technology (DoIT). DoIT coordinates the statewide Information Technology activities.

A-1.2 Technical Architecture

Components of the State's technical architecture include:

- State Network Environment: The State operates multiple wide-area networks using various technologies including frame relay, fiber, dedicated lines, wireless, Voice over IP (VOIP), and VPN technologies. Networks have varying levels of integration and connectivity to the statewide core for resource sharing and centralized administration by the Department of Information Technology (DoIT). Direct support is provided for twenty-one partner agencies; other State agencies support their own networks, out-source the support, or use the resources of another agency.
- Internet Access: All State agencies are connected to the State's intranet which is being redesigned to function as the statewide core network, in addition to facilitating access to e-mail, the Internet, and the State's financial applications. Some agencies additionally have their own Internet service providers.
- Virtual Server Environment: The State uses VMWare for Windows server virtualization and virtual hosts are deployed at two separate State campus sites. VMWare provides a highly scalable and high availability environment for the State's many Agencies. If a virtual host fails, VMWare automatically fails over all of the virtual servers on that host to another host. The EMC Networker product is used to manage backups for this environment utilizing Data Domain as the disk to disk repository.
- For the State's Oracle enterprise systems: an Oracle solution is used for the virtual environment. Similar to the Windows environment, this solution provides a highly scalable and high availability environment and also utilizes the EMC Networker and Data Domain backup solution.

A-1.3 Future Systems Environment

Future design and development efforts should conform to the emerging environment as defined by the State's e-Government Architecture Plan.

A-1.3.1 Description of Existing Turnpike System

The NHDOT Bureau of Turnpikes operates a Turnpike System that is comprised of three (3), non-contiguous, limited-access highways: the Blue Star Turnpike (I-95); the Spaulding Turnpike (collectively referred to as the Eastern Turnpike) and the F.E. Everett Turnpike (also known as the Central Turnpike).

The Central or F.E. Everett Turnpike is the longest at 44.6 miles, extending from the Massachusetts State Line in Nashua, New Hampshire to Exit 14 in Concord, New Hampshire. It comprises, in part, a portion of the US Interstate Highways 93 and 293 and connects the three largest cities in New Hampshire (Nashua, Manchester and Concord). The Central Turnpike also connects with major east-west highways

such as NH 101, US 4 as well as Interstate 89. Currently there are two mainline toll plazas at Hooksett and Bedford, and 3 ramp plazas at Hooksett, Continental Boulevard (Exit 11), and Merrimack Industrial Drive (Exit 10).

The Blue Star Turnpike extends from the Massachusetts state line in Seabrook, New Hampshire to the Maine state line in Portsmouth, New Hampshire. It is 16.2 miles in length and constitutes a portion of Interstate 95. It connects with major highways that include NH 101, US 4 and the Spaulding Turnpike. At Portsmouth, the Blue Star Turnpike splits into two segments, one segment merging with the Spaulding Turnpike, and the other with the Maine Turnpike via the Piscataqua River Bridge. There is a single mainline toll plaza and a ramp toll plaza on the Blue Star Turnpike, both located in the Town of Hampton.

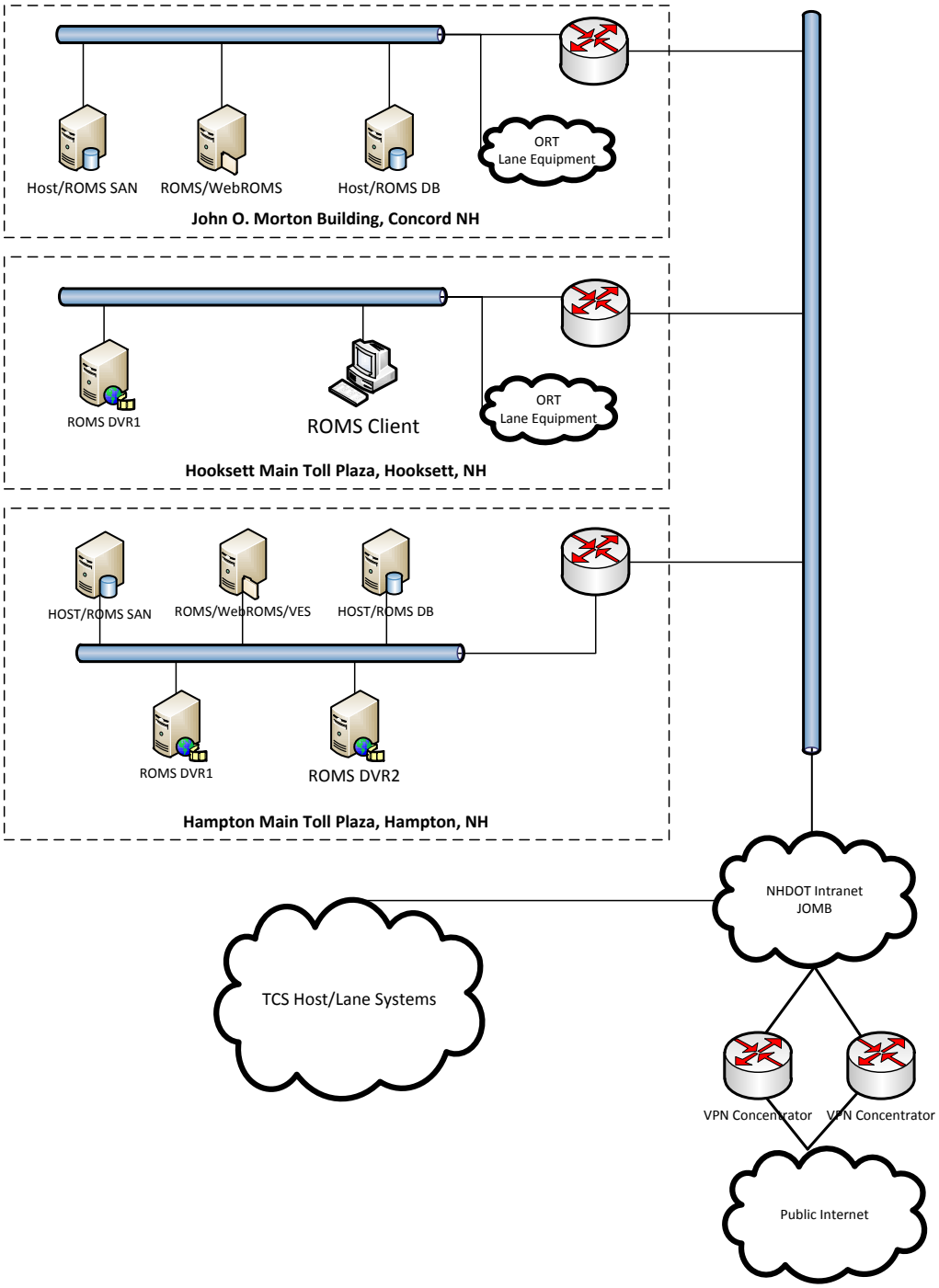
The Spaulding Turnpike is 33.3 linear miles, extending from Portsmouth, New Hampshire, to Exit 18 in Milton, New Hampshire. It is the major north-south road in the eastern portion of the state, and connects the Blue Star Turnpike to NH 16, which is the major roadway to northern New Hampshire along the eastern border of New Hampshire. It also connects the three major cities in eastern New Hampshire (Portsmouth, Dover and Rochester) and connects to several major highways that include US 4, NH 16, NH 125 and Interstate 95. There are two mainline toll locations at Dover and Rochester. The Spaulding Turnpike and Blue Star Turnpike are also collectively known as the Eastern Turnpike.

A-1.3.2 Vehicle Classification

The current NHDOT vehicle classification schedule consists of ten different classes including both single rear tire and dual rear tire classifications. The current vehicle classification structures and corresponding toll rate structures can be found at the following:
https://www.nh.gov/dot/org/operations/turnpikes/documents/TollsClassChart.pdf
http://www.nh.gov/dot/org/operations/turnpikes/documents/NewTollRates-July12009NoBedfordRoad.xls

A-1.3.3 Existing ORT System Description

The existing NHDOT Open Road Toll (ORT) system is a separate and fully-integrated system that was implemented by Schneider Electric (formally Telvent) and is currently maintained and operated at the Hampton and Hooksett Mainline toll plazas. The Conventional TCS was implemented at each of the 10 toll plazas in 2014 by Xerox. This system is maintained by Xerox.


Host/ROMS SAN
ROMS/WebROMS
Host/ROMS DB
ORT
Lane Equipment
John O. Morton Building, Concord NH
ROMS DVR1
ROMS Client
ORT
Lane Equipment
Hooksett Main Toll Plaza, Hooksett, NH
HOST/ROMS SAN
ROMS/WebROMS/VES
HOST/ROMS DB
ROMS DVR1
ROMS DVR2
Hampton Main Toll Plaza, Hampton, NH
NHDOT Intranet
JOMB
TCS Host/Lane Systems
VPN Concentrator
VPN Concentrator
Public Internet

A-1.3.4 NHDOT Statistics

The following are the 2015 statistics based on the processing from the current NHDOT's back office system:

- Annual Transactions – 112.3 million (approx.)
- Annual Revenue - $120 million (approx.)
- Annual *E-ZPass* Transactions – 85 million (approx.)
- *E-ZPass* Participation Rate – 71% (approx.)
- Annual Home vs. Away *E-ZPass* Transactions – 55 Million Home, 30 Million Away (approx.)
- Total NHDOT *E-ZPass* Accounts – 388,000 (approx.)
- Total NHDOT *E-ZPass* Transponders in circulation – 665,000 (approx.)
- Total Transponders Issued Annually – 104,000 (approx.)
- Total Accounts Opened Annually – 36,000 (approx.)
- Violation Notices Sent Annually – 1,125,000 (approx.)

A-1.3.5 Current Interfaces

Table A-3 – 1: Interfaces

Agency Name	Import or Export	Function	Frequency
Agency Existing *E-ZPass* Violation Server	Export	Send Violation Images to CSC for violation processing.	Live
Agency Existing *E-ZPass* Host Server	Import	Receive Transponder Status File to update ORT lanes.	Daily
Agency Existing Lane (Toll Collection System) Host Server	Export	Send *E-ZPass* transactions to existing Lane System Host for inclusion in processing.	Hourly

A-2 Related Documents Required

(Required at Contract time)

a. Certificate of Good Standing/Authority
(Dated after April of the current year and available from the Office of the Secretary of State by calling (603) 271-3244 or (603) 271-3246. Forms are also available on: www.sos.nh.gov/corporate/index.html)

b. Certificate of Vote (Appendix G)

c. Proof of Insurance Compliance with Appendix H: State of New Hampshire Terms and Conditions, Section H-14: Insurance.

A-3 Agency Project Team

Agency high-level staffing for the project will include:

John Corcoran	Bureau of Turnpike	Administrator, Contract Manager
Renee Dupuis	Bureau of Turnpike	Assistant Administrator, Project Manager
Vacant	Bureau of Turnpike	E-ZPass Manager
Laura Marriott	Bureau of Turnpike	Toll Manager
John Clarke	Bureau of Turnpike	Business Systems Analyst
Charles Burns	DoIT at DOT	DoIT Liaison

A-3.1 Project Sponsor

The Project Sponsor, the Bureau of Turnpikes (Agency) and the Commissioner will be responsible for securing financing and resources, addressing issues brought to attention by the Agency Project Manager, and assisting the Agency Project Manager in promoting the project throughout the Agency. The Project Sponsor or an appropriate designee will be available to resolve issues on a timely basis.

A-3.2 Contract Manager

The Contract Manager major duties will include:

- Project lead during RFP phase and Contract Development.

A-3.3 Agency Project Manager

The Agency Project Manager major duties will include:

- Lead the Project through design, development, testing and maintenance;
- Oversee Project's acceptance, planning, implementation and follow-up issues;
- Contact point for coordination and management of Project Implementation Plan with the Contractor and State's Project team;
- Coordinate/plan with Contractor testing, conversion and implementation of the Project;
- Facilitate Project strategy and approach;
- Engage and manage Contractor;
- Manage significant issues and risks; and
- Manage stakeholders' concerns.

APPENDIX B: MINIMUM STANDARDS FOR PROPOSAL CONSIDERATION

Information is requested in the Proposal Content section, herein, to enable the Agency to Contract for Project implementation with an acceptable Contractor. Coverage in Appendix B is limited to specific minimum requirements. A Proposal that fails to satisfy the requirements in this section may be rejected without further consideration.

B-1 Proposal Submission

The Proposal must be submitted on time, as defined in this RFP in the Schedule of Events section, herein and include the properly completed Proposal Transmittal Letter contained in Form 1 in Appendix J: Proposal Transmittal Letter Section, herein.

B-2 Compliance with Requirements

Requirements and Deliverables are listed in Appendix C: Requirements and Deliverables in this RFP. See Section 5.19.6 Section III: Responses to Requirements and Deliverables.

B-3 Contractor Experience

a. The Contractor must have been responsible for the implementation of at least one (1) ORT or AET toll system within the United States. The specific experience and project must be described within the Proposal in the Prior Project Descriptions Section as one of the designated projects. The contents of this section are described in Appendix E: Standards for Describing Contractor Qualifications.
b. The Contractor must have designed, developed, installed and maintained for a minimum period of five (5) years ORT or AET toll system within the United States.

B-4 The Contractor key staff must have the following experience:

1. Project Principal: Shall have been full time employee of the Proposer or its parent company for at least one (1) year and have a minimum of ten (10) years' experience in the toll/revenue collection industry or similar industry, with five (5) years of senior management responsibility for major projects. Shall have senior management responsibility for at least one (1) project of five million dollars ($5,000,000) or more in value.
2. Project Manager: Shall have at least five (5) years' experience in the toll/revenue collection industry or similar industry, of which the last three (3) years shall have been as project manager of ORT toll collection projects similar to this Project. Shall have been project manager for at least one (1) project of two million dollars ($2,000,000) or more in value.
3. Quality Assurance Manager: Shall have been a quality assurance manager for at least three (3) years on similar projects in the ORT toll collection industry or related industry.

4. Assistant Project Manager: Shall have at least three (3) years of experience in the ORT toll collection or related industry, with at least one (1) year of management work on toll collection projects.
5. Technical (Software) Manager: Shall have a minimum of five (5) years of software development management experience, including at least two (2) years of experience in software development/management of toll/revenue collection projects of similar nature to this Project.
6. Installation Manager: Shall have at least three (3) years of experience in the ORT toll collection or related industry, with at least two (2) years of experience in a responsible installation management role on ORT toll collection projects.
7. Data Migration Manager: The Data Migration Manager shall have overall responsibility for the planning, implementation, and monitoring of the data migration from the existing ORT System to Contractor's new ORT System. The Data Migration Manager shall have at least 6 years working with database conversions and migrations similar in complexity to the ORT data migration, 3 years in a management or lead role for data migration. And 2 years of experience working with the Contractor's proposed solution product.
8. Maintenance Manager: Shall have at least three (3) years of experience in maintaining toll collection systems with at least one (1) year experience in the management of maintenance of ORT toll collection systems.

APPENDIX C: REQUIREMENTS AND DELIVERABLES

C-1 Scope of Work

The Contractor shall provide, in accordance with this Scope of Work and all Appendices and Exhibits to this RFP, all necessary resources, software, systems, facilities, communications and other resources needed to fully support the development, delivery and operations of a ORT system and related operations to support electronic tolling, video tolling, violation processing and *E-ZPass* Group reciprocity.

C-1.1 Project Goals

The purpose of this project is to acquire an Open Road Tolling/E-ZPass System through an upgrade process by utilizing existing hardware where practical, replacing where necessary, and securing ongoing maintenance services. To fulfill these intentions, the following project goals have been established:

Goal 1: Meeting the Project Schedule with the deployment of a fully integrated, working and accurate ORT solution.

Goal 2: Obtain ORT maintenance services for the current ("legacy") system operating in Hooksett and Hampton. Work with existing ORT Contractor to maintain service.

Goal 3: Implement new redundant, highly reliable ORT system and maintenance services in Bedford, Dover and Rochester over the initial five (5) year Contract Term.

Goal 4: Receive the best value for the dollars invested.

The project will be delivered in two (2) distinct phases. Phase I will commence upon issuance of NTP and involve the various efforts and tasks required to design, develop, install and commission the new ORT System for revenue collection. Phase I will accomplished under the following sub phases;

Phase IA – Design, Development and Factory Test – Under this sub phase the Contractor shall complete the new ORT design and develop culminating in Factory Acceptance Test (FAT).

Phase IB – Training, Installation, On-Site First Installation Test (OFIT), Commissioning, and Bedford Go Live – This will include the necessary efforts to provide any and all necessary installation and upgrade efforts including system commissioning testing.

Phase IC – Extended Operations Test (EOT) – This test will be a 45 day evaluation of the new ORT under live operating conditions to prove out conformance with the specified requirements.

Phase II will commence with the Selected Contractor assuming all legacy system maintenance efforts on July 1, 2018. It is expected that Phase II will be completed no later than June 30, 2023.

Phase II – ORT Maintenance and Warranty – This phase includes both the provisions of full maintenance and system support during a twelve (12) month Warranty Period, following issuance of Provisional Final System Acceptance, and throughout the maintenance term. The Warranty Period is only applicable to the hardware installed at the Bedford Plaza.

C-1.2 Definition & Understanding of the Term Configurable

Throughout the RFP and subsequent project documentation the term 'configurable' and 'user configurable' is and will be used. To provide clarity and avoid misinterpretation the NHDOT has defined the terms "User Configurable" and "Configurable" as:

> **User Configurable** - shall mean that users of the system such as operations staff, management staff, etc., with appropriate user rights may make changes to ORT system. User Configurable items shall not be dependent on the Contractor's development staff, programmers, etc. nor shall it be subject to code changes, requests for extra work, considered out of scope work or require additional system testing and or regression testing.
>
> **Configurable** – shall mean that the System is capable of being configured to adapt to changes throughout the term of the Contract. Configurable items may be limited to the Contractor's development staff, programmers, etc. Configurable changes, either directed by NHDOT or at the Contractor's discretion shall be considered part of the Contractor's operations of the ORT and not subject to code changes, requests for extra work or considered out of scope work.

Both User Configurable and Configurable items shall be performed and included efforts as part of the ongoing operations of the ORT System.

> **Fixed** – In addition to the "Configurable" terms the NHDOT recognizes that elements or components of the System will be "fixed" whereby specific code changes may be required and or possibly additional testing.

The Contractor shall identify in APPENDIX J: FORMS, Form 8: Compliance Matrix where it feels items may be considered User Configurable, Configurable or Fixed.

C-1.3 Project Overview

The New Hampshire Department of Transportation (NHDOT) Bureau of Turnpikes (also referred to as "the Agency" operates a Turnpike System that is comprised of three (3), non-contiguous, limited-access highways: the Blue Star Turnpike (I-95) and the Spaulding Turnpike, which are collectively referred to as the Eastern Turnpike, and the F.E. Everett Turnpike, also known as the Central Turnpike. The Turnpike System is a combination of standard barrier toll collection system providing both slow speed electronic and cash payment and high speed ORT toll collection systems. The existing Central Host System uses the regional *E-ZPass* Customer Service Center (CSC) to process *E-ZPass* (AVI) transactions and will continue

to be used on the Agency toll lanes. The Agency desires to enhance the service and reduce congestion periods at mainline plazas by providing express lane, or Open Road Toll (ORT) capabilities at designated plazas.

There will be new ORT implementations at the Bedford Mainline Plaza (May-June 2018), Dover and Rochester (2021-2023). In the Bedford location, the cash collection sections of the mainline plaza will be physically split into two separate collection areas, one northbound (NB) and one southbound (SB), in order to accommodate the installation of four (4) ORT Lanes, two (2) at either direction in the center of the existing plaza. The Dover and Rochester locations will be new installations. The ORT Lanes will be equipped with AVI, AVDC, and VES equipment to allow the Agency to electronically collect tolls and pursue toll evaders. A Maintenance On-Line Management System (MOMS) that provides for the monitoring of the system and supports all maintenances activities shall be included as part of the ORT Plaza/Host System and meet the requirements of this document. It is preferred but not required that the MOMS system be integrated with the existing ORT MOMS system.

The ORT Lanes and the ORT Plaza/Host System provided for the project shall support all of the functions necessary to:

1. Detect, track, classify, and process vehicles traveling the ORT Lanes in accordance with the Agency operational policies.
2. Identify, record, and pursue violations in accordance with the Agency's Business Rules and New Hampshire's legislative policies.
3. Generate, and track and record the occurrence of hardware and software failures and their resolution and support all required maintenance activities.
4. Determine the applicable pricing and charge the customers the appropriate toll in accordance with the Agency's Business Rules updated during the Design Phase.
5. Audit and reconcile transactional and financial data –may have the capability to audit both between internal systems and between the Agency and the *E-ZPass* CSC.
6. Generate modified or additional operational, traffic, audit, financial and performance reports to allow the Agency to operate and manage the Agency's ORT Lanes and Toll Collection System.
7. Be compliant with the *E-ZPass* Group Specifications for AVI toll collection.
8. Be capable of operating side-by-side with the current system with no operational or functional interference.
9. Interface with either the existing Central Host System or *E-ZPass* CSC for the transfer of transaction, images, revenue data and transfer of Transponder Status Files.
10. Implement an effective Violation Enforcement System that will capture images of potential violators and mismatch cases in the ORT Lanes.
11. Interface with the existing Image Server or provided Image Server for the transfer of images.
12. Interface with existing ORT host servers or provide new Host Servers.
13. Interface with existing Lane Host Server.

The ORT System includes, but is not limited to, the following:

1. Development, configuration, customization, procurement, manufacturing, testing and installation of hardware and software for the new ORT In-lane Systems, and the ORT Plaza/Host System. The System provided shall meet the specifications as detailed in this document.
2. The Contractor is responsible for designing, providing, installing and testing all equipment and peripherals required to meet the requirements under this Contract. The Contractor is responsible for determining the proper quantities of in-lane equipment and peripherals required to satisfy ORT requirements of this SOW.
3. Providing the necessary communications network infrastructure that will allow the System to communicate among various ORT Lanes and ORT Plaza/Host System components, the existing Central Host System, the Image Sever and/or with the *E-ZPass* CSC as required.
4. Providing the necessary infrastructure to mount the toll collection equipment in the new ORT Lanes.

The physical System as further described in this Document shall consist of the following primary subsystems:

1. Automatic Vehicle Identification (AVI) System;
2. Automatic Vehicle Detection and Classification (AVDC) System;
3. Violation Enforcement System (VES);
4. Toll Zone Controller;
5. ORT Plaza/Host System comprising of:
    a. Toll Collection Management;
    b. MOMS;
6. Digital Video Audit System (DVAS);
7. Communications Network.

Autonomous redundant toll zone controllers shall interface with the in-lane equipment and communicate in real-time with the ORT plaza/ORT host system for the transfer of transactions, alarms, and event messages. Transactions from the ORT plaza/ORT host system shall be transferred to the existing Central Lane Host System for reporting, reconciliation and transmission to the *E-ZPass* CSC. Images associated with apparent violator transactions shall be transferred to the Image Server and on to the *E-ZPass* CSC with the capability to capture and transfer class mismatch transactions in the future. The ORT plaza/ORT host system shall obtain the transponder status list from either the existing Central Lane Host System or from the *E-ZPass* CSC and transmit the transponder status list to the toll zone controllers. The ORT Plaza/Host shall also have the capability of scheduling and managing toll rates and schedules and transmitting the data to the ORT toll zone controllers.

C-1.3.1 Existing ORT System Maintenance Requirements

The Contractor shall provide maintenance for the Existing ORT Lanes in Hampton and Hooksett. The purpose is to maintain the Existing ORT System in a sufficient manner to support toll operations and revenue collection utilizing the existing System.

Since the Existing ORT System operates on a software design proprietary to Kapsch, NHDOT has retained Kapsch on a time and materials basis agreement to address critical failures that may not be capable of being solely addressed by the Contractor. During this period between July 1, 2019 and June 30, 2023, if a failure or fault occurs that may require Kapsch software support, the Contractor shall work with the NHDOT to determine the exact issue and requested support from Kapsch. Furthermore, the Contractor shall work with Kapsch in supporting any fixes or resolutions.

The existing ORT Toll System integrator and maintainer, Kapsch is not precluded from submitting a Proposal on this Project. Regardless of whether Kapsch submits a Proposal on the Project, Kapsch shall be responsible for providing certain services related to the Existing ORT toll collection System as further described in Appendix M: Agreement for ORT Toll Collection System with Kapsch. These services shall be in the form of a pre-determined amount (PDA) sub-contract with the incumbent Contractor and shall include annual Software Maintenance and training. The dollar amount of the PDA will be determined by the State and may be supplied to the Contractors in an addendum issued by the State, but will not be in the price proposal. The State in its sole discretion may decide to award the Contract without the PDA dollar amount provided to the successful Contractor.

C-1.3.2 Existing Software and Firmware Maintenance

The NHDOT will retain the services of Kapsch on a time and materials basis for maintenance of existing software and firmware. The Contractor shall coordinate with Kapsch to support their software maintenance efforts during the period of July 1, 2019 and June 30, 2023.

C-1.4 Project Schedule, Phases and Milestones

This section shall provide an overall summary of project phasing, scheduling, and milestone achievements.

C-1.4.1 Project Phases

The ORT upgrade and maintenance project shall be divided into two (2) overall phases, generally delineated by successful completion of major milestones. These phases include:

Phase I - New ORT Deployment - Phase shall involve the various efforts and task required to design, develop, install and commission the new ORT System for revenue collection. Phase I shall be accomplished under the following sub phases;

> **Phase IA – Design, Development and Factory Test** – Under this sub phase the Contractor shall complete the new ORT design and develop culminating in Factory Acceptance Test (FAT).
>
> **Phase IB – Training, Installation, On-Site First Installation Test (OFIT), Commissioning, and Bedford Go Live** – This will include the necessary efforts to provide any and all necessary installation and upgrade efforts including system commissioning testing.

Phase IC – Extended Operations Test (EOT) – This test will be a 45 day evaluation of the new ORT under live operating conditions to prove out conformance with the specified requirements.

Phase II – ORT Maintenance and Warranty – This phase includes both the provisions of full maintenance and system support during a twelve (12) month Warranty Period, following issuance of Provisional Final System Acceptance, and throughout the maintenance term. The Warranty Period is only applicable to the hardware installed at the Bedford Plaza.

The following table represents the completion deadlines required for each major Phase of the Project:

Project Phase	Milestone Completion Date
Phase I – New ORT Lane	
Phase IA – Design, Development and Factory Acceptance Test	December 31, 2017
Phase IB – Training, Installation, System Acceptance Testing, Commissioning and Bedford Go-Live	May 31, 2018
Phase IC – Extended Operations Test	September 1, 2018
Phase II – Warranty and Maintenance Term	Based on Provisional Final System Acceptance or Final System Acceptance

The new Bedford ORT System shall be ready for full use and revenue service no later than the date as dictated by completion of the Phase IB Milestone. If significant problems are detected during the EOT period, and the equipment is not operating at an acceptable level of performance as defined in this RFP, the Contractor shall be notified in writing immediately. Problems or defects shall be promptly resolved by the Contractor. System Acceptance shall not be granted by the NHDOT until the ORT system performs satisfactorily.

C-1.5 General Requirements

The requirements herein are intended to cover the system concepts, operational design, technical design, development, programming, integration, implementation, fabrication, installation, testing and Maintenance of an ORT system that meets the needs of the Agency's Project including, without limitation, ORT toll collection management, audit and reconciliation, and violation enforcement.

The Contractor shall furnish and mobilize all required facilities, equipment, and resources necessary for initiating and concluding the Contract and may include such portions of the following as are required at the beginning and end of the Project:

1. Setting up at the various worksites, storage areas, sanitation and other facilities as required by the specifications, by local or state law, or by regulation, and the subsequent demobilization and removal from the site of said equipment, appurtenances and the like upon completion of the work.
2. Coordinating all lane closure activities and/or traffic control with the Agency and the Civil Contractor.

3. Obtaining necessary permits and licenses, and payment of fees as required by local, state and federal law.
4. Coordinating design, installation, and test activities with the Agency and the Civil Contractor during various stages of this Project.
5. Lighting work area.
6. Providing required insurance and bonds.
7. Providing required software licenses and software escrow.

The Contractor shall be responsible for purchasing and maintaining all equipment required for development and testing of the ORT toll collection system. The Contractor shall also develop and establish a test site with the same configuration and equipment as the Agency ORT Lanes. The Agency shall approve the test site and shall have full access to the test site. Equipment installed at the test site shall be the same type of equipment as the final installation.

C-1.6 Legal Requirements

The Contractor is required to be compliant with the regulations and laws that govern an ORT toll collection system in New Hampshire.

C-1.6.1 FCC License

The AVI system shall comply with all applicable Federal Communications Commission (FCC) regulations. While NHDOT will be the ultimate responsible party for obtaining the applicable FCC licenses, it is the Contractor's responsibility to support the Agency upon request by providing all necessary information on the proposed AVI system to complete this task. The Contractor shall, as part of this effort, identify and accommodate any site conditions that may potentially degrade the performance of the AVI system. Under all circumstances it is the Contractor's responsibility to comply with the AVI performance requirements of this document and no relief in such performance shall be provided.

C-1.7 Interoperability Requirements

The AVI system shall be certified and approved by the *E-ZPass* Group and meet all of the technical and operational requirements of the *E-ZPass* Group Contract. The AVI system shall read the *E-ZPass* transponders issued with the accuracy specified in Section C-2.9.

The ORT Plaza/Host System shall have the ability to obtain and process the Transponder Status File from the Existing Central Host System or directly from *E-ZPass* CSC in accordance with the interface file specifications. The ORT Plaza/Host System shall transfer the required transaction data for all *E-ZPass* transactions to either the Existing Central Host System or the *E-ZPass* CSC to meet the *E-ZPass* Group interoperability file specifications, available from the *E-ZPass* Group website.

C-1.8 General Lane and Plaza Modifications Description

The current four ORT lanes in Hooksett and four ORT lanes in Hampton will be maintained, and an additional four ORT lanes will be deployed in Bedford. New Plazas with ORT lanes will be implemented in Dover and Rochester.

The proposed upgrade of the Bedford Toll Plaza shall include the addition of a total of four ORT lanes, two in each direction centered on the plaza. The diagram below shows the new configuration with the ORT.

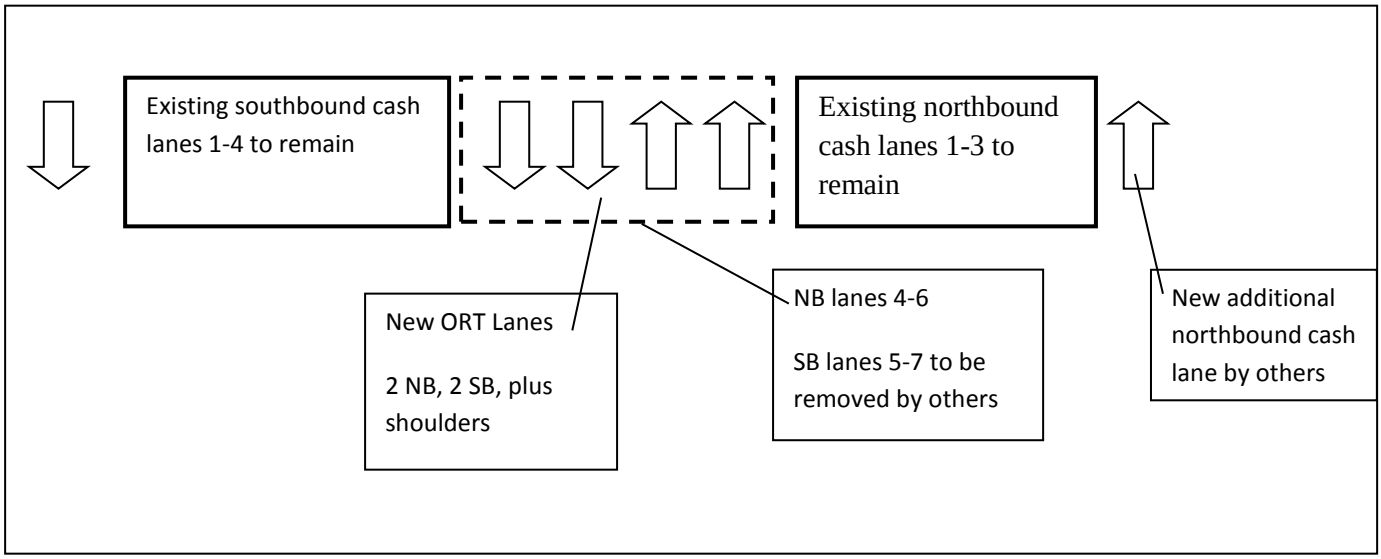


Figure 1: Bedford Toll Plaza Toll System Modifications

The new ORT lanes are currently designed as full 12 foot travel lanes with full shoulders on the inside (8 foot wide) and outside (10 feet wide) of the lanes in each direction. Work is also anticipated to include a single new cash lane on the northbound side of the plaza as shown in Figure 1.

C-1.9 Scope of Work

C-1.9.1 Remove Existing Infrastructure

As part of a separate Contract, the existing Lane System Contractor shall be responsible for removing all salvageable existing toll equipment from toll lanes in coordination with the infrastructure demolition to be conducted by Civil Contractor to make space for the new ORT lanes. This applies only to the Bedford location.

C-1.9.2 Integrate/Reuse Existing Infrastructure

Working with the existing Lane System Contractor, the Contractor shall determine which portions of the existing infrastructure will be reused. The following aspects of the existing Lane System are anticipated to be reused and integrated into the ORT System. The Systems Integrator will be required to field verify adequacy of all equipment to be reused:

- Network connections between plaza and host servers
- Host server(s)
- Network connection and interface with CSC

C-1.9.3 Furnish New Infrastructure

All required equipment for the ORT System to meet the technical requirements presented within this document shall be provided by the System Integrator. A MOMS for the ORT System shall be provided by the Contractor that meet the requirements within this document.

C-1.10 Scope of Maintenance for System

The System Integrator shall be responsible for Maintenance of the new ORT System in Bedford and the Maintenance of the existing ORT System in Hampton and Hooksett as detailed in Section C-8.0 of this document.

C-1.11 Responsibility Matrix

The responsibility matrix describes the responsibilities and coordination required by the primary project team members. Table C-1 at the end of this Appendix contains the responsibility matrix.

C-1.12 Pricing Framework

The Proposer shall complete the pricing sheets provided in the RFP Appendix J as part of the submission. These pricing sheets include the following:

1. Costs for design, installation and testing of new ORT lanes at Bedford.
2. Cost for the design, installation and testing of the ORT Plaza/Host System and interfaces to the existing ORT solution.
3. Costs for maintaining ORT Lanes and the ORT Plaza/Host System in Bedford, Hampton and Hooksett.
4. Costs basis for future ORT implementations at Dover and Rochester and Maintenance.

C-1.13 Project Deliverables

C-1.13.1 General

Detailed and accurate documentation is required to ensure that the Agency can operate and maintain the ORT System. Detailed documentation shall enable the Agency to understand the ORT System, thus resulting in better performance of audit and reconciliations. It also shall assist the Agency in making better, informed decisions on any required System changes or revisions to Business Rules.

Unless otherwise noted or instructed by NHDOT document deliverables require a draft, final draft submission for NHDOT review and approval.

- Draft – Draft submittals shall be completed by the Contractor with intent to represent a 90% completion. NHDOT's review of the Draft shall serve as the initial review and to resolve any outstanding issues and/or clarifications needed for the Contractor to complete the document and submit a Final Draft. NHDOT shall be allowed a 15 business day review period for all Draft submittals.

- Final Draft – The Final Draft shall be considered 100% complete taking into consideration and applying all comments and resolutions from the Draft submittal. NHDOT's review of the Final Draft is intended to verify that all comments and resolutions have been appropriately applied. NHDOT shall be allowed a 3 business day review period for all Final Draft submittals.

Final submittals shall also be subject to final review and approval by NHDOT and for subsequent payment where applicable.

NHDOT review times are estimates. If the Contractor's submittals are incomplete the review may take longer. The NHDOT reserves the right to reject any submittal which it feels has not been adequately prepared. The NHDOT will inform the Contractor in writing in such event and will request a resubmittal of the deliverable. NHDOT's rejection shall not waive the Contractor's responsibility to fulfill and maintain the approved project schedule.

In the event the Contractor fails to address comments appropriately requiring additional or repetitive reviews the NHDOT reserves the right to seek reimbursement for any additional consultant costs related to the additional review efforts.

The Contractor shall meet the submittal dates per their approved Project Schedule. The table below: Summary of Major Deliverables provides estimate due dates or phase for deliverable/milestone. Each of these submittals along with all corresponding drafts shall be clearly represented in the Project Schedule. The Contractor shall ensure that the scheduling and submittal of all drafts take into account the required review and resubmittal times to meet the milestone deliverable date.

NHDOT will review and approve all deliverables required under the Contract. In the event the Contractor fails to receive approval of any document prior to "Go-Live" as indicated in Table C- 13:

Table C- 13: Summary of Major Deliverables

Item No.	Deliverable/Milestone	Estimate Due Date*
1	Notice to Proceed/Mobilization	
2	Civil Design Function Requirements	30 Days from NTP
3	Project Schedule (Baseline)/Escrow Deposit	45 Days from NTP
4	Final Project Management Plan, including Quality Assurance Plan	45 Days from NTP
5	System Requirements Document	During Phase IA
6	Draft Business Rules Document	During Phase IA
7	Draft Interface Control Documents	During Phase IA
8	Preliminary System Detailed Design Document	During Phase IA
9	Final Data Migration Plan	During Phase IA
10	Final Implementation & Transition Plan	During Phase IA
11	Final Master Test Plan	During Phase IA
12	Factory Acceptance Test (FAT) Plan	During Phase IA
13	Final Interface Control Documents	During Phase IB
14	Final System Detailed Design Document	During Phase IB
15	Final Maintenance Manual	During Phase IB
16	Final ORT installation Plan and 100% drawings Approved	During Phase IB
17	ORT On-Site First Installation Test (OFIT) Test Plan Approved	During Phase IB
18	Commissioning Test Plan	During Phase IB
19	Successful Completion of Installation, Commissioning and Go-Live (Phase IB complete)	During Phase IB
20	Final Business Rules Document	During Phase IB

21	Draft Reports Manual	During Phase IB
22	Draft User Manuals	During Phase IB
23	Final Disaster Recovery Plan & Business Continuity Plan	During Phase IB
24	Final Training Plan	During Phase IB
25	Final User Manuals	During Phase IB
25	Final Reports Manual	During Phase IB
26	Training Completed	During Phase IB
27	Extended Operations Test Plan	During Phase IC
28	Final As Built Drawings & Spare Parts List & BOM	During Phase IC
29	Final Project Acceptance and Final Software Escrow Deposit	During Phase 1C
30	Retainage Released	

***Unless otherwise specified the Contractor shall propose delivery dates within their schedule for the specified project phases. NHDOT will review the schedule with the Contractor and reserves the right to request adjustments in document delivery dates to prevent an overload or strain on NHDOT resources to review documents.**

Summary of Major Deliverables the NHDOT may withhold, in its entirety, monthly operations payments until such documents are satisfactorily submitted and approved.

The Contractor shall take into consideration the review and response times of both the NHDOT and the Contractor in preparing and managing the timeliness of the document deliverables.

As part of each review process, NHDOT will provide the Contractor with a consolidated set of comments on the deliverable submitted for review.

The Contractor shall respond in writing to all NHDOT provided comments. A comment resolution meeting may be conducted to clarify and resolve any remaining questions and issues concerning the comments and/or responses provided.

Based on NHDOT comments and the results of the comment resolution meeting, the Contractor shall prepare a final version of the deliverable for NHDOT approval.

C-1.14 Deliverable Payment Schedule

The Contractor will be compensated for work satisfactorily performed under the Contract, based on the Payment Schedule detailed below. All invoices will be subject to 5% retainage to be paid upon Acceptance of the project.

Item No.	Item	Percent Payment*	Cumulative Gross Payment	Payment Minus Retainage	Cumulative Net Payment
1	Notice to Proceed/Mobilization	2.50%	2.50%	2.375%	2.38%
2	Civil Design Function Requirements	2.50%	5.00%	2.375%	4.75%
3	Project Schedule (Baseline)/Escrow Deposit	1.00%	6.00%	0.950%	5.70%
4	Final Project Management Plan, including Quality Assurance Plan	2.50%	8.50%	2.375%	8.08%
5	System Requirements Document	4.00%	12.50%	3.800%	11.88%
6	Draft Business Rules Document	2.00%	14.50%	1.900%	13.78%
7	Draft Interface Control Documents	2.00%	16.50%	1.900%	15.68%
8	Preliminary System Design Document	4.00%	20.50%	3.800%	19.48%
9	Final Data Migration Plan	2.50%	23.00%	2.375%	21.85%
10	Final Implementation & Transition Plan	2.50%	25.50%	2.375%	24.23%

11	Final Master Test Plan	2.50%	28.00%	2.375%	26.60%
12	Factory Acceptance Test (FAT) Plan	5.00%	33.00%	4.750%	31.35%
13	Final Interface Control Documents	1.00%	34.00%	0.950%	32.30%
14	Final System Detailed Design Document	4.00%	38.00%	3.800%	36.10%
15	Final Maintenance Manual	2.00%	40.00%	1.900%	38.00%
16	Final ORT installation Plan and 100% drawings Approved	10.00%	50.00%	9.500%	47.50%
17	ORT On-Site First Installation Test (OFIT) Test Plan Approved	2.50%	52.50%	2.375%	49.88%
18	Commissioning Test Plan	2.50%	55.00%	2.375%	52.25%
19	Successful Completion of Installation, Commissioning and Go-Live (Phase IB complete)	5.00%	60.00%	4.750%	57.00%
20	Final Business Rules Document	2.00%	62.00%	1.900%	58.90%
21	Draft Reports Manual	2.50%	64.50%	2.375%	61.28%
22	Draft User Manuals	2.50%	67.00%	2.375%	63.65%
23	Final Disaster Recovery Plan & Business Continuity	5.00%	72.00%	4.750%	68.40%

	Plan				
24	Final Training Plan	2.50%	74.50%	2.375%	70.78%
25	Final Manuals: User Manual, Reports Manual	2.50%	77.00%	2.375%	73.15%
26	Training Completed	5.00%	82.00%	4.750%	77.90%
27	Extended Operations Test Plan	10.00%	92.00%	9.500%	87.40%
28	Final As Built Drawings & Spare Parts List & BOM	5.00%	97.00%	4.750%	92.15%
29	Final Project Acceptance and Final Software Escrow Deposit	3.00%	100.00%	2.850%	95.00%
30	Retainage Release	5.00%		5.000%	100.00%

C-2 Functional Requirements

C-2.1 ORT Toll Collection System Hardware

C-2.1.1 General Requirements

All hardware and equipment supplied for the ORT System or related improvements to the existing Lane System, excluding consumable material (material that needs continuous replenishment), shall be certified to have a ten-year minimum service life. All equipment, supplies and materials furnished for the Agency ORT toll collection system shall be new, off-the-shelf, field proven and meet applicable ISO, IEEE and ANSI standards. Materials and products that have been previously used for development work, purchased systems or items that have been salvaged or rebuilt shall not be permitted to be used in connection with this Project. All equipment provided by the Contractor shall be multi-sourced and readily available to the Agency. Proof of purchase and payment in the form of dated invoice, shipping bills and payment receipts shall be retained and furnished to the Agency upon request.

C-2.1.2 Maintainability

The ORT toll collection system hardware shall be designed with the following specifications:

- Modular replaceable components to allow for easy and quick maintenance.

- All components that perform the same function shall be interchangeable.
- All toll zone controllers shall be identical.
- All replacements shall be plug compatible with no changes required. All exceptions shall be noted.
- All electronic components shall be installed in non-corrosive sealed enclosures and meet the requirements specified in Section C-5.2.2.
- All enclosures shall have, at a minimum, 25% of the capacity reserved for future expansion for added boards and components.
- Where possible all in-lane equipment shall use network architecture to communicate with the toll zone controller.
- ISO standard I/O interface modules shall be used in the design and all serial, discrete and network interface boards shall have at minimum two spare slots to support the addition of components.
- All field wiring shall be terminated on screw lugs or connectors and all connectors shall be keyed or polarized to prevent incorrect connections.
- All wiring and connectors shall be labeled and strain relief shall be provided to protect the conductors.
- Surge suppression shall be provided for all wiring.
- All lane equipment shall be fused and protected against over current, over voltage, under voltage and lightning.
- Power supply shall be provided for all required internal DC voltages.
- All equipment shall be properly grounded for protection of the equipment and to ensure the safety of maintenance personnel.

C-2.1.3 Diagnostics

Maintenance personnel shall have easy access to components, and removal, testing and replacement shall not require extensive effort or tools. All test points necessary to diagnose the equipment while in operation shall be easily accessible and LED indicators shall be provided to assist technicians to identify and diagnose problems. Technicians shall have the ability to connect a laptop or terminal and keyboard to troubleshoot the components. Technicians shall have secure and remote access to the device to perform diagnostics when the lane is in operation. All error logs and event log shall be easily accessible. All diagnostics performed shall be recorded and reported to the MOMS, including the technician ID and time. All diagnostic software and tools required to support Maintenance activities shall be supplied by the Contractor and the Agency shall have full rights to such diagnostic software and tools.

C-2.2 Customized Hardware

If customized components or controllers are used, the Contractor shall provide detailed documentation on the design, production and testing of these units as further detailed in Section C-7. Documentation shall include the detailed Bill of Material (BOM) listing manufacturers/Contractors.

C-2.2.1 Equipment and Computer Enclosures

All in-lane equipment shall be installed in enclosures located in the existing Bedford Plaza tunnel and plaza building spaces as well as new locations in Dover and Rochester unless otherwise Approved by the Agency. The current tunnel is approximately seven (7) feet wide with potential wall mounting space for equipment, similar to the existing equipment installations. In addition to the tunnel walls, additional mounting areas may be available in the two (2) spiral staircases in the middle of the Bedford Plaza which will be decommissioned. The Bedford Plaza layout is further described in Exhibit 2. Additional space may be available in and around the plaza area and will be further identified during the site tour. The Contractor shall be responsible for verifying and coordinating enclosures installation space with NHDOT. The Contractor shall be responsible for purchasing and installing these equipment enclosures in accordance with the requirements in this section and in Section C-5.0. The Contractor shall supply equipment enclosures that are NEMA 4 rated or Approved equal, and must be able to support the toll collection components for a minimum of 10 years. All cable access holes, and other required openings shall be have gaskets or otherwise sealed to form a water tight seal, regardless of location (outdoor, tunnel, etc.).

All enclosures shall include heating and cooling units to ensure proper and reliable operations in the Agency toll collection environment. It is the Contractor's responsibility to provide the enclosure of the correct size that meets the requirements of this document. Temperature sensors shall be installed inside the equipment racks and roadside enclosures to report temperature status through the MOMS. Capability shall also be provided too automatically and gracefully shutdown servers in the event operating conditions degrade the performance of the Systems.

All critical equipment on the ORT Lanes shall be on UPS and shall operate without degradation for up to one (1) hour in the event of a power outage. Contractor shall coordinate with NHDOT staff regarding generator power quality requirements for feeding into the UPS system. Prior to total shutdown the UPS shall send a message to the toll zone controller that allows for a graceful shutdown of the computers. When the System is on the UPS a notification shall be reported to the MOMS.

Access to all enclosures shall be recorded automatically and transmitted to the MOMS.

C-2.2.2 Environmental

All equipment and hardware provided for the ORT System or related Enhancements to the existing ORT System shall at minimum meet the environmental requirements listed below:

1. The toll collection equipment to be supplied will be installed in areas exposed to the range of climatic conditions found in the project area. In addition to the climatic conditions, the equipment will also be subjected to harsh environmental factors normally found in the operation of a toll lane, such as, but not limited to, car, truck and bus emissions; industrial exhausts; industrial cleaners; road salt; gasoline and car lubricants; Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI); and vibrations. These conditions shall be taken

into account in the design and selection of equipment proposed for use on this Project. The Contractor is responsible for ensuring that the proposed System works accurately and reliably in such an environment including providing the necessary equipment and climate controls to ensure proper operations of the equipment.

2. The toll zone controllers, VES controllers, and other in-lane components must be able to operate in a sealed and enclosed environment as described in Section C-2.2.1 and be able to support all lane hardware/software specifications of this document. The toll zone controller shall operate with no degradation of performance in ambient air temperature of minus (-) 30ºC to 50ºC with and without direct sunlight and a relative humidity of 5 to 100 percent.
3. All exposed or in-lane equipment, when packaged in its fully assembled configuration, shall not be damaged, nor shall operational performance or lifetime be degraded, after being subjected to vibration of 1 g at 15 Hz, or shocks of 5 g for 10 ±1 millisecond, in each of three mutually perpendicular axes.
4. During the Design Phase the Contractor shall provide thermal calculations that prove the toll zone controller and other lane electronics enclosures meet the temperature specifications given above. Results of all environmental tests conducted and Certification of compliance shall be provided to the Agency as part of the Factory Acceptance Test (FAT).

C-2.2.3 Assembly

All Customized Hardware shall be assembled and tested in the fabrication shop in accordance with the Agency Approved Test Plan before being installed in the lane. All chassis, attachments and hardware shall be fabricated from corrosion and rust resistant materials.

All Customized Hardware shall be identified and shall undergo a 72-hour burn in test in accordance with the Agency Approved Test Plan before they are installed in the lanes. Customized Hardware assembly shall facilitate easy replacement (use of standard maintenance tools) of failed components in accordance with the maintainability requirements in this document.

C-2.2.4 Bill of Materials (BOM)

The Proposer shall include the BOM in the proposal for all equipment and hardware supplied for the ORT System or related Enhancements to the existing ORT System to meet the specifications of this document. During the design phase the BOM shall be finalized and all changes there after shall be subject to Approval of the Agency. Prior to purchase of any equipment the Contractor shall submit the final BOM to the Agency for Approval. All hardware and software procured under this Scope of Work shall be confirmed to be the latest model/version at the time of purchase. Updates to the BOM shall be provided by the Contractor whenever changes occur and at a minimum on a semi-annual basis.

C-2.2.5 Asset Inventory

The Contractor shall assume responsibility for spare parts and asset inventory including tracking and purchasing of all asset inventory items. NHDOT shall deliver the current spares and assets in inventory

to the Contractor but maintain ownership of the inventory. When spare parts inventory reach a critical level, the Contractor shall inform NHDOT. NHDOT will decide if the spares need to be ordered for the New ORT or allow the supply to dwindle to zero for certain parts or components. Refer to Appendix K for an inventory list.

C-2.2.6 Spare Parts

The ORT toll collection system provided for the ORT System or related Enhancements to the existing ORT System should allow the Agency to maintain and replace parts for the next nine (9) years at a minimum. The Contractor shall provide a spare parts list and recommended quantities for all spare parts for all hardware supplied for the ORT Lanes and ORT Plaza/Host System. The Contractor shall also provide the suppliers for manufacture of all parts and spare equipment with the current price list at the time of proposal and with the time period identified for which this price shall apply. The Contractor shall purchase under this Contract an initial stock of spare parts as described in Section C-8.7.2 that shall be made available to the maintenance staff upon Acceptance of the System. Spare parts for existing ORT lanes are provided in Section M.

C-2.2.7 Hardware Warranty

All hardware installed in the ORT Lanes shall have a warranty covered through the defined Warranty Period. Labor to install equipment replacements under warranty shall be incidental to the maintenance monthly fee. All products shall be warranted against design and installation flaws for the life of the product. Replacement of products within the Warranty Period shall be at no cost to the Agency.

C-2.2.8 ORT Toll Collection System Software

The operating system, database, and ORT toll collection system software provided by the Contractor shall support real time operations of the lane and shall be field proven. The proposed operating systems shall have a future upgrade path and must be supported for up to ten (10) years. The Contractor shall ensure that the risk of obsolescence to the hardware is minimized through the selection of the operating system software and the peripheral hardware. The existing system includes existing Interface Control Documents (ICDs) which will not change. If changes are required it will be at Contractor expense and coordinated with the existing lane Contractor and *E-ZPass* CSC.

The ORT toll collection system software shall support the implementation of the current system pricing regime and have the capability to interface with various other systems to obtain or transmit data related to the ORT Lanes System. A browser based Graphical User Interface (GUI) shall be employed for all software that has a user interface. Any GUI shall follow accepted industry human engineering design standards for ease of readability, understandability, appropriate use of menu-driven operations, appropriate use of context-sensitive help, user customization and intuitive operation. The ORT toll collection system software shall be parameter driven, configurable, and provide flexibility to the user to make changes. The ORT toll collection system software shall have debug features that shall assist in the trouble shooting of the System in the event of problems.

All ORT toll collection system software provided as part of the ORT System or related Enhancements to the existing Lane System shall be warranted against design flaws, and software defects and deficiencies for the life of the Project.

C-2.3 ORT Toll Collection System Security and Access Control Requirements

C-2.3.1 Enclosure Access

Access to all toll collection enclosures shall be key/lock controlled. All new enclosures installed shall be access controlled using keys/locks. Access to the enclosures shall be recorded automatically and transmitted to the MOMS if applicable under the current or projected upgraded MOMS system.

C-2.3.2 ORT Toll Collection System Lock Requirements

All enclosure locks for the ORT toll collection system shall be removable and replaceable cylinder lock types or similar as Approved by NHDOT. The Contractor shall supply all locks, establish the keying index system for all toll collection enclosures and install these locks on all toll collection enclosures before installation.

The Agency shall issue all keys for all toll collection equipment locks. Contractor personnel shall utilize only assigned, individual keys, and shall not share keys with any other individuals, or make copies of any assigned keys. Contractor personnel shall immediately return all assigned keys to the Agency upon request.

C-2.3.3 ORT Toll Collection System Software Security

Access to all information on the ORT toll collection system computer network shall be limited to authorized Agency, DoIT, and Contractor personnel only and shall be password controlled. User access security including sign-on facilities, permission control, and different levels of access shall be provided for the files, directories, and application software. The Agency and the Contractor shall develop the matrix of access levels during system design. The system should allow for changes to the access levels and additions of personnel in a secure manner. The system administrator shall be able to view and update access levels via a graphical and easy to read table within the application software. The Contractor shall not circumvent the system security as designed and as Approved by the Agency. Specific requirements shall be developed by the Contractor during System Design.

C-2.4 Toll Collection In-lane Subsystems

C-2.4.1 Automatic Vehicle Identification (AVI) System

The Contractor shall provide an AVI system that is certified to be compliant with the *E-ZPass* Group requirements, including Kapsch tuning and commissioning of the AVI equipment. The AVI system shall be able to read *E-ZPass* transponders using multiprotocol readers with the accuracy specified in Section C-2.9.1.

Contractor shall identify the required number of readers, antennas, and other AVI equipment required to support the requirements of this document. The Agency requirement for the system is for AVI coverage on the travel lanes and shoulders. The Contractor shall furnish and install all hardware and shall be responsible for the placement, installation, physical tuning of the equipment and integrating the AVI system into the Contractor ORT Design. The Contractor shall furnish and install other cabling and associated equipment mounting fixtures necessary to form a fully functioning AVI system that meets the requirements of this document.

The AVI system shall be able to read and report *E-ZPass* transponders on vehicles traveling through any area of the toll zone, including but not limited to center of lane, straddling lanes or shoulders with no degradation of performance or interference. If more than one transponder is present in a vehicle, the AVI system shall have the ability to accurately read and maintain a database of multiple transponders that are compliant with the *E-ZPass* Group Interoperability requirements. The AVI system shall have the ability to process transponders mounted on vehicles traveling in stop and go and bumper-to-bumper traffic in a fully congested roadway (three feet spacing) and on vehicles traveling at speeds up to 100 mph. The AVI system shall be implemented using multiprotocol readers.

The AVI system shall be capable of continuously performing diagnostics and reporting its health to the toll zone controller. Loss of communication to any element of the AVI system shall be immediately detected and transmitted to the MOMS.

To support remote access to the AVI system, an interface shall be provided so that software lane tuning, diagnostics, and other remote support shall be available to authorized personnel. Setup and configuration of the AVI system shall be achieved remotely and shall not require lane closure except for major lane tuning; when initially installed or when a reader or antenna is replaced.

Note, as part of the AVI system, the Agency currently utilizes functionality available in the *E-ZPass* Group transponder to specifically designate non-revenue transponders within the Agency's home transponder pool.

C-2.4.2 Automatic Vehicle Detection and Classification System (AVDC)

The Contractor shall be responsible for installing the required sensors and hardware as part of the AVDC system that shall accurately detect, separate, and classify vehicles (including dual tire vehicles) traveling in stop and go ("bumper-to-bumper") traffic in a fully congested roadway and vehicles traveling at speeds up to 100 mph, and accurately separate vehicles spaced as closely as three (3) feet apart, with Proposer's offering a solution that exceeds this requirement receiving more favorable consideration technically. The base requested system is to include full AVDC only in the travel lanes VES and violation enforcement triggers on shoulders. The system shall also be able to recover from instances of vehicles backing up through the lanes and this activity shall not impact the classification and detection of other vehicles in the lanes. The AVDC system shall detect the speed of the vehicle and report that to the toll zone controller as part of the vehicle transaction data. The Contractor shall ensure that there is sensor

coverage in the travel lanes and on the shoulder with vehicles traveling the shoulder and vehicles straddling lanes shall also be accurately detected and reported. Classification of vehicles traveling on the shoulder is not required however; the System shall accurately detect and report vehicles that travel on the shoulder.

The AVDC system developed, procured, furnished, and installed shall have the ability to detect hitches and ensure that vehicles with a tow are reported as one unit and are classified according to current Agency toll rates and classification structures. The Contractor shall analyze the site conditions and procure, furnish and install the sensors that perform in accordance with performance requirements set forth in this document. A gantry structure will be procured, furnished, and installed via a separate Contract at each tolling location (northbound and southbound) for installation of the AVI, AVDC and VES systems. The Contractor shall provide detailed specification requirements for gantry structures including hangers, access points specifications for wire-taps, etc. within thirty (30) days of NTP, and the Civil Contractor shall construct the gantries as required.

The AVDC system shall provide vehicle event messages, signals, and classification data to the toll zone controller and VES trigger. The AVDC system shall be capable of reporting its health to the toll zone controller and shall provide status when polled. Loss of communication to any element of the AVDC system shall be immediately detected and transmitted to the ORT Host Central Processing System (CPS) System to be reported to the MOMS. The AVDC system shall have adequate redundancy whereby a failure of a single sensor does not degrade lane operations or the System's capability to accurately capture and process images. In the event the AVDC system fails, images of all vehicles shall be captured and processed in accordance with Agency Business Rules.

In the event there is a classification mismatch between the AVDC system and the transponder, as defined by the Agency Business Rules, the system shall be capable of capturing an image of the vehicle and processing in accordance with the Business Rules. The retention or removal of the image shall be defined by business rules.

In addition to detecting the axle configurations necessary to support the current toll rate structure, the AVDC shall also include the functionality to utilize the maximum height of vehicle at the first axle, second axle and the highest point between the two axles for either augmenting the current classification structure or as a basis for potential future classification structures.

C-2.4.3 Violation Enforcement System (VES)

The Contractor shall procure, furnish, and install all necessary VES hardware and software required to support the violation processing requirements as set forth in this document. VES equipment and software that support front and rear image capture shall be procured, furnished, and installed at all the tolling locations, with full coverage in the travel lanes and shoulders. The Contractor shall ensure that there is shoulder coverage and vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane and straddling lanes. All vehicles shall be accurately detected and

their images captured and processed in accordance with the Business Rules developed during Phase 1A-Design, Development and Factory Testing.

C-2.4.4 VES Cameras and Associated In-lane Equipment

In order to support the toll enforcement requirements the capture of both front and rear license plate images is required. Vehicle license plate images shall be captured and processed in accordance with the Business Rules to be developed during the Design Phase and in accordance with all applicable violation legislation. The VES shall capture and process vehicles traveling in stop and go and "bumper-to-bumper" traffic in a fully congested roadway, vehicles traveling at speeds up to 100 mph, and vehicles with separation as close as three (3) feet apart. The VES shall be capable of buffering images (retaining an image until its disposition is known) such that no image is lost in order to support multiple vehicles in the lane and Agency Business Rules.

The Contractor shall procure, furnish, and install cameras, lighting, necessary VES triggers, and the necessary camera control software to automatically adjust VES to accommodate varying light and weather conditions to maintain adequate brightness and contrast settings, with or without traffic, to ensure optimum license plate information capture under all conditions and time of day. Lights procured furnished and installed in support of VES cameras shall not distract motorists traveling in either direction in the lanes. The Contractor shall provide two (2) front cameras and one (1) rear camera with the installation.

The violation images transferred shall include but not be limited to the full image and the Region of Interest (ROI). Cameras shall be adjusted such that no images of the driver shall be taken.

Note that the current design of the Agency system includes image tagging for matching up to transactions at the CSC that is non-standard compared to typical *E-ZPass* Group protocols.

C-2.4.4.1 VES Controllers/Servers

The Contractor shall procure, furnish, and install the necessary controllers/servers to support the in-lane VES equipment. The processor speed and memory shall be sufficient to process vehicles in real time to meet the speed and traffic volumes as specified in this document. The processor shall support standalone operations and the storage media shall be sized to hold a minimum of thirty (30) days of images and apparent violation data per lane at each of the tolling locations under normal operating conditions.

The VES shall be capable of performing with no degradation under conditions where every vehicle is considered an apparent violation (100% violations). Under these conditions the System shall be capable of storing images for seven (7) consecutive days per lane. The System shall be configurable to be set for processing of 100% violations. The VES controllers/servers shall have sufficient redundancy such that failure of a processor, board, power supply, disk or other critical unit does not result in loss of violation images and/or data. In the event communications to the VES controller/server is lost or the VES

controller/server becomes non-operational, the Contractor's design shall ensure that no images are lost. The VES shall be capable of continuously performing diagnostics and reporting its health to the MOMS. Loss of communication to any element of the VES shall be immediately detected and reported to the MOMS.

C-2.4.5 Toll Zone Controller

C-2.4.5.1 Toll Zone Controller Hardware

Toll zone controllers provided at the northbound and southbound tolling locations of the ORT Lanes shall be designed in a redundant configuration where there is a single primary toll zone controller with a "hot standby" secondary toll zone controller operating in parallel and able to take over control of the ORT Lanes in the event the primary unit should fail (automatic failover). When the secondary unit detects that the primary is off-line, the secondary shall assume the functions of the primary unit. Alarm messages shall be generated when such an event occurs. The Contractor's failover design shall ensure that there is no loss of revenue or transactions when one of the toll zone controllers fails. Only one toll zone controller at a time shall generate revenue transactions. The switchover from the primary toll zone controller to the secondary toll zone controller shall be transparent to the rest of the systems. Equivalent designs will be considered provided the same functionality and performance requirements can be demonstrated as equivalent.

Proprietary toll zone controller hardware will be accepted if drawings and a detailed narrative of the fabrication process to enable construction, repair, and modification of the hardware and rights to use the documentation provided are transferred to the Agency.

The processor speed and memory shall be sufficient to process vehicles in real time to meet the speed and traffic volumes as specified in this document. The disks shall be sized to hold 30 days of transaction and event data.

C-2.4.5.2 Toll Zone Controller Software

The toll zone controller located at each of the tolling locations shall process all of the data obtained from the other subsystems to generate a transaction record for each vehicle passage under the tolling location gantries. The toll zone controller shall:

1. Maintain the transponder status list used to validate the status of a transponder received from the AVI system.
2. Obtain the toll rate and schedule data from the ORT Plaza/Host System and determine the toll charged to AVI transactions and violations. Determination of toll can be performed either at the zone controller at the ORT Plaza/Host System.
3. Use the data obtained from the AVI system and AVDC system to assign the transponder read and classification to the correct vehicle.
4. Notify the VES to save and process vehicle images if the vehicle is flagged as a violation or a mismatch case per the Agency Business Rules.

5. Indicate the transmission status of the vehicle transaction recorded.
6. Transmit the transaction record with vehicle detection data, classification data, transponder data, and all other pertinent information regarding the vehicle to the ORT Plaza/Host System.
7. Transmit the violation images and data to the appropriate applicable server (new ORT Image Server or other depending on design) for further processing.
8. Transmits to the MOMS all alarm messages relating to the health of each subsystem, including the health of the primary and secondary (redundant) toll zone controller.

The toll zone controller software shall be configurable and able to support Agency operational needs without requiring changes to software. All configurable parameters shall be presented via a graphical table for easy viewing and updating by the system administrator through the appropriate application software module. The configurable parameters shall be further defined during the design process.

The Contractor shall propose appropriate protocols and data structures to accomplish the communications required between various components and peripherals. These protocols and data structures shall be fully detailed by the Contractor during the design process and Approved by the Agency prior to System Implementation. All messages between the toll zone controller, VES, AVI, and AVDC systems, ORT Plaza/Host Systems (for existing and proposed ORT) and the existing Lane system Central Host System shall utilize a guaranteed transmission protocol.

The toll zone controller application software shall support all lane functions required to meet Agency operational requirements. Those functions include the following:

C-2.4.5.2.1 Toll Zone Controller Start-Up

Upon start-up or initialization, the toll zone controller shall perform a self-diagnostics test to ensure full system operations. Alarm messages shall be reported for all failure conditions and a notification of the diagnostic check completion shall be displayed on the MOMS monitoring screen. The lanes shall always come up in an open mode if critical systems as defined by the Agency are operational. The failure of a critical system shall result in the toll location operating under degraded operations in accordance with the Business Rules developed during the Design Phase.

Upon boot-up, the toll zone controller shall verify with the ORT Plaza/Host System that it has the latest configuration files, application software, Transponder Status File, toll rates and schedules, and any other files required to support the lane operations. If the latest files are not present on the toll zone controller, it shall request the latest data from the central processing system. The toll zone controller upon start-up shall also synchronize its time with the ORT Plaza/Host System and verify that the messages are synchronized.

C-2.4.5.2.2 ORT Operations

The ORT System shall support the following modes of operations:

1. Open: The toll zone controller shall by default be in an open mode status when it is powered up. Authorized users shall have the ability (local and remote) to select the mode in which the lane is brought back up. All transactions shall be processed normally in an open mode.
2. Maintenance: Authorized users shall have the ability (local and remote) to open a lane in Maintenance mode. At the lane the transactions shall be processed normally but shall be flagged as Maintenance mode transactions. Maintenance mode transactions shall not be transmitted to *E-ZPass* CSC and shall be stopped at the ORT Plaza/Host or existing Central Host System. Maintenance mode transactions shall be reported separately and shall not be included in any revenue or traffic reports unless agreed to during design process. Additionally, the lanes shall be capable of processing transactions while maintenance activities occur in one of the lanes. For example, should the Agency decide to engage in maintenance activities in one lane for snow removal within a closed work zone, the remaining lanes shall be capable of recording transactions without interference by the maintenance activities.
3. Special Event: Capability shall be provided whereby authorized users can enable and disable a Special Event mode of operations. In such a mode of operation either a Zero Fare or Selected Toll Schedule shall be initiated, and the System shall report all transactions as if in normal operations.
4. Save Image: Capability shall be provided whereby authorized users can enable and disable a toll zone controller to save images based on various selection criteria. Transactions under such condition shall be processed normally; however, these transactions shall be flagged.
5. Closed Mode: The ORT Lanes are always open unless some conditions (critical system failure to be defined during the Design Phase) force the lanes to operate in a degraded mode. Certain emergency conditions will force the ORT Lanes to be closed at which time it shall be operated in accordance with Agency Business Rules developed during the Design Phase applicable to this condition.

C-2.4.5.2.3 Transaction Processing

The toll zone controller shall be required to detect, classify and frame vehicles, assign the transponder accurately to vehicles, and capture the image of the correct vehicle. The detailed transaction processing rules and the transaction message details shall be defined and finalized during the Design Phase; however, the following basic rules apply:

1. All transponder reads that are *E-ZPass* Group compliant shall be processed and reported as a transaction.
2. The System shall have the ability to process multiple transponders in a vehicle and report each transponder.
3. The system shall have the ability to read, process and report as a transaction, non *E-ZPass* Group transponders (multi-protocol) including (but not limited to) SeGo and 6C.
4. All non-*E-ZPass* Group transponder reads shall be reported.
5. One transaction shall be created for each vehicle that travels through the tolling location and the toll zone controller shall ensure that the transaction is complete prior to transmitting it.

6. The toll zone controller shall be able to accurately identify, process, and track multiple vehicles in the toll zone.
7. The toll zone controller shall ensure that duplicate AVI transactions (same Transponder ID) are not reported from the same lane or tolling location within a configurable period of time.
8. Buffered Transponder Reads that are transmitted to the zone controller shall not be assigned to a vehicle by the toll zone controller but shall be flagged and reported to the ORT Plaza/Host System for further processing and vehicle assignment.
9. The zone controller shall automatically synchronize with the various subsystems to ensure the events in the lane correspond to the transaction generated.
10. Each transaction shall contain and be reported with various event times including 'vehicle exit' time and 'Transponder read' time that shall allow Transponder reads, images and video to be associated correctly with the vehicle.
11. The zone controller shall identify incorrect coding of *E-ZPass* Group transponders.
12. The zone controller shall support National operability of transponders.
13. The Zone controller shall identify and apply business rules for spurious/isolated reads.

C-2.4.5.2.4 Fare Determination

The System shall determine the toll for all transactions using the toll rates and schedules established for each of the tolling locations. The toll determination can be performed at the zone controller or the ORT Plaza/Host System; however, every transaction shall have the correct AVI and apparent violation toll associated with the transaction based on the fare class as defined in this section. The current toll determination utilizes a barrier type tolling concept whereby a fare amount is charged at each tolling location that the vehicle passes through. The ORT System shall continue using barrier type tolling concept. Toll Rate Schedules shall be user configurable through a configuration menu with the ability for global, zone, and/or lane selection. The system shall identify and classify oversize vehicles including those with extra axles.

C-2.4.5.2.5 Fare Class

The ORT System shall provide the necessary information to assign a fare class (as structured under the current system) to each transaction. While fare class is currently handled by the CSC, the following rules shall be considered as part of the overall Business Rules considerations during the ORT System design:

1. AVI Transactions
   a. If AVDC system is not operational and no transponder class is identified, the default class for the transaction will be Class 1 per the plaza fare (configurable).
   b. Transactions with 0 or 1 axle shall default to Class 1 per the plaza fare (configurable) if no transponder class is detected. System shall flag the transaction and all data shall be retained.

   c. If AVDC axles are greater than the highest class in the fare tables, and there is no transponder class detected, the default class for the transaction will for a predefined amount (configurable). System shall flag the transaction and all data shall be retained.
2. Apparent violations (non-payments in the lane)
   a. If AVDC system is not operational, the default class for the transaction will be Class 1 per the plaza fare (configurable).
   b. Transactions with 0 or 1 axle shall default to Class 1 per the plaza fare (configurable). System shall flag the transaction and all data shall be retained.
   c. If AVDC axles are greater than the highest class in the fare tables, the default class will be predefined (configurable) for the transaction per the plaza fare (configurable). System shall flag the transaction and all data shall be retained.

C-2.4.5.2.6 Saving of Images

The System shall be designed such that the VES shall capture and save images even if the AVDC system is not operational. The current system requirement is seven (7) days but the Contractor shall provide the updated capacity of the system and provide options for expanding this capacity if needed. Images shall be captured and saved for the following conditions:

1. In all cases where there is no valid transponder read, the front and rear license plate image of all vehicles shall be saved.
2. In all cases where there is a class mismatch between the transponder class and the AVDC, as determined by the Business Rules, the front and rear images of the vehicle shall be saved.

If the VES loses communications with the toll zone controller, an image of every vehicle shall be saved. Images saved during this condition shall be flagged and subsequently matched with the correct transaction data when communications with the toll zone controller resumes. This matching shall take place in a manner that does not interfere with or degrade real time toll zone controller operations.

If AVDC system is not operational but the VES trigger is functioning, images shall be saved such that all non-valid transponder transactions that occur during the AVDC malfunction can be subsequently pursued for collection. Sufficient data shall be provided in the transactions to allow the *E-ZPass* CSC to process such transactions so that *E-ZPass* customers are not charged in error when lane operation is degraded.

C-2.4.5.2.7 Configuration Files

All parameters and settings required to run the toll zone controller application shall be maintained in configuration files. Access to configuration files required to support the toll zone controller operations shall be controlled and access to these files must be limited to authorized personnel.

The configuration files can be maintained on the central processing server or downloaded along with the toll zone controller application file; however, authorized personnel shall be able to make changes to the

configuration files in the field. All toll zone controllers shall have default configuration files that shall allow the lane to start-up automatically. Authorized personnel shall be able to make changes to parameters and settings that are defined as configurable elsewhere in this document and in the Approved design documents.

A method shall be developed such that the presence of outdated configuration files and software versions is detected and reported to the MOMS.

C-2.4.5.3 Interface Control Document Development

The Contractor shall fully cooperate with the Agency and its designated Contractor(s) as necessary to develop all required interface control documents (ICDs). The ICD shall include all specifications, parameters, system requirements, programming interfaces and all other elements to effectively and completely interface the ORT System to the existing Lane System and/or the CSC, as required under the final agreed-to Contract Documents, including Appendix C: Requirements and Deliverables.

Contractor shall also be responsible for ongoing coordination of the interface with the result that such System operates to the maximum extent possible as a single System for the Agency's benefit. Contractor shall work with the other interfacing Contractors on a timely basis to efficiently and effectively address any System problems at no additional cost to the Agency. Such coordination shall not require the initiation or intervention of the Agency.

In the event that the elements comprising the ORT System do not properly interface with the existing Lane System or the CSC as applicable, and the Contractor's and the interfacing Contractors' collective efforts to correct same are untimely or unsuccessful, or the interfacing Contractors fail to cooperate with other Agency designated and/or interfacing Contractor(s) to the satisfaction of the Agency as determined at the Agency's sole discretion, then in addition to the Agency's other available remedies, the Agency shall have the right to, in whole or in part, withhold and/or require a refund of payments to the Contractor and/or the interfacing Contractors involved in developing the ICD.

C-2.4.5.3.1 Interface to AVI System

The toll zone controller shall interface with the AVI System and transmit all data received from the AVI system. The toll zone controller shall report all tag reads; the details of the data format shall be finalized or confirmed as unchanged from the existing Central Host System during the Design Phase. The Contractor shall be responsible for ensuring that all data elements required by the *E-ZPass* CSC to meet Agency operational and *E-ZPass* Group interoperability requirements are provided in the transaction.

C-2.4.5.3.2 Interface to AVDC System

The toll zone controller shall interface with the AVDC system to obtain vehicle events that shall permit accurate detection, classification, tracking and processing of vehicles. Vehicle speed information shall also be obtained from the AVDC system and reported as part of the vehicle transaction data.

C-2.4.5.3.3 Interface to VES

The toll zone controller shall interface with the VES to capture and process images of vehicles identified to be apparent violators and class mismatches in accordance with the Business Rules to be developed during the Design Phase. Vehicle data and images obtained from the VES and transmitted to the *E-ZPass* CSC shall support the violation processing requirements.

C-2.4.5.3.4 Interface to ORT Plaza/Host System

All messages generated at the zone controllers shall be transmitted to the ORT Plaza/Host server in near real-time and shall be guaranteed. All messages shall be uniquely identified and validation shall be performed at the ORT Plaza/Host System to ensure that there are no missing or duplicate messages. The System shall support exception handling in accordance with the Agency Business Rules Approved during the Design Phase. An alarm shall be generated and reported to the MOMS for all exceptions/errors.

The Contractor shall provide an automated means of synchronizing the lane and host server messages in the event the zone controllers are replaced, if communications are down, or if data on the zone controller is not retrievable due to a catastrophic failure.

C-2.4.5.3.5 Interface to MOMS

All alarm and equipment/process health messages generated at the toll zone controllers shall be transmitted to the MOMS in real-time and shall be guaranteed. All messages shall be uniquely identified and validation shall be performed to ensure that there are no missing or duplicate messages. Failure of the toll zone controller shall be automatically detected by the MOMS.

C-2.4.5.3.6 Receiving Data

The toll zone controllers shall be capable of receiving files and tables from the applicable ORT plaza/host servers. Receipt of all files and data shall be verified and acknowledged and any failures in the transmission shall be reported to the MOMS.

Transponder File (TF): The toll zone controller shall be capable of supporting the *E-ZPass* Group TF and shall have the capability to support every Agency and its assigned transponder range as described in the interoperability specifications. The toll zone controller shall be capable of accepting comprehensive (complete list once a day) and incremental (changes updated on a configurable interval, but not less than on an hourly basis) TFs and shall activate the lists upon receipt after validation of the files. The Contractor shall use an effective design to transmit the files (compress, encode, and transmit), store the files and use the files such that the new list is available at the toll zone controllers within 10 minutes of the applicable ORT Plaza/Host server obtaining the new list. Transponder validation shall occur in no greater than 50 milliseconds; all exceptions to this requirement shall be clearly explained and detailed in the Proposer's proposal. The format of the file shall be finalized during the Design Phase.

Toll Rates and Schedules: The zone controller shall be capable of implementing value-based pricing that varies by time of day, day of the week, and holiday. The toll rates are based on vehicle class and

payment type. The toll rates and toll schedules and the effective time shall be downloaded to the zone controller (if applicable) when the toll rate structure changes. The System shall permit the Agency to schedule toll rates and schedules changes in advance of the new rates becoming effective.

Configuration Files: All configuration files and tables needed to support the lane operations shall be downloaded to the zone controllers from the host server upon confirmed change or at scheduled intervals and activated as required. Versions of the configurable files on each zone controller shall be maintained, tracked, and recorded.

Software Download: All zone controller software/firmware shall be downloaded to the zone controllers from the ORT plaza/host server and versions on each zone controller shall be maintained, tracked, and recorded. Report shall be developed to extract this information as well as configuration files. The information shall come from the source, not from editable files.

C-2.4.5.3.7 Transmitting Data

The zone controller shall transmit to the ORT Plaza/Host System the toll collection data including but not limited to those identified below.

1. All transaction messages generated in the lanes.
2. All alarm and status messages generated in the lanes.
3. All lane operational communication status messages and self-health messages.
4. All events generated in the lanes that are displayed on the real time screen or are required at the ORT Plaza/Host System.
5. All transponder and images
6. Acknowledgement files

All messages shall be confirmed as received by the ORT Plaza/Host System before they are flagged for archiving. In the event of communication failures the messages shall be stored on the zone controller until successful transmission is complete and verified. The exception handling process shall be instituted in accordance with the Business Rules Approved during the Design Phase and all failed transactions shall be identified and reported. Any exceptions or failure shall result in the creation of an alarm that is reported to the MOMS.

C-2.4.5.3.8 Monitor All Lane Equipment for Device Status

Each toll zone controller shall monitor itself and associated in-lane equipment devices for status. All systems including AVI, AVDC and VES shall be continually polled (once per minute or frequency to be recommended by the Contractor and Approved by the Agency) for status. The health of some digital devices shall be inferred from events. If a device recovers after reporting a failure, then a recovery message shall be generated and the device operational status restored. The MOMS shall determine if it has lost communication with the toll zone controller, and generate an alarm message if communication

is unavailable. All alarm, health and recovery messages shall be transmitted to the applicable servers and reported to the MOMS and the real time screen.

C-2.4.5.3.9 Diagnostics and Equipment Malfunction

The toll zone controller software shall execute periodic diagnostic checks on in-lane equipment. Intelligent peripheral devices shall be interrogated for device status on a regular basis. A device's failure to respond to a status inquiry, after a configurable number of retries shall be regarded by the toll zone controller software as an equipment failure. In the event of this failure a message shall be sent to the applicable plaza or host servers and reported to the MOMS. Such tests shall take place in all modes of lane operation, and the results shall be placed in each toll zone controller's event log.

Degraded modes of operation shall be supported based on Business Rules developed during the design process. The Contractor shall ensure the proposed ORT collection system continues to operate without loss of revenue or visible impact to the customer in accordance with the degraded mode operations agreed to during the Design Phase in the event that certain designated components of the ORT Lanes System fail.

C-2.4.5.3.10 Stand-alone Mode of Operation

The toll zone controller shall be capable of operating in a stand-alone mode for a minimum of thirty (30) days if communications to the ORT Plaza/Host System are down. When operating in this mode, the last files downloaded from the applicable plaza or host server shall be used while processing vehicles. Upon re-establishing communications with the applicable plaza or host server or existing plaza/host computer all back-logged messages shall be transmitted to each of the servers without affecting the real time operations or degrading the lane operations. If any downloads were initiated while the communications were down, then these files shall be re-transmitted to the toll zone controller to bring it up-to-date.

The zone controller shall have a port to permit on-site manual uploading of software, Transponder Status Files, toll rates (if applicable) or other pertinent data required for continued operation until communications with the ORT Plaza/Host System is re-established. Additionally, technicians shall have the ability to download transactions from the zone controller and transfer such transactions to the ORT Plaza/Host System.

Upon re-establishing communications with the ORT Plaza/Host System all back-logged messages shall be transmitted to the ORT Plaza/Host System without affecting the real time operations or degrading the lane operations. Manually transferred transactions shall also be transmitted and the ORT Plaza/Host System shall ensure all transactions are synchronized. If any downloads were initiated while the communications were down, then these files shall be re-transmitted to the zone controller to bring it up-to-date; however, in the case of dynamic toll rate and travel times, only real-time data shall be transmitted (if applicable). Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be transmitted to the MOMS.

C-2.4.5.3.11 Time Synchronization

All toll zone controllers shall be synchronized either to the ORT Plaza/Host System as a primary source or to a common time synchronization source. There shall be a second source for time synchronization if communication to the primary source is down. The software used for time synchronization shall support monotonic changes to time. The toll zone controller shall synchronize or transmit time synchronization messages with every device capable of maintaining time. The DVAS system shall also be synchronized with the primary and secondary time sources.

C-2.5 Optical Character Recognition - License Place Processing Functionality

The Contractor shall include Optical Character Recognition (OCR) functionality to the VES. VES OCR functionality shall process image-based transactions captured from the lane and return license plate character information and confidence level parameter to the lane controller to be processed by the ORT host.

OCR determined U.S. plate jurisdiction (if assigned at the lane level and if applicable). OCR determined U.S. plate type (if assigned at the lane level and if applicable). OCR determined confidence level (if assigned at the lane level and if applicable).

The OCR engine shall return a correct result for 90% of the human readable license plate images captured by the System, including plate type and jurisdiction.

The VES OCR engine shall process all vehicle images through one (1) or multiple OCR engines.

The OCR engine shall produce plate number, plate type, and jurisdiction of issue for the license plate images when an OCR value is returned.

The System shall immediately flag Transactions for human review when the OCR values for the front and rear plate of a 2-axle vehicle do not match.

The System shall append the OCR value for the front plate to the Transaction when the OCR values for the front and rear plate do not match for vehicles with 3 or more axles.

C-2.6 Roadway Pavement, Toll Gantries and Equipment Shelter Design Support

C-2.6.1 General Design Requirements

The Contractor shall coordinate, review, and approve the design for all civil construction work to be performed by others on the Project, including gantries and roadway/pavement relative to the aspects that integrate with the design and installation of the ORT System. Upon approval of the design by the Contractor, the Contractor shall assume responsibility for the design to the extent that if the civil work is installed as designed and does not meet the performance requirements of this document, the

Contractor shall be responsible for the costs of redesign, civil rework and additional equipment costs as further set forth in the Agreement. The Contractor shall also coordinate and oversee the installation of the civil elements to ensure that the civil work is performed in accordance with the Contractor's design requirements.

Note that initial Proposer's civil functional requirements are requested as part of this RFP and preliminary updated requirements are due within 30 days of NTP.

C-2.6.2 Toll Gantries

The Contractor shall provide in-lane equipment design, installation specifications, structural requirements, conduit requirements and drawings for gantries at each tolling location as it relates to the Contractor's equipment requirements. Such drawings shall be sealed, stamped, and certified by a Licensed Architect/Engineer of the appropriate discipline valid in the New Hampshire to the third party civil designer, including but not limited to equipment mounting locations and installation instructions, conduit and electrical requirements, wind load, equipment load and power calculations, as well as Contractor requirements related to special electrical grounding, isolated circuit integrity by equipment and/or lane type. While the conceptual design on the gantries have not been completed and the Contractor's functional requirements will be a key component of the design process, the current anticipation by NHDOT involves mono-tube structures for the gantry system. Note this is subject to revision.

The Contractor shall also review and approve all aspects of toll gantry design drawings submitted by the third party designer that are related to the ORT toll collection system equipment, including but not limited to the items identified in this document. The Contractor shall be responsible for all necessary mounting hardware required to install the toll equipment on each gantry as specified in this document and shall ensure that wind load design is compliant with wind speed and wind loading standard specifications for structural supports for highway signs in the State of New Hampshire. The Contractor is also responsible for all equipment installations, terminations, cable pulls between controllers and gantry and connections of toll equipment located on the gantry.

C-2.6.3 Roadway Pavement

During the Design Phase the Contractor shall provide updated in-pavement sensor requirements, if such sensors are to be used, to the third party designer. Additionally, the Contractor shall review and approve the pavement design, including roadway material to be utilized and construction methods to be used in the construction of the pavement. The current anticipated pavement type in the area of tolling equipment will be Portland Cement Concrete. Details of the pavement design have not been further developed until Contractor functional requirements are identified.

C-2.7 Digital Video Audit System (DVAS)

The ORT System shall provide a Digital Video Audit System (DVAS) system. Such a system will include the capability to display detailed events for each lane as they occur in real-time. Transponder read event,

vehicle detection events, and image capture events would be displayed when monitoring is enabled to assist maintenance staff trouble shoot lane problems. Such events would be saved for later review. The video will be able to see dual tires at night.

The DVAS shall perform video surveillance on the down-traffic side of plazas all lanes within the NHDOT's Turnpike System. DVAS shall capture live video images, archive and recall video image records that will correlate with the toll transactions as they occur in the lanes. The DVAS is intended to provide the NHDOT's audit staff with the capability to review video in time synchronization with a toll transaction. The DVAS shall be designed to operate on a continuous availability basis, 24 hours per day, 7 days per week 365 days per year and as such must be maintained with the same rigor as the ORT Lanes.

DVAS should not be confused with the VES or vehicle recognition systems that utilize optical character or image recognition to determine vehicle license plate or vehicle profile data.

Raw DVAS video shall be time/date stamped.

C-2.7.1 DVAS Architecture and Network Video Management Server

It is preferred but not required that the DVAS system provide a single integrated solution with access to all ORT locations. The DVAS Network Video Management System shall provide video image storage and recall (via Hard Drive Array) that will support near real time retrieval for up to 60 days and archiving of video greater than 60 days for up to one year.

The images are time synchronized with the toll collection data for the appropriate toll lane location. A typical integrated Audit and DVAS application would have a screen/interface where the user would be able to advance through multiple images that correspond to the transaction information below it.

The DVAS System shall report alerts and alarms into the MOMS.

C-2.7.2 DVAS Cameras

Each DVAS camera shall produce a digital image with a software adjustable field of view (FOV) that is wide enough to visually see two lanes of traffic with sufficient image quality that will enable the user to identify the visual characteristic of the vehicle, including **dual-tire vehicles at night**. The DVAS camera connectivity shall be IP based having an Ethernet type connection capable of supporting fiber optic transmission if necessary. The design, quality and speed of the DVAS camera is critical and shall provide images of sufficient resolution and clarity in all weather and lighting conditions. The DVAS camera shall be capable of rendering images in both color and black and white. DVAS camera housing shall be weather tight meeting specification IP66.

C-2.7.3 DVAS Audit Application

Toll audit shall be supported by the DVAS Audit Application where video images can be viewed in near real time as they are recorded or later in time from anywhere within the NHDOT's LAN or across the

WAN. The Audit Application shall be browser based and have an integrated display that combines playable video images of actual traffic (from DVAS) with data from corresponding toll transactions or lane events. The Audit Application will make it possible for the user to zoom in on an image to determine the type of vehicle or transaction that occurred. Users may access the corresponding video image by inquiry using a transaction number, or transaction date and time, or any unusual occurrence event associated with a toll transaction. Video shall be viewable live. The Contractor shall provide user training on the DVAS Audit Application.

C-2.8 ORT Plaza/Host System Functions

The Agency ORT Lanes toll collection process shall be administered and controlled by an ORT Plaza/Host System that performs the following functions at a minimum:

1. Transponder Status File Management;
2. Real-time Monitoring;
3. Management of User Access Privileges;
4. Toll Rate/Schedule Management;
5. Maintenance on-line management;
6. Image Storage;
7. DVAS;
8. Financial Audit and Reconciliation;
9. Transactional Audit and Reconciliation;
10. Interface to *E-ZPass* CSC or Interface to existing Central Host System; and
11. Interface to Toll Zone Controller.

The Contractor shall provide the computer hardware needed to support the software that meets the ORT System requirements. All computers provided as part of the ORT System or related Enhancements to the existing ORT toll system shall have up-to-date current virus protection, internet security, and other security software and shall automatically obtain virus protection updates according to a recommended (configurable) maintenance schedule. A high level of redundancy shall be built into the system to support high availability requirements.

C-2.8.1 ORT Plaza/Host System Hardware

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 ORT Plaza/Host system hardware in accordance with the requirements of these specifications. The ORT Plaza/Host System hardware shall have warranty and Maintenance support services during the defined Warranty Period.

The Contractor shall furnish and install a complete ORT Plaza/Host System configuration and shall include all enclosures, systems, network equipment and ancillary equipment as may be necessary to provide a complete and acceptable server system. A hosted solution it preferred. Hosting for primary and secondary locations shall be in the contiguous United States ant a location approved by the Agency.

The contractor is responsible for providing network connectivity between all sites. The contractor shall have the responsibility to provide 24x7 monitoring services for the ORT Plaza/Host systems.

Coordination with DoIT will likely be required to determine available infrastructure and to provide any required access. The Contractor shall identify the configuration differences, if any, required for each of the two interface options; existing Central Lane Host System and *E-ZPass* CSC. The ORT Plaza/Host System server configuration shall be designed and implemented such that the Host CPS/server shall be brought back on-line within four (4) hours in the event of a failure. The Contractor shall provide Disaster Recovery procedures for the ORT Plaza/Host System that shall be implemented to ensure data security during a disaster. The ORT Plaza/Host System shall be capable of performing all functions described in these specifications.

The ORT Plaza/Host System servers, including all major hardware elements, shall be of the latest design and incorporate standard commercial products currently in production and shall be manufactured by the same computer company, except as specified. It is desirable for all servers in the Agency ORT Lanes toll collection system and all peripheral hardware to be supplied from the same manufacturer. The intent is to increase compatibility and reduce maintainability problems. The Contractor shall use proven server configurations that support future upgrades to processors, memory, storage, operating system, database, and other system components. The Contractor shall plan for ten (10) year growth in traffic volumes.

The Contractor shall ensure the ORT Plaza/Host System servers are sized appropriately to meet operational and traffic growth projections for the next ten (10) years. Contractor shall use effective data storage techniques for the management of data. Users of the Agency ORT System shall experience no delays in generating reports or accessing the ORT Plaza/Host System for data.

The Contractor shall provide a storage subsystem and data storage strategy that allows for the hot-swap of failed hard drives and ensures that the failure of a single drive does not impair the operation of the system and does not require that the system be shut down to repair. Initially, the system shall have 200% of the disk capacity that is anticipated for the first two (2) years of operation.

C-2.8.1.1 ORT Plaza/Host System Server Operating System

The operating system for the ORT Plaza/Host System servers shall consist of a multi-user, multi-tasking operating system. The operating system shall support all peripherals defined in these specifications. The operating system shall also support the proposed communications architecture, redundant configuration, database software, and Contractor's application software. The Contractor shall obtain all licenses required in the name of the Agency. All licenses shall be provided to the Agency for all off-the-shelf operating system software, in addition to original software installation titles and media. The Contractor shall retain authorized copies (backups) for all software media to use for periodic System Maintenance, upgrades, or restore, as required. The proposed operating system should have a future

upgrade path and must be supported for up to ten (10) years from the date of Project Acceptance. The proposed operating system shall be covered under warranty during the Warranty Period

The operating system shall be a proven system, used widely throughout the United States for intensive database operations, and should be compatible with the database and other web-based tools. There shall be no degradation of performance when numerous users access the ORT Plaza/Host System simultaneously.

C-2.8.1.2 ORT Plaza/Host System Database

The ORT Plaza/Host System is a critical system that is directly linked to financial viability of the Agency ORT Plaza/Host System. The Agency requires a high level of reliability and security from the database used for the storage of transaction data, toll collection management data, violation data, violator data, and all other data, as applicable, for the Agency ORT toll collection system. The Contractor shall ensure that alarms are raised when disk/table space are below a configurable threshold to ensure no data is lost. The Contractor shall use the latest database that is field-proven to operate in a transaction intensive environment. The database software shall be compatible with the operating system and application software, and shall support the ORT Plaza/Host System server architecture. Appropriate licenses shall be provided to the Agency for all off-the-shelf database software. The proposed database software shall have warranty and maintenance support services for the defined Warranty Period. The chosen database should have an upgrade path and should support upgrades to operating system, application, memory, disk drives, and processors.

C-2.8.1.3 Data Backup and Retention

Capability shall be provided by the Contractor to back up the ORT Plaza/Host System data on a daily basis without manual intervention, using tape/disk libraries or other media from which data can be retrieved. Notification on the status of the backup process shall be sent to the MOMS. Tools shall be provided to view the backup data in a user friendly and readable form. If there is a catastrophic failure that results in the loss of data, the Contractor shall provide a means to retrieve the data without disruption to the Host operations. The Contractor shall provide a process that, at minimum stores a weekly full data back up at an offsite location. The following rules for data retention shall be followed by the Contractor:

1. AVI and apparent violation transactions shall be retained on-line for three (3) fiscal years plus the existing fiscal year on the ORT Plaza/Host System and then archived to permanent long-term storage disk.
2. Images of apparent violations shall be retained on the Image Servers for seven (7) days if provided by the Contractor.
3. Summarized data shall be retained on-line on the ORT Plaza/Host System for at least ten (10) fiscal years plus the existing fiscal year.
4. System logs shall be retained on-line on the System for ninety (90) days after which they are archived.

5. DVAS video image storage and recall (via Hard Drive Array) shall support near real time retrieval for up to 60 days and archiving of video greater than 60 days for up to one year.
6. All other data shall be retained on the server for seven (7) fiscal years plus the existing fiscal year after which they are archived.

When the disk space utilization reaches 80% capacity, a message shall be transmitted to the MOMS. Data shall be deleted only after it is confirmed to be successfully archived. Any deletion of data shall be automatic, without user intervention, and shall generate a message to be transmitted to the MOMS.

The ORT Plaza/Host System servers shall be sized to accommodate the restoration of the archived data, if needed but such data shall not impact on-line data or reports. Users shall be able to generate queries from the restored data. Detailed disk sizing calculations shall be provided during the Design Phase.

C-2.8.1.4 Maintenance Access and Application Access

Maintenance technicians and Agency staff shall have ability to access the System and application as needed.

C-2.8.1.4.1 Maintenance Access

The Contractor shall procure, furnish, and install the required keyboards, video monitors, mice, and KVM switches to allow Maintenance technicians to access all servers, controllers, computers, and devices in order to perform diagnostics. Maintenance technicians shall also be able to access the System through a secure virtual private network (VPN) connection and through any workstation connected to the ORT System network.

C-2.8.1.5 Agency Access

Agency access to the ORT System shall be via a Graphical User Interface (GUI) application or Approved equal based on the current system access capabilities. Any new access shall be browser based and any workstation connected to the ORT System network shall be able to access to the System application. Access to the application software shall not require the installation of any Contractor supplied application software on the workstations. Based on the user's access privileges the appropriate menus shall be made available. The Agency shall have any required licenses to use such applications in accordance with the same licensing arrangements as other parts of the existing or ORT toll system and the ORT System shall accommodate the ability to allow any and all Agency workstations to access the application.

C-2.8.1.6 Workstations

Various Agency administrative staff, auditors and other support staff may require access to the ORT Plaza/Host System for performing toll collection management, audit and reconciliation, violation processing, and MOMS functions. The Contractor shall provide any necessary updates to the existing Agency workstations to continue access to the system once the ORT System has been added. Workstations shall be equipped with the necessary peripheral equipment needed for operations shall be

installed in designated offices to provide the required access. In addition all workstations connected to the Agency toll collection network shall be able to access the application software and, based on access privileges, appropriate menus and screens shall be made available to the user.

C-2.8.1.7 Uninterrupted Power Supply (UPS)

All equipment that supports the ORT Plaza/Host System shall be on UPS procured, furnished, and installed by the Contractor, and the Contractor shall furnish and install an electronic interface between the ORT Plaza/Host System and the UPS to monitor the UPS performance. Software drivers shall be developed, furnished, and installed to acquire, display, store and report all parameters provided as outputs from the UPS. The UPS shall support the ORT Plaza/Host System for a minimum of one (1) hour. Prior to total shutdown the UPS shall send a message to the ORT Plaza/Host System that allows for a graceful shutdown of the server. When the System is on the UPS a notification shall be reported to the MOMS.

The Contractor shall coordinate with NHDOT staff regarding generator feed requirements, including but not limited to the level and quality of the power supplied to the UPS by the generator source.

C-2.8.1.8 Communications Equipment

The ORT System will be interconnected by fiber optics or dedicated leased communications lines as required. The Contractor shall work with the Agency during the Design Phase to complete the overall network architecture design and confirm available bandwidth capacities are adequate to support the ORT System. If the bandwidth of the existing network communications needs to be increased to support the transfer of ORT data and images, it is the responsibility of the Contractor to provide the improvements. All local area network (LAN) and wide area network (WAN) communications equipment shall be state of the art network equipment as appropriate to support the ORT System. Network monitoring software shall be provided to monitor the ORT System network status and communications, including the connection to the Agency administrative office. All network alarms shall be reported to the MOMS.

C-2.8.1.9 Equipment Enclosures

Enclosures shall be provided with appropriate access doors, closure panels, face panels, stabilizer kits, casters, mounting and installation hardware as may be necessary to provide a complete and operational installation of the ORT Plaza/Host System hardware. All interconnections and power cabling shall be provided as necessary and shall be installed to provide a professional look. Each enclosure front shall be enclosed with a tempered glass door and key lock to shield the Systems from dust. The enclosure designs shall consider the allowable space at the ORT locations where the servers are to be installed. The enclosures, enclosure panels, and hardware described in this section and the proposed equipment layout shall be submitted to the Agency for Approval during the design process prior to purchase and installation.

All enclosures shall have, at a minimum, 25% of the capacity reserved for future expansion.

C-2.8.2 General ORT Plaza/Host Software Requirements

Toll collection management, audit and reconciliation, maintenance on-line management, *E-ZPass* CSC interface, the existing Lane Host System interface, interface to toll zone controllers and revenue and financial reporting, are some of the key functions for the ORT Plaza/Host System.

The ORT Plaza/Host System application software shall allow authorized users to perform all of the functions related to the ORT Lane management and system maintenance. Users with the appropriate privileges shall have access to the ORT Plaza/Host System screens and menus. It shall support all operations related to ORT Lanes, violation processing and financial reporting in accordance with the Agency Business Rules established during the design process and the State legislation. The efficient operations of the toll collection management and violation processing functions are critical to the success of the project.

The operational and system requirements are described here to allow the Contractor to understand the proposed ORT Lane management and violation processing operations. The Contractor's standard commercial off the shelf (COTS) software for the ORT toll collection system may be utilized if it provides ORT toll collection system management, system maintenance, audit, reconciliation, violation processing, and reporting functionality equivalent to what is described in this document, subject to the Approval of the Agency.

C-2.8.3 ORT Plaza/Host Software Functionality

The ORT Plaza/Host System software shall support the functionality detailed in this section and shall meet the Agency operational requirements set forth in this document.

C-2.8.3.1 Data Communications and Interface Requirements

All transactions, images and messages transferred between all subsystems shall be guaranteed and have the required data validation protocols to confirm the accuracy and validity of data transfer. The ORT Plaza/Host System shall support the following interfaces:

1. Interface to the toll zone controllers: The ORT Plaza/Host System shall receive and store all the messages from the toll zone controllers in real-time. It shall transmit all data required by the toll zone controllers to support its operation. All data sent to and received from each toll zone controller and the ORT Plaza/Host System shall be acknowledged and confirmed.
2. Interface to the *E-ZPass* CSC: The ORT Plaza/Host System shall interface to the *E-ZPass* CSC for the transfer of transaction images.
3. Interface to the existing Central Host System: The ORT Plaza/Host System shall have the ability to transmit transactions to the existing Central Host System in real time and in batch mode (at configurable intervals/transactions). The format and protocol for the transmission of the transactions shall be in compliance with the existing plaza to Central Host System interface as coordinated with the existing Lane System Contractor during the Design Phase. The ORT

Plaza/Host System shall be capable of obtaining the Transponder Status Files for all *E-ZPass* Group agencies from the Central Host System.

4. Interface to the *E-ZPass* CSC: The ORT Plaza/Host system shall be capable of obtaining the Transponder Status files for all *E-ZPass* Group agencies from the *E-ZPass* CSC. The ORT Plaza/Host System shall also be capable of transmitting and reconciling the transaction files in compliance with the existing ICD to the *E-ZPass* CSC as required under the current system.
5. Interface to Other Peripherals: The ORT Plaza/Host System shall interface with other devices, including but not limited to the UPS in order to monitor status and alarm messages generated from the UPS. Such alarms shall be reported to the MOMS.

C-2.8.3.2 Version Tracking Requirements

The ORT Plaza/Host System shall maintain records (not the actual files) of all versions of the Transponder Status list; toll rates and schedules; lane configuration files, and lane executables that it received and/or created and that were successfully downloaded to the lanes over the past six months on a rolling schedule or as determined in design and Approved by the Agency. Receipt of files from and transfer of files to the existing Central Host System or *E-ZPass* CSC (based on selected Agency interface option) their version, time of receipt and processing status shall also be tracked and reported. Reports and a GUI shall be made available to verify the versions and the download status. Failure in the transmission of any data to a lane or the back office system (existing Central Host System or *E-ZPass* CSC) shall result in a failure message being logged and reported to the MOMS.

C-2.8.3.3 Revenue Day Assignment and Verification

It is critical that all messages from the zone controllers are transmitted to the ORT Plaza/Host System and a verification of this data transmission shall be performed. The Contractor shall provide this validation which, if successful, closes the Revenue Day. If the validation process fails for any reason, failure messages shall be created and reports shall be made available to authorized personnel. If the Revenue Day process determines that transactions are missing, the missing sequence number shall be identified and reported. The System shall allow for the manual closure of a Revenue Day and all such manual closures shall be flagged and reported. Reconciliation of transactions and revenue is performed on a Revenue Day basis, which for AVI and apparent violation transactions is the transaction date.

The current revenue day is from 11:45:00 PM to 11:44:59 PM.

C-2.8.3.4 Data Summarization

In order to support the Agency reporting requirements and control the size of the database, all pertinent financial and transactional data shall be summarized. The availability of detailed data and the summarization of data shall be in accordance with the data backup and retention requirements, herein.

C-2.8.3.5 Diagnostics

The ORT Plaza/Host System shall provide self-diagnosis functions to detect and report on the status and functioning condition of the ORT Plaza/Host System hardware devices; communications; processes;

tasks, and software applications, as defined in the Agency Approved Design Document. All failures detected shall be reported to the MOMS.

C-2.8.3.6 Data Security

The Contractor shall ensure that master data records, once entered into the System, cannot be deleted or changed. Master data records and files shall only be appended to and not edited or deleted. If manual intervention is required only authorized users with proper security access shall be permitted to 'flag' a file to ensure the integrity and provide a complete audit trail. All System access/entry, logins, and modifications (i.e. flagging actions) shall be recorded. Encryption shall be used for all confidential data.

C-2.8.3.7 Transaction Pre-processing

The ORT Plaza/Host System shall ensure all transactions transmitted to the existing Central Lane Host System or the *E-ZPass* CSC are transactions that comply with the existing ICD specifications and can be correctly posted to an account or can be pursued as a violation. Transactions that cannot be processed further at the *E-ZPass* CSC shall be identified and flagged and then transmitted to the existing Central Lane Host System or *E-ZPass* CSC. If duplicate transactions are not filtered at the zone controller then the ORT Plaza/Host System shall perform such filtering. In cases where a transponder read and an apparent violation are created for a vehicle (in case of buffered reads or lane logic issues) then the ORT Plaza/Host System shall perform the filtering based upon configurable parameters Approved during the Design Phase. In case of buffered read transactions, the transponder read time shall be used as the transaction time. Alarm messages shall be created and reported to the MOMS in the event such exceptions exceed a configurable threshold.

C-2.8.3.8 Fare Calculation

Currently the Agency determines the fare charged at each tolling plaza based on the vehicle classification as determined by AVI and AVDC systems. The *E-ZPass* BOS determines the actual fare based on ORT inputs, but the ORT system shall provide an estimate based on business rules.

C-2.8.4 ORT Plaza/Host System Application Software

The Contractor shall develop, furnish, and install single application software for the ORT Plaza/Host System that supports all user functions for the ORT Plaza/Host System. The Graphical User Interface (GUI) application shall be browser based supporting NH browser version requirements and any workstation connected to the Agency ORT network shall be granted permission to access and run the application, based on the user's access privileges the appropriate menus shall be made available.

Changes to the System data and System parameters shall be through screens and only authorized users shall have access to these screens. All access to the application and changes to the data shall be recorded and tracked, and the System shall provide an audit trail for all data modifications and parameter changes.

C-2.8.4.1 Screens and Report Access

Capability shall be provided to assign privileges and access rights, as determined by the Agency, to the ORT Plaza/Host System application. Based on the access levels/role a user is assigned to the appropriate menus, screens, tabs, reports and all other required user information shall be displayed. There must be the capability to modify user information fields (i.e. name). For some screens, certain access levels/roles may only be allowed to view the contents and not allowed to enter any data. Access privileges shall be set up to allow Agency authorized personnel to make changes to the access privileges at any time, and shall be based upon access level/role and not at an individual employee basis.

C-2.8.4.2 ORT Toll Collection System Screens/Reports

All data entered or generated in the System shall be retrievable through reports and screens. Reports and screens shall be made available through the System and on an ad-hoc basis with various selection and sort criteria. Reports and screen criteria shall be easily configurable. The location selection criteria shall include Plaza, zone, lane, and direction of travel. The date selection criteria shall include but are not limited to the ability to generate the same report by hour; day; date range; weekly; monthly; yearly, and year-to-date. Data shall be presented as an accumulation or individually for the selected criteria. This capability shall be configurable and applicable to individual tolling location and different transaction types whereby the user can choose the data to be presented as an accumulation of tolling locations and/or payment types or as individual tolling locations and/or payment types. Reports developed shall allow the Agency to audit and reconcile the ORT Plaza/Host System with the existing Central Host System or the *E-ZPass* CSC in accordance with this document. Capability shall be provided to manipulate the report data to perform comparative analysis and statistical calculations. The Contractor shall provide ad-hoc reporting tools and use of the tools to generate ad-hoc reports shall be documented. Ad-hoc report templates created by authorized users shall be made available to all authorized users.

The detailed requirements for each report shall be identified in a series of reporting design workshops to be conducted by the Contractor.

The Contractor shall provide complete report designs and submit to NHDOT for review and approval as part of the System Design Document (SDD).

The Contractor shall fully develop and implement the complete reporting functionality and production capability prior to Operations Commencement.

The Contractor shall provide a Reports Manual for user reference. The Reports Manual shall provide the report name; report identifier (number or code); available formats; report fields, descriptions and values; frequency or automated creation; and day or month the report shall be available.

Capability shall be provided to assign privileges and access rights, as determined by the NHDOT, to the report application.

All data entered or generated in the System shall be retrievable through reports. Reports shall be made available through the System and ad-hoc basis; shall have various selection and sort criteria, and shall be easily configurable. Summary reports shall be supported by the ability to "drill down". The reports shall have the capability to run by transaction date, date range; weekly; monthly; yearly, and year to date. Reports shall be able to run at any date for a specific point in time, so that reports can be re-run at a later date.

In addition to the reports listed below the Contractor shall provide fifteen (15) additional report formats to be determined during the Contract.

Users of the System shall be capable of accessing System reports via a single System interface, username and password.

The System design shall ensure that all reports are generated on a separate report database and or server(s). Report generation shall not be performed against production data.

All reports shall display the parameters selected and the date and time run. All reports shall include totals, sub-totals, and grand-totals as appropriate. Reports shall have brief notes to explain its purpose and what the data means per column and row. Full explanation of the reports shall be included in the Reports Manual.

Authorized personnel shall also have the ability to view the contents of files that are received by and or transmitted to the *E-ZPass* CSC and the existing Central Host System in a readable format. If files are compressed, encrypted or not easily readable, the necessary software tools shall be provided to view their contents. If the user selects a specific file, the contents of the file shall be displayed and the user shall have the ability to save the contents as a .csv file and in Excel format.

Where applicable, data shall also be presented in a graph form. Chart types shall be able to select presentation form from a variety of graphic styles. Report designs shall be presented and finalized during the Design Phase. Data shall be organized and summarized in manner to allow for report generation within no more than ten (10) seconds for daily reports, and no more than sixty (60) seconds for monthly and annual reports, for a report generation request. Additionally, after the implementation of the System, the need may arise to create additional reports and modify implemented reports and the Contractor shall support such additions and/or modifications.

The System shall be capable of generating several categories of reports that have the capability for drill down including, but not limited to, financial and violation reports. The following list represents the minimum required reports:

C-2.8.4.3 ORT Plaza/Host Reports

The reports required to audit and reconcile the ORT Plaza/Host System are listed below in this section. The System shall be capable of generating several categories of reports that have the capability for drill down including, but not limited to:

a. Revenue Day Report: This report shows the status of the transaction transmission from the zone controllers, the Revenue Day Status, the failed transactions, all exceptions, and missing transaction sequence at each of the tolling locations. The communication status between the zone controllers to all of the subsystems shall be displayed. It also shows the transmission status of the transactions to the existing Central Host System or the *E-ZPass* CSC.
b. Transmission Reconciliation Reports: Yearly, quarterly, monthly, weekly, and daily reports that show AVI and apparent violation transaction transmission reconciliation for all of the tolling locations. These reports shall validate that all of the AVI and apparent violation transactions received from the lanes were posted to the ORT Plaza/Host System and transmitted to the existing Central Host System or the *E-ZPass* CSC. Reports shall be available by revenue day and transmit day and transmit day reports shall show the files transmitted and acknowledged by the receiving system. The report shall provide the File Creation Date, XOTX File Name, URL Link, Record Count, Expected AVI Revenue, XOTX Acknowledgement Date, and Return Code. Reports shall include the capability to drill-down or link to the actual XOTX files.
c. Transaction and Revenue Reports: Daily, weekly, monthly, quarterly, and yearly transactions and revenue reports showing expected revenue by revenue payment type. Class mismatch transactions shall also be identified. Transaction and revenue reports shall be summarized and detailed. Capability shall exist to generate reports that display Maintenance mode transactions separately.
d. Hourly Lane Traffic: The report shall identify traffic counts by the hour, plaza and lane.
e. Hourly Lane Class Traffic: The report shall identify traffic counts by hour, plaza, lane and class.
f. Home/Away E-ZPass Transactions: The report shall identify the count of transactions by agency, based on transponder, broke down by class and provide a percentage.
g. ETC Penetration Statistics: The report shall provide the ETC penetration statistics by lane, time, and plaza. The report will provide counts, totals and percentages by calendar date (12:00:00 am – 11:59:59 pm).
h. Special Event report: Report shall be provided that displays the transactions that occurred during this mode of operation, the event type, the paid amount, and the expected toll revenue not collected. The report will run by revenue date (11:45 pm to 11:44:59 pm). Buffered and spurious transponder reads will not be included for the counts and the revenue. Classification is based on the higher of the AVI and AVC class. When there is a violation revenue will be assigned based on the AVC class.

i. Transponder File Transmission Report: The Transponder File Transmission reports shall show the status of the Transponder Status File transmissions to the Plaza/Host System and to all of the tolling locations/lanes. Time of receipt from the existing Central Host System or the *E-ZPass* CSC, time of transmission to the tolling locations/lanes, the status of the transmission and the times/status of the acknowledge shall be tracked, reported and displayed.
j. Image Reconciliation Report: The Image Reconciliation report shall provide the ability to match transactions to images and to help identify missing images. Reports shall include the capability to drill-down or link to the actual image files.
k. System Exceptions Report: The System Exceptions report shall display transactions that are considered exceptions, including but not limited to duplicate transactions, host filtered transactions and non-interoperable transponder reads. Exception handling errors shall also be displayed along with the transaction.
l. Data Backup and Retention Reports: Weekly and monthly reports shall be made available that show data backup and retention status for each category of data (detailed and summarized).
m. System Audit Reports: Weekly and monthly reports shall be made available that show the user access data and modifications made and ability shall be provided to obtain the details of the modifications.
n. Employee List Report: Report shall provide a list of employee names, host role, system role, and employee's current status.
o. Back Office Image Transfer Report: The report shall identify the Plaza, Lane, image transmission date and time, plaza transaction ID, Image name, time sent to the Back Office and the size of the. This report is utilized to track the images sent to the Back Office to ensure that all images are sent in a timely manner for processing.

In addition to the above reports the ORT Plaza/Host System shall have the capability for the Agency to generate ad-hoc reports as required. Ad-hoc reports can be generated utilizing a third party software package supplied by the Contractor and the data dictionary or schema as provided in the documentation. Data shall be presented as an accumulation or individually for the selected criteria. Capability shall be provided to manipulate the report data to perform comparative analysis and statistical calculations. The Contractor shall provide ad-hoc reporting business intelligence tools to generate ad-hoc reports. Ad-hoc report templates created by authorized users shall be made available to all authorized users.

C-2.8.4.4 Real-Time Monitoring

The Contractor shall provide the capability to monitor the real-time activity at all ORT System tolling locations in a pictorial and Dashboard view. Users shall have access to the detailed data directly from the pictorial and Dashboard view. Users shall be able to easily maneuver through screens and view data, and different colors and pictures shall be used to bring critical events to the user's attention. Summary

data by payment type for the entire roadway and by tolling location shall be displayed and users shall have the ability to drill down to the details. If a specific tolling location is selected, transaction and event level data by lane shall be made available through this screen. Users shall be able to easily identify problems (traffic or equipment) on the ORT lanes. In addition, the real-time monitoring shall provide detailed real-time information about the AVI system performance, the AVDC system performance, and the VES performance to assist in diagnosing and investigating problems. Data pertinent to traffic monitoring, dynamic pricing, and Maintenance shall be displayed in real-time.

C-2.8.4.5 Remote Operations

The System shall provide the ability to allow authorized users to remotely operate the ORT lanes to support the Agency operations including but not limited to:

1. Place the ORT tolling location/lane in all applicable modes, including Maintenance mode.
2. Enable and disable a Special Event condition, whereby authorized personnel can initiate a zero fare condition or a special toll rate schedule to all lanes at a selected tolling location. Users shall also have the ability to initiate zero fare condition to all lanes at a location for a selected travel direction. The initiation and termination of these modes of operations shall be recorded. All transactions that occur in such conditions shall be flagged.
3. Enable or disable an Image Save condition whereby images of all vehicles are saved for the selected criteria.

C-2.8.4.6 User Setup and Maintenance Screen

User setup and maintenance is a critical task since the employee access levels/roles created through the System shall determine what privileges and access rights each employee is granted. Access to ORT Plaza/Host System and the MOMS application shall be controlled through this interface. Authorized personnel shall have the ability to create new users and modify existing users through the System. Through a user setup and maintenance screen, the users shall be designated various access levels/roles based on their responsibilities (job description). In the Design Phase access levels/roles shall be created and the System shall allow the input and editing of generic job access levels/roles. The access rights of each role and the ability to add roles and users shall be defined by the Agency during the Design Phase.

The user setup and maintenance screen shall be also used to activate and inactivate employees and also terminate them from the System. The same screen shall also be used to assign User ID and PIN/password for access to applications. As soon as the information is saved, an access control list shall be transmitted in near real-time to the various Systems for immediate user access.

C-2.8.4.7 Toll Rate and Schedules

The System shall provide the ability to create and manage toll rates and schedules and transmit the data to the ORT lane system and all toll zone controllers if applicable automatically. The Agency shall have the ability to make any updates to the toll rate schedule as part of a single update, whereby the System automatically coordinates with the *E-ZPass* CSC (if Agency selects this option) with the latest file. The

System shall have the capability to schedule, maintain, and store an unlimited number of toll rates and schedules. Toll rates and schedules shall be maintained for each tolling location and users shall have the ability to establish the date and time in the future at which the new toll rates and schedules become effective. At such effective time the new toll rates shall be activated with no manual intervention. The toll rate for AVI, video and violation transactions shall be defined for each class of vehicle.

The zone controller or Host shall be capable of implementing value-based pricing that varies by time of day, day of the week, and holiday. The toll rates are based on vehicle class and payment type. The toll rates and toll schedules and the effective time shall be downloaded to the zone controller (if applicable) when the toll rate structure changes. The System shall permit the NHDOT to schedule toll rates and schedules changes in advance of the new rates becoming effective.

The System shall support configurable rate programs including but not limited to commuter programs and discount programs, allowing different rates to be in effect based on the terms of the applicable program. In addition, the System shall support establishing toll schedules for special events that are activated during special event mode of operation. A Default Rate Table shall also be defined at the global, tolling location and lane level, which shall be used automatically when no specific rate table is defined for a specific time period.

C-2.8.4.8 Configurable Parameters

The System shall provide the ability for authorized users to modify the configurable System parameters. Any change shall result in the creation of a new configurable parameter set and each change shall be identified by a unique identifier. Changes to configurable parameters can be scheduled to take effect immediately or at a scheduled time as determined by the user. When a new parameter takes effect, a notification shall be generated and reported to the MOMS.

C-2.8.4.9 Toll Zone Controller Executable Download

The System shall have the capability to download toll zone controller executable files and all other files required by the lane for its operations. Successful download of the files shall be verified and alarm messages generated if any file was not received by any lanes. Where possible, all System application updates shall be automated requiring no action by the toll operations personnel.

C-2.8.4.10 Time Synchronization

The ORT Plaza/Host System shall be synchronized to a certified source Approved by the Agency using standard network time protocol at configurable intervals but at a minimum every five (5) minutes. The zone controllers; AVI systems; AVDC systems; VES; and other servers needed to support the requirements of this document shall be synchronized to the ORT Plaza/Host System or Approved certified source. If needed, synchronization messages shall be sent to devices that do not support off-the-shelf time synchronization software. All servers and controllers shall have a primary and secondary source for synchronizing time. The time synchronization technique shall ensure that there are no transactions or files with incorrect time stamps.

C-2.8.5 Maintenance On-line Management System (MOMS)

As part of the ORT Plaza/Host System application software, or as a separate application, the Contractor shall provide the MOMS functions for reporting and tracking alarm messages and maintaining status, location, health, and attributes for ORT Lanes field equipment asset (inventory). The MOMS shall meet the requirements needed to support the maintenance operations specified in Section C-8.0 of this document. The MOMS shall support real-time paging of maintenance staff and shall be configurable to meet the Agency operations requirements. It is preferred but not required that the MOMS system be integrated with the existing ORT MOMS system.

Scheduling of all preventive and predictive maintenance activities shall be performed through the MOMS and automatic work orders shall be generated at the scheduled times. The MOMS shall have the ability to create manual work orders in events where one was not automatically created. The MOMS shall have the ability to determine response times, repair times, and lane down time from the data entered by the maintenance technician.

As part of the ORT Plaza/Host System Application Software, the Contractor shall furnish and integrate a Maintenance On-line Management System (MOMS) that supports the monitoring and Maintenance operations for all ORT Lanes and the ORT Plaza/Host System procured, furnished, and installed as part of the ORT System. The Contractor shall configure the MOMS to meet the applicable performance requirements set forth in Sections C-2.8 and C-8.0 of this Appendix C.

The MOMS may reside on either the ORT Plaza/Host System server or a separate server. If a separate server is procured, furnished and installed, it shall meet all of the general hardware requirements set forth in this document.

A spare parts inventory of equipment shall be maintained and tracking and purchasing of all toll related equipment shall be done through the MOMS. When spare parts inventory reach a configurable threshold, automatic replenish alerts shall be generated.

C-2.8.5.1 Failure Reporting and Real-time Notification

The MOMS shall be capable of reporting and tracking alarm messages and maintaining status, location, health, and attributes for all hardware, networks, and software procured, developed, furnished, and installed. All failures and alarms shall result in the creation of work orders and depending on the work order priority, the MOMS shall notify Maintenance staff electronically in real-time. The Agency shall have the ability to configure the priority level of each alarm and assign and change the escalation attributes. Addition of alarms shall not require any changes to the MOMS and the Agency shall have the ability to indicate if an alarm should result in the generation of a work order and if an alarm should be considered in performance reporting.

Maintenance staff shall have the ability to create work orders manually, enter data regarding the Maintenance status and close work orders. Maintenance staff shall be equipped with portable devices

that allow them to access the MOMS, enter data remotely and completely manage work orders. The MOMS shall have the ability to determine and calculate initial acknowledgement times, response times (both remote access and on-site), repair times and lane and system down time from the data entered by the Maintenance technician. Equipment recovery messages shall also be reported through the MOMS.

C-2.8.5.2 Preventive and Predictive Maintenance

Scheduling of all preventive and predictive Maintenance activities shall be performed through the MOMS and automatic work orders shall be generated at the scheduled times.

C-2.8.5.3 Asset Management

All equipment procured, furnished, and installed shall be entered into inventory and tracked through the Asset Management system that is part of the MOMS. All Warranty information shall be tracked and automatic work orders shall be generated when the Warranty expires. A spare parts inventory of equipment shall be maintained and tracking and purchasing of all System equipment shall be done through the MOMS. When spare parts inventory is reduced to a configurable threshold quantity, automatic replenishment alerts shall be generated.

C-2.8.5.4 MOMS Screen

In order to ensure that all ORT tolling locations are functional, all Systems are operational, all the processes are working and file transfers are successful, authorized users shall have access to the MOMS screens that can verify the status of tolling locations, the System and various file transfers, including the files transmitted and received from the *E-ZPass* CSC or data transmitted and received from the Central Host System. ORT tolling locations and System status shall be shown in a pictorial view with the capability to drill down to the device causing an alert and its associated error logs. This screen shall show if required files were transmitted to all the lanes, the Central Host System or *E-ZPass* CSC and what version is in use. Users shall have the ability to re-initiate download in the event transmissions were not successful. Screens shall be available that show all the alarms generated by the various Systems and subsystems, including the operating system, DVAS and the database.

Failure of any devices, processes, programs, and scheduled tasks shall be forwarded to a MOMS screen that is accessible to authorized staff. Various events and error logs shall be provided for each program that shall assist the system administrator to investigate problems.

C-2.8.6 Disaster Recovery and Business Continuity

The Contractor shall provide a Host System which supports expedited disaster recovery from failure and preserves to the greatest extent possible full business continuity.

The Host System shall meet Tier 3 availability of 99.982%. The hosting solution may be comprised of a primary and or secondary system. The specific design shall be at the discretion of the Contractor so long as it meets the up-time availability and requirements as specified in this RFP.

Hosting of the primary and failover data centers shall be in data centers or clouds managed by the Contractor or other third party Data Center provider. The Data Center shall be U.S. based. The Contractor shall provide and maintain full responsibility for a redundant network connection between the NHDOT's ORT network and the Contractor's data center(s).

The Contractor shall design and implement a disaster recovery and business continuity plan which ensures that the System is hardware, software and information redundant.

If the primary system should experience a technical issue or failure, functionality should be transferred to a secondary system after a maximum of two hours of troubleshooting has failed to resolve the problem.

The Contractor's communication system shall support a seamless transfer to the secondary system on a real-time basis. The Contractor shall also demonstrate that the Host can be switched over seamlessly from the primary system to the secondary system during On-Site Testing and annually each year thereafter during the Annual Disaster Recovery Test. System design must allow for this complete failover testing annually.

C-2.9 Performance Requirements

The Contractor shall provide an ORT System that is designed to meet the accuracy, performance and throughput requirements set forth in this document. The testing logistics required to prove adherence to these requirements is detailed in the Master Test Plan and the test procedures set forth in Section C-6.2 General Testing Requirements.

C-2.9.1 Accuracy Requirements

The Contractor shall provide an ORT System that meets the accuracy requirements described below. The Contractor shall validate System compliance to the accuracy requirement by collecting data to the required sample size in live traffic operations as described below for each test. All times-of-day and traffic conditions shall be proportionally represented within the samples. The same sample of vehicles collected during live operations may be used for the verification of multiple accuracies, if applicable. Prior to the start of testing the System shall be confirmed to be fully operational. Transactions that fail to meet the requirements shall be reviewed and audited and anomalies investigated.

The ORT System shall meet the accuracy requirements described below.

ORT System Performance Requirements

Performance Requirement	Requirement Description	Performance Level

C-2.9.2 Transponder Read Accuracy	A transponder mounted in accordance with the manufacturer mounting instructions shall be read by the AVI system under all conditions within the design specification described in this document at the time of testing. This requirement applies to all tolling locations types based upon the transponder mix collected during the testing period for the given sample size. Testing shall require the use of controlled test vehicles with known "good" transponders intermixing with live traffic to create the required sample size.	99.95%
C-2.9.3 Transponder Reporting Accuracy	A transponder that is detected and read by the AVI reader shall be reported to the zone controller under all conditions within the Design specification described in this document. Testing shall require the use of transponder reads collected during live traffic operations.	100%
C-2.9.4 Vehicle Detection Accuracy	The zone controller shall detect and report all vehicles traveling through the tolling location under all conditions within the Design specification described in this document. Testing shall require the use of vehicle data collected during live traffic operations.	99.99%
C-2.9.5 Vehicle Classification Accuracy	The zone controller shall classify all vehicles in accordance with the Agency classification structure traveling through the tolling location under all conditions within the Design specification described in this document. Testing shall require the use of vehicle data collected during live traffic operations. A mix of different vehicle types and configurations, including trailers and multi-axle vehicles shall be used.	99.5%

C-2.9.6 Transponder Association Accuracy	Every transponder that is reported to the zone controller shall be assigned to the correct vehicle under all conditions within the Design specification described in this document. Testing shall require the use of controlled test vehicles intermixing with live traffic.	99.95%
C-2.9.7 Image Capture Reporting Accuracy	The System shall capture, report and correctly associate an image to the correct vehicle as defined in the Business Rules under all conditions within the Design specification described in this document. The system shall provide metrics and reporting to validate accuracy, Testing shall require the use of vehicle data collected during live traffic operations.	99.95%
C-2.9.8 Image Quality Reporting Accuracy	The System shall capture, process and report image rejection rates and reason codes under all conditions within the Design specification described in this document. The system shall provide metrics and reporting to validate accuracy, Testing shall require the use of vehicle data collected during live traffic operations.	99.95%
C-2.9.9 Transaction Processing Requirements	All transactions generated by the toll zone controllers in accordance with the above accuracy requirements shall be reported to the ORT Plaza/Host System and the Central Host System or *E-ZPass* CSC under all conditions within the Design specification described in this document. Testing shall require the use of vehicle data collected during live traffic operations.	100%
C-2.9.10 False Read Processing	Testing shall require the use of vehicle data collected during live traffic operations and test results will be verified by monitoring the *E-ZPass* CSC for	0.001%

	accurate account posting. The purpose of this requirement is primarily to prevent false charges to customer accounts due to inaccurate reads and tag assignments.	
C-2.9.11 Image Transmission Requirements	All AVI class mismatch and apparent violation images from the Image Server shall be transmitted to the *E-ZPass* CSC under all conditions within the Design specification described in this document. Testing shall require the use of vehicle data collected during live traffic operations.	100%

C-2.10 Mean Time Between Failure (MTBF)

The ORT System shall be required to meet specific minimum duration requirements for components and subsystems in continuous operation. This time requirement is defined as the Mean Time Between Failure (MTBF). The Contractor shall provide all third-party MTBF on individual components to be used in the System.

MTBF requirements for all components of the ORT System shall meet the MTBF as specified below:

Component or Subsystem	MTBF (hours)
Redundant Zone Controller	20,000
Automatic Vehicle Detection/Classification System (AVDCS)	8,760
Violation Enforcement System (VES)/OCR Server	8,760
Automatic Vehicle Identification (AVI) System	8,760
ORT Plaza/Host System	8,760

The reliability of the System components shall be calculated based on the following MTBF calculation:

$$\text{MTBF} = \frac{\text{\# Units X Test Period (hours)}}{\text{\# Chargeable Failures}}$$

Chargeable failures are defined in Section C-2.12.1.

C-2.11 Availability

The Contractor shall meet availability requirements listed below:

Availability Requirements (Monthly)	
System or Subsystem	Availability Requirement (%)
Lane	99.95
System	99.95

These availability requirements shall be separately calculated and applied as follows:

An available lane is defined as a lane with all of its subsystems properly functioning and available to collect revenue and send required transactions, including associated transaction data, such as apparent violation images, to the Central Host System/*E-ZPass* CSC where applicable. A failure of the System, as defined below, shall not be included in the lane availability calculation.

An available System is defined as the overall System that includes the ORT Plaza/Host System, the WAN, and the image server, that are properly functioning and available to collect revenue, receive data transmitted from the lanes and properly process and transmit the data to the Central Host System/ *E-ZPass* CSC. A failure of the lane shall not be included in the System availability calculation.

Calculation for Availability shall be the following calculation:

Availability = 100% - [Hours Downtime / (# Days in time period measured * 24)]

C-2.12 Chargeable and Non-Chargeable Failures

For purposes of calculating MTBF and Availability performance requirements for testing, as detailed in Section C-5.0, and for Maintenance performance, as detailed in Section C-8.0, chargeable and non-chargeable failures are defined as follows:

C-2.12.1 Chargeable Failures

Chargeable failures include any failures that are not specifically identified as non-chargeable in Section C-2.12.2, including, but not limited to, the following:

- A malfunction which prevents the ORT toll collection system component (hardware or software) from performing its designated function, when used and operated under its intended operational and environmental conditions as detailed in this document.
- A malfunction that poses a threat to the safety of the ORT toll collection system components, ORT toll collection system customers, employees or others.
- An occurrence where data is not successfully transmitted between the lanes and the ORT Plaza/Host System and from the ORT Plaza/Host System to the Central Host System/ *E-ZPass* CSC unless such failure is already accounted for as a separate performance failure (e.g., if the lane is not functioning and does not transmit data to the ORT Plaza/Host System, the lane would be charged for the failure but the System would not).
- A failure of equipment or software that allows revenue loss to occur on the ORT toll collection system that is not already accounted for as a separate performance failure.
- Software anomalies and bugs that affect the performance and operation of the ORT toll collection system.
- Shutdown or unavailability of the ORT toll collection system unless specifically directed by the Agency.
- Failure to properly register or report a transaction.
- Failure to properly reconcile the ORT toll collection system.

- Failure to electronically send or receive transaction and payment information.
- Failure to send required transactions to the Lane system or the *E-ZPass* CSC.
- Failure to send required images**.**
- Failure to generate the reports required to reconcile and audit the System.
- Failure of the DVAS system.

C-2.12.2 Non-Chargeable Failures

Non chargeable failures shall include:

- Force majeure, as defined in the applicable Contract Documents.
- Vandalism.
- Failure of a test facility or test instrumentation.
- System component failures caused by externally applied stress conditions outside of the requirements of this document.
- System component failures caused by environmental or operating conditions outside of the requirements of this document.
- Normal operating adjustments as allowed in the Test Procedure or Maintenance Plan, as applicable.
- Failures that are patron or user induced.

C-3 System Schedule and Transition

The Contractor shall accommodate staging and phases of the new ORT System in accordance with the Approved schedule. The Contractor schedule shall be sufficiently flexible to accommodate modifications or changes such as early completions or delays in start or completion of segments that would normally be expected in a multi-phase construction schedule.

C-3.1 ORT System Implementation

The Contractor shall design, test, and install the ORT System; including the ORT Plaza/Host System hardware at the Agency designated location and the disaster recovery site, where applicable. The ORT Plaza/Host System functions shall be tested and Commissioned as needed prior to commencing Commissioning and Operational Tests for the ORT in-lane equipment/Systems. A Transition Plan that identifies the Implementation, Commissioning and assumption of operation of the Existing Lane System and the Existing ORT System shall be submitted to the Agency for review and Approval.

C-3.2 General Schedule Requirement and Associated Penalties

The overall goal of the project and primary requirement is the opening of the completed converted Bedford plaza by 5/31/2018. Therefore the opening date for the ORT lanes shall be by midnight at the end of, May 31st. Given these dates are subject to a range of stakeholders and Contracts, the following schedule constraints shall be required of the System Integrator.

C-3.2.1 Master Test Plan

The Contractor shall be required to provide a high level Master Test Plan covering all aspects of testing as detailed in Section C-6.2 of this document.

C-3.2.2 ORT Lanes Deployment

The Contractor shall install, test and complete OFIT and Commissioning testing as part of the ORT Lanes Deployment.

C-3.3 Transition to Open Road Toll Lanes

The Contractor shall provide a detailed Transition Plan for Agency Approval that addresses all critical elements associated with the Implementation of the ORT System, including ORT Plaza/Host System. The Transition Plan shall also address the integration and interface testing of the ORT Plaza/Host System to the Central Host System or the *E-ZPass* CSC.

C-4 Project Delivery

C-4.1 Project Management Plan

The Contractor shall submit a preliminary Project Management Plan in its Proposal in accordance with the requirements of Appendix C: Requirements and Deliverables. A finalized Project Management Plan and Schedule shall be due forty-five (45) business days after Notice to Proceed (NTP). See Section C-7.6 Project Management Plan for further details.

C-5 Installation Requirements

This section details the Contractor installation requirements. Unless approved by the Agency, no System installation shall occur prior to the satisfactory completion and approval of the Factory Acceptance Test (FAT) and the approval of Installation Design.

C-5.1 Installation Program

The Contractor shall install all ORT System equipment provided for the ORT System or related Enhancements to the existing Lane System. The Contractor shall meet the following installation program requirements:

C-5.1.1 Installation Plan

The Contractor shall develop an installation plan that documents all installation related activities for the project. The installation plan shall be the master document from which the elements of the System shall be installed. The installation plan shall include and define, at a minimum, the following items:

1. The installation schedule, detailing phases and/or installation segments. Once the baseline schedule is approved by the Agency updates during the installation periods identifying all

schedule changes and work progress in the form of percentage completions shall be submitted to the Agency.

2. The minimum resource allocation requirement for any installation phase or segment.
3. How the Contractor manages delivery and staging of the ORT equipment to be installed.
4. How the Contractor manages the delivery and staging of the ORT Plaza/Host System equipment at the designated facility and any applicable disaster recovery facility.
5. The coordination between third party Contractors, including the Civil Contractor(s), existing Lane System Contractor (ORT and Lane) and the *E-ZPass* CSC Contractor.
6. The order in which equipment items are to be installed with estimated durations.
7. Any required prerequisite activities to be accomplished by other Contractors.
8. Any special or unique installation requirements.
9. A detailed component list and how each item version number and serial number shall be recorded and accurately input to the MOMS for each installation configuration.
10. Organization Chart defining key personnel, roles and responsibilities and contact information.
11. Installation check list described below.

C-5.1.2 Installation and Construction Coordination and Meetings

C-5.1.2.1 Weekly Installation Meetings

The Contractor shall schedule and attend weekly installation meetings during the active installation phases of the project. The Contractor and any Subcontractors shall ensure that the appropriate personnel are present at these meetings, who can represent the Contractor's interest and provide the information necessary in a meaningful manner. The Contractor shall prepare and distribute a meeting agenda at least 48 hours prior to the scheduled meeting. The meeting agenda shall consist of those items pertaining to the installation and schedule for the previous and current week's installation efforts, as well as a two week forecasted schedule of activities. All issues that arose during the installation activity for the week shall be discussed and acted upon. At this meeting, the Contractor should also be prepared to address any issues or questions by the Agency. The Contractor shall document the meeting discussions and distribute the meeting documentation to the team. The Contractor shall also record and maintain an action items list that tracks all installation related issues.

C-5.1.2.2 Construction Coordination

The Agency (or its third party Contractor designee(s)) is responsible for the construction of the roadway including necessary toll-zone conduit, pull-boxes, conduit leading into tunnel and the gantry. The Contractor shall coordinate closely with the Agency, and the Agency contractors in all aspects of the Project. The Contractor shall:

1. For all ORT toll system equipment provided by the Contractor, provide all required Design and installation drawings, operating requirements and installation instructions to the Agency and its third party Contractors;
2. Review all third party Contractor provided drawings with respect to the ORT toll system;
3. Approve all aspects of such drawings related to the toll system, and

Ensure the System Integrator's needs necessary to meet the requirements set forth in this document are met with regard to such design. This includes responsibility for ensuring that the locations, positions, installation, connections and other elements of the Contractor inputs identified on the design and installation drawings provided by the Contractor for all Contractors and Agency provided equipment, whether in-roadway, gantry mounted, or otherwise located, shall meet such requirements. Table C-1 Responsibility Matrix at the end of Appendix C defines the areas of responsibility for the parties involved in the Project Design and construction.

Contractor shall also ensure that the installed roadway and gantries, meet the Design requirements provided by the Contractor and shall approve such installed work with regard to the Design provided.

During the project Design, development and installation periods there shall be a series of meetings between the Contractor, the Agency, and the third party Contractors to clearly define and develop the installation requirements, methodology, timetables, test plans, roles, and contingency plans. In addition, the Contractor shall attend regular progress meetings during the active construction periods for all of the Contract stages to ensure that proper coordination is taking place and to report on progress of the ORT installation. The Contractor shall identify and communicate any issues regarding ORT System construction and installation on a timely basis to the Construction Contractor and the Agency.

C-5.2 Installation Scope of Work and Requirements

The Contractor shall procure, install, terminate and test all equipment specified as part of the ORT System as set forth in this document. The Contractor shall also procure, furnish, and install all roadside or tunnel enclosures, and install conduits and cable trays required to support the ORT System in the tunnel. The Contractor shall coordinate with the Civil Contractor who will perform the maintenance of traffic (MOT) and lane closures and shall meet the NH MOT specifications with regard to maintenance of traffic.

C-5.2.1 Compliance to Standards

The Contractor shall adhere to all installation standards, applicable laws, ordinances and codes as required, including but not limited to NEC, the Agency, NHDOT, FHWA, IEEE and OSHA, for areas including but not limited to electrical codes, traffic control, seismic considerations, or environmental. All installations shall meet such requirements. The Contractor shall be responsible for all costs associated with any permits, plan reviews, and inspections. It shall also be the Contractor's responsibility to procure all documentation required to install and adhere to the proper installation standard, law, ordinance, or codes.

Relative to safety standards, the Contractor shall particularly note the NHDOT Standard Specifications 107.05 Sanitary, Health and Safety Provisions and 107.06 Public Convenience and Safety.

C-5.2.2 In-Lane Toll System Installation Requirements

The Contractor shall supply all personnel, tools, vehicles, materials and equipment required to perform the complete installation of the ORT System, including but not limited to all equipment and vehicles required for overhead installation work on gantries; specialty equipment for preparation and saw-cutting of loops as required, and provide necessary test vehicles, cameras and equipment to adequately test the installed System in accordance with the Approved Test Plan.

Where the Contractor is providing subsystem components manufactured by a third party Contractor, the Contractor shall ensure that all such components are installed in accordance with manufacturer's installation guidelines. In addition, the Contractor shall provide such subsystem manufacturer on-site and remote support as is necessary to ensure the proper installation and operation of its equipment at no additional cost to the Agency.

The Installation scope of work includes but is not limited to:

1. Furnish and install clean power to all ORT toll collection equipment.
2. Furnish and install all connecting conduit or wire ways from the stub conduits entering the tunnel from the roadway.
3. Furnish and install separate grounding for the ORT toll collection system, surge protection devices (SPD), junction boxes, pull boxes, conduits, and other such items as required by the installation standards and requirements. See Section C-5.2.2.2 for more detail on electrical work requirements.
4. Furnish and install all wiring for all in-lane equipment and connections to the enclosures. This includes the proper termination of all power, communication, and RF cables and/or wiring (copper, fiber optic or network) required to connect the individual components into a fully operational System.
5. Furnish and install all equipment racks and roadside enclosures required for the in-lane electronics, including environmental control devices and UPSs, as required.
6. Furnish and install all equipment brackets to support equipment on gantry hangers.
7. Furnish and install all zone controller computers (hardware and software) into the equipment racks and enclosures.
8. Furnish and install all electronics and other devices in their respective equipment racks and enclosures as required to provide a fully operational System.
9. Furnish and install the AVDC system equipment, including in-pavement sensors or overhead mounted equipment as specified. Includes all the Agency Approved materials, equipment and supplies required for saw-cutting, wiring and sealing of wires in the roadway.
10. Install the AVI system equipment, including antennas, readers, related equipment, cables, and any support brackets required. All AVI mounting hardware, junction boxes, and cables shall be procured and supplied by the Contractor.
11. Furnish and install the VES equipment, including cameras, VES illumination, and any video controller equipment, sensors, software, controllers/servers, or specialty equipment associated with the VES.
12. Validate all cable and wire terminations via a test process to ensure that the cable is connected to the correct location on each end and that the cable/wire is properly terminated.

13. Power up and provide a field check out/installation Acceptance Test of all Systems, to be witnessed and Approved by the Agency or its designated representative. Provide the completed installation checklist as described in Section C-5.2.2.1.
14. Tuning and testing of the AVI system, as described in, and in full accordance with, manufacturer's guidelines.
15. Calibration and testing of VES in full accordance with manufacturer's guidelines.
16. Calibration and testing of DVAS in full accordance with manufacturer's guidelines.
17. Calibration and testing of AVDC system in full accordance with manufacturer's guidelines.
18. Installation and testing of the security access control equipment.
19. All other items, materials, and equipment to complete installation in accordance with this specification.
20. All other items, materials, and equipment to complete testing in accordance with this specification.
21. The Civil Contractor will provide conduit and pull-boxes in roadway per ORT Contractor.

C-5.2.2.1 Installation Checklist

As part of the Installation Plan, the Contractor shall develop an installation checklist that tracks the progress and completion of all installation activities. The checklist shall be the document detailing those items required for the installation crew to complete the installation process for all equipment and components, including terminations and connections. A copy of the checklist signed and approved by the Contractor, attesting to the completeness of the installation, shall be provided to the Agency after the completion of the installation activities for each lane at each tolling location. The Contractor shall conduct a final inspection of all installations and certify the installation work.

C-5.2.2.2 Electrical Work

Electrical work to be performed shall include, but not be limited to the following general items of work:

1. Provide and install surge protection devices as required to protect the ORT toll collection system equipment and electronics.
2. Install junction boxes and terminate new cable and conduit attachment devices, where applicable.
3. Provide a new grounding system for the ORT tolling locations.
4. Bond all conduits, manhole frames, metallic junction boxes, and other conductive items to the grounding system in conformance with the Agency and NHDOT Standard Specifications and the NEC.

All electrical work shall be performed in accordance with the applicable regulations. Appropriate NEC compliance shall be adhered to with all electrical articles for installation pertaining to wiring, enclosures, and other electrical equipment in hazardous locations. UL labels shall be provided for all electrical panel boards, enclosures, and accessories.

All electrical equipment must be inspected prior to installation for defects that could damage the equipment or harm personnel. Any equipment found to have defects shall not be installed but shall instead be replaced with a fully functioning replacement.

All electrical equipment shall be properly grounded for safety. Equipment shall be furnished with grounding pads or grounding lugs. All ground connections shall be cleaned immediately prior to connection. The Contractor shall provide all grounding material required for installation. Ground connections made to metallic cold water piping system at such locations shall be readily available for inspection. Where cold water piping is not available, use other available or made electrodes as described in NEC Sections 250-81 or 250-83. No grounding conductor shall be smaller in size than 10 AWG unless it is a part of an acceptable cable assembly.

C-5.2.2.3 Work Standards and Requirements

In-lane ORT equipment installation shall be scheduled so as not to disrupt or delay traffic during the installation process. The Contractor shall make every effort to schedule work around peak traffic movement times. In the event that extended lane closures are required, closures may have to be accomplished during night hours. Unless repeated access to the ORT Lanes could disrupt or delay traffic, these requirements are not applicable to work in closed construction zones for which most of the ORT System and testing is anticipated.

The ORT equipment installation shall be performed to the Agency Approved set of plans. The Contractor shall provide project management and oversight of all work performed. At all times when installation work is taking place, the Contractor shall have an individual designated in the Organization Chart as Site Manager on-site to supervise the installation. The Contractor shall install the ORT equipment to the highest standards, using experienced and knowledgeable personnel. For example, journeyman electricians shall terminate all cables, wiring, or fiber optic cables. All tools such as crimpers, fiber optic termination tools, and test equipment shall have been properly calibrated prior to being used.

The Contractor shall provide a safe environment for the installation process in accordance with all applicable local, State and federal requirements, as well as any Authority policies. Examples would include but not limited to the following examples:

1. Safety harnesses shall be included and employed on all lifts, and the personnel trained on their use.
2. Hard hats and safety vest shall be worn in all construction areas.
3. Safety toe shoes shall be worn in construction areas and around active roadways while performing installation processes.
4. Regular safety meetings shall be scheduled to review safety procedures.

C-5.2.3 ORT Host CPS Installation

The Contractor is responsible for the design of the room that houses the servers and shall take into consideration all design elements including but not limited to space, utility, fire suppression, environmental, power and floor loading requirements. All servers, storage devices, communications equipment, UPS and other ORT Host CPS hardware shall be installed in the designated locations within the building or structures as prescribed in the drawings submitted by the Contractor and Approved by the Agency. The Contractor shall take into consideration the environmental state required in order to maintain the ORT Host CPS. The Contractor shall also take into consideration the loading requirements and limitations and ensure that the structural integrity is not compromised. The Contractor is responsible for:

1. Installation of the UPS.
2. Installation of the equipment enclosures, image servers, ORT Host CPS servers, data storage subsystems, communications equipment, and other peripheral equipment needed to support the ORT System at the operational and the disaster recovery site.
3. Installation of security access system.
4. Installation of all network equipment.
5. Establishing and validating communications to in-lane equipment.
6. Validation of communications to the *E-ZPass* CSC and the existing Central Lane Host System.

C-5.3 Design and Documentation During Construction and Installation

C-5.3.1 Engineering Design

The Contractor shall secure the services of a fully qualified engineering design firm(s) or provide fully qualified Contractor employees for the purpose of performing all infrastructure related engineering design (civil, structural, electrical, mechanical, and architectural) and the preparation of related plans and documentation under this Project. All design work shall be performed under the direct supervision of a Licensed Engineer of the appropriate discipline in the State of New Hampshire. If the Engineering Design effort is performed by the Contractor, the Contractor shall submit documentation showing that the Contractor has met the required qualifications described in this section.

C-5.3.2 Installation Design and Drawings

The Contractor shall submit shop drawings detailing the installation design that shall be used on-site and at the host location for installation work. Detailed drawings shall be provided for each lane configuration and if measurements differ from site to site, these variations shall be noted. All documentation regarding the ORT System equipment shall be maintained by the Contractor and made accessible to the Agency for review. All documents should have updated and visible version and revision numbers, titles and other information as outlined in Section C-7.8. Examples of documentation to be provided include but are not limited to:

- Detailed installation drawing for each piece of equipment.
- Detailed electrical schematics.

- Detailed roadside enclosure layout and interconnections drawings.
- Detailed equipment rack layout and interconnections drawings.
- Detailed communications layout.
- Sketches, both hand drawn and computer generated.
- Memos denoting changes or modification requirements.
- All red line drawings.

At the completion of the installation, when all changes and modifications have been incorporated and Approved, this documentation shall be supplied to the Agency as part of the as-built package as further identified in Section C-7.8.9.

For the ORT Host CPS, detailed equipment enclosure layout drawings shall be provided. If break out boxes are required such details shall be included. Detailed UPS installation drawings shall also be provided including power calculations and load calculations.

C-5.3.3 As-built Drawings/Documents

The Contractor and any Subcontractor shall update the latest drawings with red lines as changes are incorporated during the installation process. At the completion of the installation of the ORT System, the Contractor shall gather all red line drawings. The red line drawings shall be verified and then incorporated into a final as-built drawing package. This final as-built package shall include installation drawings, shop drawings and sketches, and other drawing types that may have been used to install the ORT System. All other documentation used regarding the installation shall be also be finalized and submitted as part of the as-built submittal.

C-6 Testing Requirements and System Acceptance

C-6.1 Overview

The requirements described in this section detail the labor, materials, facility, and support services necessary to test the ORT System. The testing shall be conducted in various phases and stages as detailed below, to validate the ORT System integrity, reliability, functionality and compliance to the requirements set forth in this document including the following technical requirements. Any and all costs associated with performance of the tests shall be borne by the Contractor including any transaction processing costs.

The objective of the Agency testing plan is to ensure that the ORT System is systematically and thoroughly tested for compliance with this document and operates reliably in accordance with the Agency Business Rules and Policies. The Contractor shall make best efforts to test the System simulating normal traffic conditions for all controlled testing identified in this section.

The ORT System provided by the Contractor shall be tested and certified to be interoperable with all *E-ZPass* agencies, and the entire ORT System shall be tested prior opening the new ORT lanes to revenue collection. The Contractor shall be responsible for all test logistics (coordinating lane closures with NHDOT and the Agency, test vehicles, transponders, drivers, etc.) and coordination activities. The Contractor shall provide the test facility that meets the requirements of the testing program. The Agency and its representatives shall only witness and Approve the testing and the Contractor shall be responsible for all aspects of the testing. Approval of any aspect of testing shall not relieve the Contractor of the responsibility to meet the full requirements of the Contract.

C-6.2 General Testing Requirements

The Contractor shall provide to the Agency, for review, comment, and Approval, a Master Test Plan that outlines the scope and testing concepts to be used to validate the ORT System from initial development through installation and Project Acceptance. It is anticipated that the Factory Acceptance Test (FAT), the On-site First Installation Test (OFIT) will each be conducted one (1) time to test the full System functionality. The following is a complete list of the anticipated tests for the project:

- Factory Acceptance Test (FAT)
- On-site First Installation Test (OFIT)
- Installation and Commissioning Testing (if applicable)
- Operational Test
- Security Test

The Master Test Plan shall cover the Factory Acceptance Test, Onsite First Installation Test, Commissioning Test (if applicable), and Operational Testing for Acceptance. Once the Master Test Plan is approved by the Agency, it shall then be used to compose the detailed test procedures, which shall be submitted to the Agency for review and Approval per the required schedule to be set by the Agency.

After the completion of each test, the Contractor shall submit to the Agency for review and Approval the Test Report that documents the results of the test. The Test Report shall include the results of the test, the test data, any anomalies identified, the corrective action and any re-tests necessary to successfully complete each testing phase.

During the development of the System software, the Contractor shall conduct tests or demonstrations as reasonably requested by the Agency to ensure that the ORT System meets the functional specifications set forth in this document.

C-6.3 ORT System/Existing Central Lane Host and/or E-ZPass CSC Interface Testing

As part of the FAT and OFIT testing, an ORT System to existing Central Lane Host or the *E-ZPass* CSC interface (whichever is applicable) test shall be conducted to verify that the interface developed meets the requirements of this document, requirements identified through coordination with the Agency and the existing Lane System Contractor during the design process (if applicable), and the *E-ZPass* ICD (if

applicable). The Contractor shall develop an interface Test Plan and submit the plan to the Agency for review and Approval. The Contractor shall work with the *E-ZPass* CSC Contractor to develop the detailed test procedures that describe all aspects of the interface testing and validation of each test requirement. The interface test shall be coordinated with the *E-ZPass* CSC Contractor and testing shall be conducted in accordance with the Approved test procedures. Upon completion of the interface testing, the Contractor shall submit a test report to the Agency for Approval that details the results of the test. The Contractor shall coordinate this testing with the Agency and the New Hampshire Office of Information Technology where applicable to include the systems located in Concord, NH as part of the testing. The System Integrator shall demonstrate full load regression testing including full loading under the existing and ORT System to verify System adequacy.

C-6.4 Factory Acceptance Test (FAT)

The Factory Acceptance Test (FAT) shall be conducted by the Contractor to verify that all functional elements of the ORT System and components provided by the Contractor are in conformance with the Agency technical and operational requirements and the final System Design as Approved by the Agency. The FAT shall be conducted either at the Contractor's facility in actual lanes or at a facility designated by the Agency in accordance with the Approved Master Test Plan and test procedures. The test procedures shall document the test configuration and all exceptions shall be noted.

The Agency shall witness the FAT and the results of such testing shall be subject to the Agency Approval. FAT shall provide sufficient evidence to the Agency that the Contractor's System meets *E-ZPass* and the Agency operational requirements, complies with this document, and is ready to be installed on-site. As part of this test, the Contractor shall update the Compliance Matrix in Form 8 in Appendix J that was reviewed and Approved by the Agency identifying each requirement and the tests conducted that prove compliance to the Contract requirements.

The Contractor shall provide the required support personnel, test vehicles, test equipment and test environment, and testing shall be conducted in accordance with the Approved test procedures. Upon completion of the FAT, the Contractor shall submit a test report to the Agency for Approval that details the results of the test. Upon the completion of any re-tests and Approval of the FAT by the Agency, the Contractor shall be given the authorization to move forward to the On-site First Installation Test.

C-6.4.1 FAT Travel Costs

As part of the Factory Acceptance Testing the Contractor shall cover travel expenses for the following:

- Three (3) DOT employees;
- Airfare (if driving distance is over 4 hours); and
- Hotel (single occupancy for the duration of the FAT).
- Rental Vehicles

C-6.4.2 Hardware Production Testing

All hardware provided by the Contractor shall be unit tested to ensure it complies with the requirements set forth in this document. The Contractor shall verify that each component meets the Approved Design specifications. The Contractor shall also provide Certification that the hardware provided for the ORT System or related Enhancements to the existing Lane System meet the requirements for the environmental conditions identified in Section C-2.2.2.

C-6.4.3 Functionality Testing

As part of the FAT, the Contractor shall demonstrate that the ORT System provided by the Contractor is in compliance with the requirements of this document and its functionality complies with the operational requirements and the Approved Design documents. The lane subsystems, ORT Host CPS (including the MOMS), existing Lane System, and interface to the *E-ZPass* CSC and various other devices and systems shall be tested for functionality. The transfer of files and data between various systems shall be tested. The Contractor shall work with the *E-ZPass* CSC Contractor, to coordinate the verification of the interface.

C-6.4.3.1 In-lane Systems

During the FAT, the Contractor shall demonstrate the lane operations as described in this document, including shoulders. Transactions shall be created and processed using real vehicles and sensors emulating on-site traffic flow. The intention of these simulations and tests is to give the Agency a full understanding of the lane logic and vehicular processing.

Real vehicles shall be used to validate:

- Accurate assignment and proper framing of each vehicle through the appropriate lane configurations at the speeds and spacing requirements specified in this document;
- The accurate capture of images and association of transponders and images to the correct vehicles;
- All exception processing requirements;
- All unusual occurrence scenarios;
- Degraded mode scenarios; and
- Rush-hour traffic scenarios.

The Contractor, with input from the Agency, shall detail various test scenarios into a Test Plan that emulates conditions such as rush-hour traffic (bumper to bumper), vehicle straddling/changing lanes/merging, degraded System, etc. The objective of this testing shall be to understand how the ORT System behaves and processes transactions in such scenarios and to ensure that the results are acceptable to the Agency and meets the requirements in this document.

As part of FAT, simulated data shall be used to run the ORT System continuously over a two (2) day period to ensure the data files are correctly created and the data is transferred and processed accurately through each zone controller, the ORT Host CPS, and the image server. As part of this test, every output

device shall be exercised including the VES and the AVDC. During this time, comprehensive transponder status list downloads shall be simulated.

C-6.4.3.2 ORT Host CPS

The functionality of the ORT Host CPS including the MOMS shall be tested as part of the FAT using the data generated from the lane functionality tests.

The data management functionality, specifically the toll rate and toll schedule shall be tested. All screens shall be tested for windows and standard actions compliance, aesthetics conditions, validation conditions, navigation conditions, usability conditions, context-sensitive help, data integrity conditions, modes conditions, field validations, and adherence to requirements. The MOMS functionality shall be verified and the System's ability to electronically notify technicians shall be tested. The ORT Host CPS interface to various entities shall be tested. The Contractor shall include specific testing from lane to the host (including NHDOT Systems in Concord). Contractor shall demonstrate load capacity of entire System to handle the additional transaction and image volumes associated with the ORT System in additional to the volumes generated by the existing ORT system, both on peak transaction and image loads.

C-6.5 On-site First Installation Test

The objective of the On-site First Installation Test (OFIT) is to verify the full functionality of the ORT System and its compliance with the functional requirements of Section C-2.0 and Approved Design specifications in a controlled, on-site environment. All equipment provided for the ORT System or related Enhancements to the existing ORT Lane System or the existing Lane System by the Contractor shall be part of this test including the communications network. The ORT Host CPS hardware shall be installed in its final locations and all interfaces to other entities shall be tested and ready prior to the start of the OFIT. The Contractor shall detail in the Master Test Plan the logistics of the testing.

The Contractor and the Agency shall agree on a test site(s) and the Contractor shall work with the Agency and NHDOT, as applicable, in setting up the lane and installing all equipment in the lane. All equipment and software that is required for the ORT System or related Enhancements to the existing ORT lane System or the existing Lane System shall be in place, and prior to the start of the test, the Contractor shall formally notify the Agency that the ORT System is "ready" for testing. The test shall be conducted by the Contractor and witnessed and Approved by the Agency. The test shall be conducted in accordance to Approved test procedures and test schedule, all in accordance with the requirements in this document.

As part of this test, the Contractor shall update the Compliance Matrix that was reviewed and Approved by the Agency identifying each requirement and the tests conducted that prove compliance to the Contract requirements. It shall be the Contractor's responsibility to ensure that each requirement is certified and/or tested for compliance.

The DVAS system and disaster recovery plan shall be tested during OFIT.

This phase of testing is very critical to the success of the Project, and as such, all anomalies shall be documented and categorized in the Test Report and corrected, subject to the Agency Approval.

The Contractor shall include specific testing of the entire transaction and image flow, from lane to the host (including NHDOT systems in Concord) through to the *E-ZPass* CSC.

Upon the successful completion and Approval of the on-site testing, any further changes to the software shall be fully documented and made only with the Approval of the Agency. Depending on the changes made to the ORT System, the Agency reserves the right to request a re-test of the entire or part of the OFIT. The objective of this is to ensure that changes to one part of the ORT System do not have a negative effect on the rest of the System.

C-6.5.1 ORT Lane Operations and Functional Test

As part of this test, traffic and travel conditions in the ORT lanes shall use real vehicles. All transactions needed to test the ORT Host CPS shall be created in the lanes.

During the OFIT, the Contractor shall test the vehicle throughput and speed requirements and generate sufficient transactions to prove the System can process transactions accurately. During this test, the operations of all types of in-lane equipment and their ability to report failures shall be verified. Test scenarios that emulate conditions such as rush-hour traffic (bumper to bumper), vehicle straddling/changing lanes/merging, equipment failures, and degraded modes of operation shall be tested.

C-6.5.2 ORT Host CPS

As the ORT lane functionality is tested, the results shall be validated at the ORT Host CPS. All screens shall be tested for correctness, error conditions, ease of use and functionality. Reports shall be generated to verify the data entered and to reconcile the transactions conducted in the lanes. The interface to various entities and the transfer and receipt of data from the *E-ZPass* CSC shall be verified for accuracy.

The accurate transfer of test data from test zone controller to the ORT Host CPS, on to the existing Central Host System (if applicable) and on to the *E-ZPass* CSC shall be verified to be in compliance with the design documents. Reconciliation of transactions, images and revenue shall be verified through reports including the interface to the *E-ZPass* CSC.

New employee additions for access authorization, toll rate table changes shall be performed to verify that the data is transferred successfully to the zone controllers and the changes shall be verified by conducting transactions in the lanes.

Various ORT Host CPS level failure conditions shall be generated to test the MOMS alarm and Maintenance requirements. Capabilities of the security access system shall be verified. The ORT Host CPS server redundancy capability shall be tested and its ability to backup, archive, and restore data shall be demonstrated.

The Contractor shall set up the ORT Maintenance On-line Management System for the plaza for the Agency prior to the OFIT. During the test, the Contractor shall verify the System's compliance to the design documents. Failures shall be simulated on all equipment and processes and the alarm messages and their tracking shall be verified through the MOMS.

C-6.5.3 AVI Interoperability

The Contractor shall set up a test account at the *E-ZPass* CSC, and/or other agencies and conduct tests in the lanes using transponders that meet the *E-ZPass* Group Interoperability requirements, and Video Toll Accounts. AVI transactions and Image Toll (IToll) transactions shall be processed and reconciliation of transactions and revenue shall be verified. All costs are responsibility of Contractor, including transaction costs.

C-6.5.4 Disaster Recovery Test

As part of the On-site First Installation Test, the Contractor shall demonstrate the Disaster Recovery Plan in accordance with the Disaster Recovery procedures Approved by the Agency.

C-6.6 Commissioning Test

Upon the successful completion and Approval of the OFIT, the Contractor shall be given the authorization to begin the Commissioning Test of the rest of the ORT System, if applicable. For example, the Contractor may choose to test the northbound or southbound side of the plaza in its entirety as part of the OFIT, and then perform a Commissioning Test for the remaining side of the plaza. A Commissioning Test shall be conducted on all tolling locations to validate the functionality and operational status of the lanes. Every piece of in-lane equipment and its interface to the zone controller shall be verified to be fully operational. During this test the zone controller, its interface to the ORT Host CPS, and the *E-ZPass* CSC interface shall be validated to ensure that the communication system is in place and the Agency ORT System to ready for revenue collection. The entire communications network shall be exercised to ensure that bandwidth is appropriately sized and the network is configured to handle the expected traffic conditions. The installation of all equipment and software, and their operations shall be verified end to end.

Upon the successful completion of the Commissioning Test, and upon Approval to proceed, the Contractor shall begin the Operational Test for the ORT System.

C-6.7 Extended Operational Test (EOT)

The objective of the Operational Test is to ensure that the Agency ORT System software and hardware functions with limited manual intervention. It is intended to confirm that all tolling locations, the ORT

Host CPS/server, image server, DVAS and the network are sized and configured correctly and data is processed without interruption.

A forty-five (45) day Operational Test shall be conducted by the Contractor starting at a date as directed by the Agency, after opening ORT lanes to traffic. Beginning with that date, the System shall be observed in live operations by the Contractor and the Agency for a minimum of forty-five (45) days to cover a monthly audit cycle. During this period System accuracy, performance, reliability, and auditability shall be verified. The alarms displayed on the MOMS shall be analyzed. Anomalies identified shall be categorized by criticality and resolution of all anomalies shall be made by the Contractor, subject to the Agency Approval. These tests shall be repeated until the Agency is satisfied that the ORT System meets the requirements as set forth in the Approved Design documents and the System requirements. Upon the successful completion of the Operational Test, the Contractor shall be given Provisional Project Acceptance.

In order to verify System accuracies and performance compliance, the Contractor shall include the use of video capture for validation purposes. The details of how the video will be setup and utilized shall be described in the EOT Plan.

Over the course of the EOT period, a minimum of 10,000 sample size of usable transactions (under live conditions) shall be collected for verification of performance requirements at a confidence level targeted at 80% and an accuracy of 99.95%. Refer to Section C-2.9 for an explanation of the performance requirements.

The sample size 10,000 transactions except for the accuracies requiring a control test. The sample size is determined by: N = log (1 - C) / log (A); where:

- N = Number in the sample
- C = Confidence level
- A = Accuracy

As a component of the EOT the alarms displayed on the MOMS shall be analyzed. Anomalies identified shall be categorized by criticality and resolution of all anomalies shall be made by the Contractor, subject to the NHDOT Approval. These tests shall be repeated until the NHDOT is satisfied that the ORT meets the requirements as set forth in the Approved design documents and the System requirements.

C-6.7.1 Security Test

IT Security involves all functions pertaining to the securing of State Data and Systems through the creation and definition of security policies, procedures and controls covering such areas as identification, authentication and non-repudiation.

All components of the Software shall be reviewed and tested to ensure they protect the State's hardware and software and its related Data assets.

Service Component	Defines the Set of Capabilities that:
Identification and Authentication	Supports obtaining information about those parties attempting to log onto a system or application for security purposes and the validation of users.
Access Control	Supports the management of permissions for logging onto a computer or network.
Encryption	Supports the encoding of data for security purposes.
Intrusion Detection	Supports the detection of illegal entrance into a computer system.
Verification	Supports the confirmation of authority to enter a computer system, application or network.
Digital Signature	Guarantees the unaltered state of a file.
User Management	Supports the administration of computer, application and network accounts within an organization.
Role/Privilege Management	Supports the granting of abilities to users or groups of users of a computer, application or network.
Audit Trail Capture and Analysis	Supports the identification and monitoring of activities within an application or system.
Input Validation	Ensures the application is protected from buffer overflow, cross-site scripting, SQL injection, and unauthorized access of files and/or directories on the server.

In their proposal, the Contractors must acknowledge their responsibilities for security testing. Tests shall focus on the technical, administrative and physical security controls that have been designed into the System architecture in order to provide the necessary confidentiality, integrity and availability. Tests shall, at a minimum, cover each of the service components. Test procedures may include Penetration Tests (pen test) or code analysis and review.

Testing shall be performed prior to Initial Acceptance Test, and is a prerequisite to acceptance.

Prior to the System being moved into production, the Contractor shall provide results of all security testing to the Department of Transportation/Department of Information Technology for review and acceptance prior to Initial Acceptance Test.

C-6.8 ORT Project Acceptance

C-6.8.1 Final Provisional Project Acceptance

Provisional Project Acceptance may be given to the Contractor at the discretion of the Department based upon the successful completion and approval of the Commissioning Test, Design Documentation including but not limited to Compliance Matrix, System Detail Design Document, Business Rules, Interface Control Documents and Manuals. Approval of Provisional Project Acceptance shall be provided in writing to the Contractor and shall begin the Warranty and Operation and Maintenance phase of the Contract.

C-6.8.2 Final Project Acceptance

Upon the successful completion of all System tests, closure of all punch-list items, and completion and submission of all Contract required documents, the Contractor shall be given Project Acceptance whereby all applicable payments, retainage and bonds will be released. Approval of Project Acceptance shall be provided in writing to the Contractor and shall begin the Warranty and Operation and Maintenance phase of the Contract.

C-7 Project Management System

C-7.1 Overview

The Contractor shall employ a Project Management System that is sufficiently detailed to enable the Agency to review and ascertain that the Contractor has the necessary management, staff, and controls in place to meet the requirements of this document. This System shall also enable the Agency to monitor the status, progress, and quality of the work performed on the Project and to make payments accordingly.

C-7.2 Project Schedule

The Contractor shall develop a detailed Project Implementation Schedule that lists all tasks related to the design, development, testing, installation and deployment of the ORT System in Microsoft Project format (latest version of MS Office used by NHDOT). Coordination with the third party Civil Contractor shall be identified and all interfacing tasks clearly documented. The Project Implementation Schedule shall identify all critical dates and events starting with the Notice to Proceed (NTP) through the date of Project Acceptance. The Project Implementation Schedule shall be resource loaded and shall include all draft submissions and review cycles. The Project Implementation Schedule shall include all dependencies on 3rd party Contractors and prerequisite activities to be completed by other Contractors and the Agency. This Project Implementation Schedule shall form the basis for all subsequent schedules and updates throughout the duration of the Project. The Project Implementation Schedule shall be base-lined upon Approval and the Contractor is required to update the Project Implementation Schedule on a monthly basis showing percent complete. Critical path tasks shall be clearly identified. All changes to the baseline Approved Schedule must be approved by the Agency.

C-7.3 Monthly Report and Progress Meeting

Monthly progress meetings (in addition to the weekly installation meetings during the active installation periods) shall be held at a location designated by the Agency. Three working days prior to the meeting, the Contractor shall submit a monthly progress report of the previous month to the Agency. The form of the Monthly Report shall be agreed to as one of the initial project tasks upon NTP and shall be incorporated into the Project Management Plan. The reports shall include the following components:

- A summary outlining progress and status, and the labor, materials and the percentage of work performed for each task in the Project Implementation Schedule. Comments shall be included where appropriate. The summary shall also identify key deliverables met and missed in the period.
- The report shall include an analysis of all critical path tasks; potential risks associated with the tasks and proposed contingency/work around plans to circumvent delays to the Project.
- A discussion of Schedule compliance and an updated Project Implementation Schedule showing proposed changes from the baseline Approved Project Implementation Schedule, if any, and showing progress from the previous month for discussion purposes. If no Project Implementation Schedule change has occurred, the Contractor shall so state.
- An updated action items list that tracks the status of all outstanding deliverables, activities and issues that need decision/resolution.
- A progress payment request, if applicable. Progress payment requests will only be considered as a part of the Monthly Report package.
- A list of change order requests and their status shall be submitted with the Monthly Progress Report.
- A summary of the time devoted to the Project by each Key Staff for the immediately preceding month.
- The previous monthly meeting minutes for Approval.
- A six (6) week look-ahead schedule.

C-7.4 Project Meetings

In addition to the monthly progress meeting, weekly project status meetings, and other regularly scheduled or ad-hoc Project meetings may be required during the course of the Project to deal with specific issues as they arise. It is anticipated that in addition to regular overall project status meetings, project specific technical meetings, and interface development meetings shall also take place, as needed.

The Contractor shall perform the following tasks related to all meetings including but not limited to:

1. Distribute notices of Project meetings in accordance with document control requirements;
2. Prepare the agenda in coordination with the Agency;
3. Attend the meeting with all required staff in attendance; and
4. Prepare draft minutes of the meeting and forward them to the Agency within five (5) working days after the day of the meeting.

C-7.5 Staffing

It shall be the Contractor's responsibility to maintain and assign a sufficient number of competent and qualified professionals and other technical personnel to meet the project schedule and requirements.

C-7.5.1 Key Personnel

As a part of its Project Management Plan the Contractor shall provide the Agency with an Organization Chart that identifies the Contractor's employees dedicated to this Project (the "Key Staff"). The chart shall identify Key Staff responsibilities and the resources to be used in fulfilling the requirements of this document.

Replacement of Key Staff personnel shall be submitted to the Agency for review and Approval prior to replacement of individual.

C-7.5.2 Staffing Plan

The Contractor shall identify in the Project Management Plan staffing requirements at a level immediately below the Key Staff required to meet project requirements. The Staffing Plan shall, in addition to identifying personnel immediately below Key Staff, provide a time line reference for anticipated resource requirements for the duration of the project.

C-7.6 Project Management Plan

The Contractor shall submit a Project Management Plan to the Agency for review and Approval. The Contractor shall update the Project Management Plan as necessary, no less than once a month in accordance with Appendix C, to accurately reflect the status of the Project schedule, tasks, deliverables, critical events, task dependencies, and payment schedule. Any updates to the Project Management Plan shall require the prior approval of the Agency. Unless otherwise agreed in writing by the Agency, changes to the Project Management Plan shall not relieve the Contractor from liability to the Agency for any damages resulting from the Contractor's failure to perform its obligations under the Contract.

In the event the Contractor requires additional time to correct deficiencies, the Project Schedule shall not change unless previously agreed in writing by the Agency. In the event of a delay in the Schedule, the Contractor must immediately notify the Agency in writing. The written notification will identify the nature of the delay, i.e., specific actions or inactions of the Contractor or Agency causing the problem; its estimated duration period to reconciliation; specific actions that need to be taken to correct the problem; and the expected schedule impact on the project.

Notwithstanding anything to the contrary, the Agency shall have the option to terminate the Contract for default, at its discretion, if it is dissatisfied with the Contractor's Project Management Plan or elements within the Project Management Plan.

The Project Management Plan shall describe how the Contractor plans to implement and manage the project including staffing, scheduling, communication procedures for controlling all correspondence, submittals, and other communications between the Contractor and the Agency.

The Project Management Plan shall at a minimum include the following elements:

1. A description of the management and organization of the program, an organization chart, identification of Key Staff and their responsibilities and identification of the resources to be used in fulfilling the requirements of the Contract.
2. A description of the planning and reporting methods to be utilized, both for use within the Contractor's staff and externally to the Agency.
3. A description of the Contractors Quality Assurance and Quality Control approach and program.
4. How day-to-day operations, general issues, and problems are communicated to the Agency.
5. How the Project Schedule and performance are reported and tracked for development activities and transition activities.
6. Document the change work order request submittal and approval process.
7. Document the invoice submission, verification, and approval process.
8. A section on communications that addresses:
    a. **Correspondence** – Correspondence shall be identified as to originator and designated receiver.
    b. **Document Control** – The Contractor shall manage the Project correspondence through Document Control software to which the Agency shall be a user and have access.
    c. **Submittals** - All submittals shall be submitted as an enclosure to the Contractor's submittal letter. Each submittal letter shall be limited to a single subject or item. The Contractor's letter shall identify the letter itself, Contract Number, Contract Name, and Subject of the submittal.
    d. **Contract Number and Name** - All items of correspondence, submittals, and documentation shall contain the Contract Number and the designated project name.
    e. **Information** - No party shall be entitled to rely on any information unless it is in writing and received from the other party's Designated Representative.
    f. **Change Work Orders** - Any change work orders from the Agency shall be in writing and shall be executed by one of the Agency's Designated Representatives and one of the Contractor Designated Representatives. The form of change work order will be directed and Approved by the Authority.
    g. **Access to Contractor Key Staff** – the Agency or the Agency's Designated Representative who is knowledgeable in the field of work, shall have unlimited access to the Key Staff during the Contractor's performance of the Contract.
9. A section on Project coordination with the *E-ZPass* CSC.
10. A section on Project coordination with the Civil Contractor(s) for gantry and roadway
11. A section that includes all Approved Project forms.
12. Project Objectives
13. Project Management Approach
14. Project Deliverables
15. Project Schedule
16. Project Organization
17. Key Staff and Contact Information
18. Roles and Responsibilities
19. Development Team
20. Operations Team
21. Maintenance Team
22. MOMS Overview
23. Quality Assurance Plan

24. Test Approach and Performance
25. Project Implementation Progress Reporting (with samples)
26. Operational Progress Reporting (with samples)
27. Software Development Plan
    a. Software Development Approach
    b. Software Life Cycle Approach
    c. Development Tools
    d. Testing Tools
    e. Programming Languages

C-7.6.1 Deliverables

The Contractor shall provide the Agency with the Deliverables in accordance with the requirements, and Terms and Conditions of the Contract. All Deliverables shall fully meet and perform in accordance with the RFP Documents and resulting Contract(s). Upon its submission of a Deliverable, the Contractor shall represent that it has performed its obligations under the Contract associated with the Deliverable. A definition of a Deliverable is provided in Appendix I.

Unless otherwise stated in the Contract documents, the Agency's review of all Deliverables will be in accordance with the time periods set forth in the Project Management Plan. For each rejection, the Approval Period shall be extended at least one time, and thereafter may be extended, at the option of the Agency, by the corresponding time required to correct any deficiency, retest or review, as applicable, provided however, that the Contractor shall not be obligated to continue performance if it reasonably believes that it cannot correct the deficiency, in which case it shall promptly notify the Agency thereof and the Agency may immediately declare Contractor in Default, avail itself of the remedies available to it in law and in equity.

Once an individual Deliverable is Approved, all sums are due and payable; however, notwithstanding the foregoing, in the event the Agency rejects a Deliverable, the Agency shall have the right to pursue all remedies under the Contract, at law and in equity, including but not limited to, the right to replacement and re-implementation costs. Refer to Appendix H, Section H-25.12.1: Termination for Default.

C-7.6.2 Quality Assurance Plan

The Quality Assurance Plan that details the Contractor's QA Program shall be submitted to the Agency for review and Approval. The Plan shall include the Contractor's QA Program through design, production, purchasing, testing, and installation of all hardware and software provided under the Contract. The QA Program shall also include, at a minimum, problem logging and tracking, follow-up tracking, and final disposition tracking during the Implementation. The quality control process shall ensure accurate problem description and recording, assignment of personnel, tracking of progress for corrections/revisions, and disposition of the problem throughout the Implementation phases of the Project.

C-7.7 Software Design and Development Requirements

To ensure that the Design requirements for the ORT System are fully understood by the Agency and the Contractor, a series of requirements and design review steps are specified herein. The Contractor shall establish and maintain an effective software design and development program to ensure compliance with the specifications of the technical requirements of this document. This section provides the description and guidelines for the techniques and methodologies to be employed to monitor the software development elements of these technical requirements.

C-7.7.1 System Requirements Review (SRR)

The Contractor shall conduct a series of System requirements reviews with user groups to identify user needs. Contractor's existing screens and presentation formats shall be used to solicit user requirements. Upon completion of the requirements review process the Contractor shall develop a System Requirements Document that details all the technical, business, and operational requirements on the ORT System. The System Requirements Document shall build on the specifications documented in Section C-2 and shall capture all user needs identified during the requirements review process. Upon Approval this document shall be the basis for design, development, and testing. During the System requirements review phase the Contractor can also present the Contractor's standard product to the Agency and use the feedback obtained in the presentation in the development of the System Requirements Document.

C-7.7.2 System Detailed Design Review (SDDR) and Business Rules Development

The Contractor shall conduct Business Rules development workshops with the Agency to develop and document the Business Rules and operational policies with the *E-ZPass* Group. The Business Rules documents and the System Requirements Document shall be used to develop the System Design.

The Contractor shall conduct a System Detailed Design Review. The review shall provide an opportunity for the Agency to walkthrough the detailed design to ensure that the final system will meet all requirements.

C-7.7.3 Software Development and Walkthrough

The Contractor shall conduct a series of software walkthroughs and solicit inputs from the Agency during the development of the ORT System. The intent of these walkthroughs is to help ensure that the final product will meet the Agency technical and operational requirements. This approach shall also ensure the Agency is familiar with the product thus expediting the testing process.

C-7.8 Documentation

The Contractor is required to provide various hardware; software; requirements; design; testing; installation; and Maintenance documentation that include Contractor-developed documentation and thirty-party documentation. All documentation provided under the Contract shall meet the

requirements described below. All Contractor-developed documentation for the ORT System can be provided in the form of updated existing documentation or new documentation as appropriate.

C-7.8.1 Document Delivery and Control

The Contractor shall keep track of all documentation submitted to NHDOT or its representatives including the document identification, name, and description of the document, version number, release date, distribution list, approval date, and document's electronic file name.

Unless specifically agreed to by NHDOT, all documentation shall be submitted electronically compatible with MS Office 2010 (Word, Excel, PowerPoint, and Project). If other programs or applications are to be used (i.e. Autocad, Visio) the Contractor may submit these in PDF however the NHDOT shall reserve the right to request these in their native formats as well.

The Contractor shall record any revisions made to the original documents and retain copies of said documents with additional written comments as original records in Word and PDF format.

The Contractor shall use a standard file naming convention to keep track of all electronic files.

The Contractor shall be responsible for ensuring that the documents are distributed electronically and can be accessible through an electronic document storage facility. This shall include all reports required under the reporting requirements.

All information (documents and communications) related to the project shall be kept on a secure, dedicated FTP site held by the Contractor.

The Contractor shall be responsible for administering the FTP site and providing access to parties approved by NHDOT.

C-7.8.2 System Requirements Document

The completion of the System requirements review shall result in the submission of the System Requirements Document that documents all of the requirements of the ORT System. During the Design and development of the software this document shall be updated to reflect any changes to the requirements that have been accepted by the Agency. The System Requirements Document shall also be used during testing to verify the System compliance to the Contract requirements. The Contractor shall submit a System Requirements Document for review and approval by NHDOT.

The System Requirements Document shall capture all of the Requirements for the ORT System in accordance with this RFP.

The System Requirements Document shall contain a listing of all System Requirements with designated parameter (i.e. columns) such as but not limited to:

- Business Rule ID;
- RFP ID/Section Reference;
- Configurability (i.e. User Configurable, Configurable or Fixed);

- Testing/Verification Method(s);
- Requirement Short Name;
- Requirement Type (i.e. System, Functional, Operational, Contractual, etc.); and
- Document Reference(s) (i.e. SDDD, Manual(s), Test Cases, ICD's, SRD, Plans, etc.).

The Contractor shall trace all Requirements to specific aspects of the ORT System and services provided by the Contractor to demonstrate that all requirements have been satisfied.

The System Requirements Document shall include an identification of the source of the requirement.

During implementation of the ORT System, it is also expected that this document be updated to reflect any changes to the requirements that have been accepted by NHDOT.

The System Requirements Document shall also be used during system testing to verify compliance to the project requirements.

C-7.8.3 Business Rules Document

The completion of the Business Rules workshops shall result in the submission of the Business Rules Document that documents the operational and Business Rules and processes that will be instituted for the ORT System. Business Rules shall be categorized by element/type of the ORT System operation and function. All configuration parameters and thresholds shall be documented in the Business Rules Document.

C-7.8.4 System Detailed Design Document

The System Detailed Design Document shall demonstrate that the Contractor understands the functional and operational requirements of the ORT System and has the processes and policies in place to provide a high quality and reliable product that meets the requirements of the Contract.

The Contractor shall submit a System Detailed Design Document (SDDD) that describes the Design specifications of all hardware and software provided as part of the ORT System to meet the Approved requirements of the Contract. Hardware Design shall describe all hardware specifications, third-party software, configuration, and testing. Software Design shall be described to the process and module level for all of the functions detailed in the Scope of Work and Approved requirements. The SDDD shall be submitted in draft form, after which the design reviews shall take place. Upon completion of the design reviews, the SDDD shall be revised and submitted to the Agency for review and Approval.

The SDDD shall include, but not be limited to:

- The specification sheets for all equipment;
- In-lane equipment, equipment enclosure layout and interconnections;
- Listing of all functions, the source of the baseline code (project used on), version and date;
- The requirements for all peripheral device interfaces and control;
- Listing of all software languages used and for what;
- Standards, and conventions used;
- All user interfaces;

- Lane layouts, and logic and timing details;
- Degraded mode of operations and impacts of failure on System operations;
- Module level descriptions and interaction among various modules;
- All operational and Business Rules;
- Interface Control Documents for all interfaces;
- System data dictionaries;
- Report and screen format;
- Database design and entity relationship modeling;
- Data flow diagrams and table configurations;
- Security access system layout and interconnections;
- UPS sizing;
- Computer sizing and design details;
- Security access system layout and interconnections; and
- Network sizing and design details including IP scheme.

After the Approval of the Operational Test, the Contractor shall submit the As-Built System Detailed Design Document that includes all changes made during the software development, installation, and testing phase.

C-7.8.5 Engineering Design Package

The Contractor shall prepare and submit the ORT System Installation Design and Documentation package to the Agency for review in accordance with the Approved Project Schedule at a minimum of two weeks prior to installation activities.

The Contractor shall secure the services of a fully qualified architectural/engineering design firm(s) for the purpose of providing electrical, mechanical, structural oversight, and documentation Approval for all installation drawings. All drawings shall be sealed, stamped, and certified by a Licensed Architect/Engineer of the appropriate discipline valid in the State of New Hampshire.

The Contractor shall develop a full size set of drawings providing sufficient detail to install the System components. In addition, the drawing shall contain notes and other detail defining specific processes that cannot be graphically depicted. The notes shall also be used to delineate specifications, tolerances, special conditions, or any other factor required to install and integrate a fully functional System.

The drawings shall include but not be limited to the following:

- Lane geometry and dimensions of actual size and placement of all ORT lane equipment;
- Equipment bracket mounting detail to the supporting structure;
- Specifications and tolerances;
- Cable schedule showing all cable and wire used for the ORT tolling locations;
- Placement of in-road components;
- Size and depth of loop cuts;
- Any specific of how the loop cable is placed into the cuts;
- All homeruns from loops;

- Any cable twist requirements for loop homeruns;
- Placement of overhead sensors;
- Details describing termination process for each termination;
- A graphical diagram of the network connectivity and data flow;
- Detailed interconnection diagrams for all Systems;
- Detailed electrical schematics;
- Detailed communications layout;
- UPS installation details floor loading calculations;
- ORT Host System equipment enclosure layout including power panels and connection to the UPS;
- Security Access Control System installation details; and
- Notes detailing any items that may not be clear or implied.

C-7.8.6 Disaster Recovery Plan

The Contractor shall develop and submit a Disaster Recovery Plan (DR Plan) for NHDOT's review and approval.

The DR Plan shall document the Contractor's facilities and operations (including any contracted or outsourced services), assess the hazards, threats and vulnerabilities that the Contractor's facilities and operations could face (including natural and technological disasters, civil emergencies, criminal activity, and other business interruptions), and describe how the Contractor shall maintain or recover its operations in the event of a business interruption.

The DR Plan shall include, at a minimum, the implementation of a back-up system site with full database replication at a different geographic region from where the Contractor's primary operations environment is located. The Contractor shall be able to switch operations to this alternate site within twenty four (24) hours of an outage impacting its primary operations center.

The DR Plan shall include the following:

1. Include a Version History,
2. Risk Assessment and approach to Mitigation,
3. Include a Contingency Planning Policy statement,
4. Include a Business Impact Analysis,
5. Identify preventative Controls,
6. Develop Recovery Strategies,
7. Develop Implementation Procedure,
8. Include a method of testing the DRP,
9. Include a strategy to keep the DRP current throughout the term of the Contract,
10. Include a method for processing critical jobs in the event of a major hardware or software failure,
11. Provide assignment and staffing of teams such as Disaster Management, Operations, Networking, and Facilities,
12. Identify an offsite location for the DRP (if applicable),
13. Include arrangements for a designated physical facility house the call/customer service center,

14. Include a risk analysis identifying the critical applications, their exposures, and an assessment of the impact on the ORT System,
15. Include arrangements with Contractors to support the needed hardware and software requirements,
16. Include forms or other control documents to use in case of a disaster.
17. Include a Business Continuity Plan (BCP) that details the Contractor's overall approach.

The DR Plan shall be fully tested by the Contractor and approved by NHDOT as part of the On-site First Installation Test. The Contractor shall successfully complete testing and validation of the DR Plan as pre-requisite of the Go-Live Readiness Assessment.

The Contractor shall then test and update the DR Plan as needed, at least on an annual basis during the Contract period under system maintenance.

The Contractor shall actively work with NHDOT on these ongoing tests, and provide NHDOT the opportunity to participate with and witness the testing and review the results of the testing with NHDOT upon completion. At a minimum the Contractor shall document and provide certification that the tests were conducted and report on the results. The Contractor shall maintain, validate, test, and resubmit the DR Plan for review and approval by NHDOT annually or after material changes in the System, architecture, location(s), or operations (including any contracted or outsourced services).

The Contractor shall conduct a review and execution of the DR Plan at least annually. And changes to the DR Plan as a result of the review or execution shall result in modification to the DR Plan

C-7.8.7 Test Documentation

As detailed in Section C-3.2.1, the Contractor shall submit a Master Test Plan, including the appropriate test procedures and scenarios for each test identified in Section C-6.2 to the Agency for Approval. Test procedures shall detail the step by step process for validating each requirements of the Contract.

C-7.8.8 Third Party Documentation

The Contractor shall provide standard, commercially available documentation for third-party provided hardware, software, maintenance materials, and support documentation provided under the Contract.

The Contractor shall furnish, install and maintain, in current updated condition, the following Primary Set of all documentation required. This material shall be provided in its commercially available form or in a comparable form and placed in racks or shelves to be retained at the Agency Offices or another Agency designated location for the duration of the Contract. Additionally, a softcopy of these documents with updates, if available shall be provided to the Agency, Acceptable softcopy formats are Microsoft Office (latest NHDOT version), and AutoCad up to AutoCad 2010 for Contractor prepared documentation as listed below. All updated documents shall show the revisions and also include a version of the clean document.

The Contractor shall provide two (2) hard copies and two (2) electronic versions of all hardware/software and user manuals for all third party sources.

C-7.8.8.1 Third Party Software Documentation

The Third Party Software Documentation shall include, but not be limited to all user's manuals; programmer's reference manuals; Warranty documentation; installation manuals; and Maintenance manuals, and shall contain all required information on items including the operating system; utilities; programming languages; application software; and communications software. The package shall also include all required electronic media to install, operate, and maintain the System being supplied. The Third Party Software Documentation shall be provided by the Contractor in a standard and organized format, with appropriate labels, tabs, and cross references to allow the Agency to easily access and reference information on each software component on the System. Third party documentation if available for the security access system is acceptable to the Agency.

All patches and updates made to the System software (third party and Contractor) after Project Acceptance shall also be provided to the Agency in electronic media. A description of what patches and updates are considered part of the established maintenance fee and what is considered extra work is described in Section C-8.6.6.

C-7.8.8.2 Third Party Hardware Documentation

The Third Party Hardware Documentation shall include, but not be limited to all technical manuals; operator's guides; installation guides; warranty documentation; hardware reference manuals; available options and versions; catalogs; components; and illustrated parts lists. The third party hardware manual shall be provided by the Contractor in a standard and organized format, with appropriate labels, tabs and cross references to allow the Agency to easily access and reference hardware information on each equipment component. Additionally, with each third party hardware manual, the Contractor shall include sufficient documentation to describe the configuration of the hardware as it was set by the Contractor for the ORT System. Any such configuration changes shall be provided to the Agency in the form of a bulletin and a change to the relevant documentation.

C-7.8.8.3 Manual Requirements

Detailed and accurate documentation is required to ensure sustainability of the ORT System and that the NHDOT can operate and maintain the system. Detailed documentation shall enable the NHDOT to understand the ORT System, thus resulting in better performance of audit and reconciliations. It also shall assist the NHDOT in making better, informed decisions on any required System changes or revisions to Business Rules.

Draft copies of all documentation shall be submitted to the NHDOT for review, and comment and the NHDOT shall have the right to require additional interim drafts at no additional cost should draft documentation submitted not be of adequate quality, or does not incorporate the NHDOT review comments, or have missing or incorrect information.

The Contractor shall submit two (2) hard copies and two (2) electronic versions of all Contractor developed documentation for the NHDOT review and Approval unless otherwise stated. Acceptable softcopy formats are Microsoft Office (latest NHDOT version), and AutoCad up to AutoCad 2010 for Contractor prepared documentation as listed below.

C-7.8.8.4 Manuals to be Submitted

The Contractor shall submit the following manuals, either as new or appended to existing:

C-7.8.8.4.1 ORT System User's Manual

The ORT System User's Manual shall detail the use of the System application software that serves the ORT Host CPS that includes the MOMS and the host functions as identified in the technical requirements. The manual shall contain illustrations and pictorial diagrams to demonstrate the step-by-step operations required for performing functionality and navigating the screens. All reports and data fields shall be clearly explained using sample formats. This manual shall also be used for training purposes. Samples of all reports shall be included in the manual or as an attachment to the manual with any specific instructions that may be applicable to a given report.

C-7.8.8.4.2 Maintenance Manual

The Maintenance Manual shall be prepared for properly trained technical personnel assigned to the Maintenance of the hardware and software within the ORT System. This manual shall include a general description; theory of operation; operator instructions; mechanical functions; installation; listing of all logs; test and troubleshooting procedures; preventive and corrective Maintenance procedures; and schedules, diagrams, schematics, layouts and parts lists required to service each piece hardware supplied for the ORT System. The manual shall also detail the use of the MOMS for Maintenance purposes.

Standard service manuals for commercial products used for the equipment is acceptable if they contain sufficient information to properly service the equipment. Large-size logic diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals and presented in a useable and durable form. Photographic documentation of equipment with appropriate labels and call-outs are satisfactory if they contain sufficient information to properly identify components parts and features.

C-7.8.8.4.3 ORT System Administrators Manual

The Contractor shall provide an ORT System Administration Manual that serves as a guide to the overall management and administration of the ORT System and shall include a troubleshooting guide for the system administrator. The manual shall include detail descriptions of all of the programs and processes that require monitoring to ensure the System is operational and properly functioning. It shall allow the administrator to perform such tasks as to confirm the completion of scheduled jobs, and investigate and identify problems. A listing of all the error codes, their meaning and potential associated problems shall be included in the manual, with a step by step guide to troubleshooting and correcting the problem.

C-7.8.9 As-Built Documentation

Prior to the Agency Acceptance of the Project, the relevant as-built documentation shall be provided that documents the final ORT System Design and Implementation.

C-7.8.9.1 System Detailed Design Document

After the Approval of the Operational Test, and prior to the Agency Acceptance of the Project, the Contractor shall submit the As-Built System Detailed Design Document (SDDD) that includes all software and hardware changes made during the System development, Implementation, and testing phases. Prior to Project Acceptance, the Contractor shall submit change pages (submit complete sections) to any section of the As-built System Detailed Design Document that changed since Project Acceptance. The Contractor shall submit ten (10) hard copies and two (2) electronic versions of the As-Built SDDD.

C-7.8.9.2 As-Built Drawings

The Contractor shall provide to the Agency a complete set of As-built drawings, which shall be delivered as four (4) full-size and ten (10) half-size complete sets of prints, and shall deliver the same in electronic format, for all equipment furnished under the Contract. The sets shall include, but not be limited to all schematics; logic diagrams; layouts; wiring diagrams; assembly drawings; installation diagrams; cable schedule, and parts detail drawings for all mechanical parts designed or modified and interface details so as to provide a complete record of the As-built status of the equipment.

Drawings contained in standard catalogs and manuals for commercial products do not have to be reproduced as part of the as-built drawing sets. All drawings for revisions to standard commercial assemblies or components for the equipment shall be included in the as-built drawing set. The As-built drawing set for the ORT System architecture shall be provided.

All As-Built drawings shall contain a table of contents that shall include a listing of all drawings with headings for drawing number, drawing title, revisions number and date, and the type of material list, wiring diagram, wire list, specification control drawing, or similar categories.

C-7.9 Quality Assurance Program and Quality Control

The Contractor shall establish and maintain an effective Quality Assurance (QA) Program to ensure compliance with the Contract. The QA Program shall ensure adequate quality throughout all areas of performance, including, design, development, fabrication, processing, assembly, inspection, test, Maintenance, packaging, shipping, storage, site preparation and installation. This Quality Assurance Plan identified below shall detail the process and procedures instituted by the Contractor to ensure the QA program is in place.

All supplies and services for the ORT System, whether manufactured or performed within the Contractor's facility or at any other source, shall be controlled at all points necessary to ensure conformance to the specifications of these technical requirements. The QA Program shall provide for

the prevention and ready detection of discrepancies and for timely and positive corrective action. The Contractor shall make objective evidence of quality conformance readily available to the Agency.

The QA Program shall include effective quality control of purchased materials and subcontracted work. Manufacturing, fabrication, and assembly work conducted within the Contractor's facility shall be controlled completely by the Contractor.

C-7.9.1 Configuration Management System

The SDP and the QA Plan shall detail the Contractor's Configuration Management System that is utilized for the Project. Configuration management process shall detail System defect tracking, change control, software changes and testing including regression testing, release notes and approval, deployment of software changes in production and verification.

C-7.9.2 Change Control Process

The SDP and the QA Plan shall detail the Contractor's Change Control Process that is instituted for the Agency ORT Project.

C-7.9.3 Records

The Contractor shall maintain records or data essential to providing objective evidence of quality until the expiration of the Warranty Period and they shall be made available to the Agency upon request. Examples of quality-related data include: inspection and test results, records of Subcontractor QA Programs, cost records pertinent to Acceptance of nonconforming material, change order back-up, design reviews and walkthroughs, and the results of internal and Contractor audits. Records shall be maintained in a manner that shall allow for easy access and analysis of the status of the overall QA Program.

C-7.9.4 Control of Purchase

The Contractor shall ensure that all supplies, components, developmental tools, assemblies, subassemblies, and services procured from Subcontractors and Contractors conform to the specifications of these technical requirements. The Contractor's responsibility includes the establishment of procedures for the selection of qualified suppliers. In selecting qualified suppliers, the Contractor shall ensure that the Subcontractors and Contractors control the quality of the supplies and services provided. Purchase orders for equipment furnished and supplied under this document shall be submitted to the Agency and the Agency shall have the option to Approve every purchase order as required. Approval of a purchase order shall not constitute Approval of the equipment or the design.

C-7.9.5 Inspection and Verification

The Contractor's QA Program shall include requirements for inspection and verification for in-process, final assembly, unit tests and System testing of the Contractor supplied Systems.

C-7.9.6 Handling, Storage and Delivery

The Contractor's QA Program shall provide for adequate, documented handling, storage, preservation, packaging, and shipping instructions to protect the quality of products required by these technical requirements. Any unique or special requirements applicable to procured items shall be delineated in the procurement documents. All procurement documents shall be made available to the Agency upon request.

C-7.9.7 Inspection at Subcontractor and Contractor Facilities

The Agency reserves the right to inspect, at the source, supplies or services not manufactured or performed within the Contractor's facility. Agency inspection shall not constitute Approval, nor shall it in any way replace the Contractor's inspection activity or relieve the Contractor of the responsibility to furnish an acceptable end product.

C-7.9.8 Access to/Inspection of Contractor's Facilities

Upon request, the Agency shall have access to the Contractor's facilities and personnel. This access may be restricted to those portions of the facilities and personnel involved with or otherwise performing work for the ORT System. Such access shall be for the purpose of inspecting the facilities, verifying progress, inspecting materials, work-in-progress and finished goods, or verifying test performance and results.

C-7.10 Training

The Contractor shall provide comprehensive training for the operation, audit and Maintenance of the ORT System. The Contractor shall develop and present for the Agency review and comments, the initial ORT System training manuals and training materials, including training for system administration, audit and reconciliation, System reporting, ad-hoc reporting, and Maintenance.

Training shall apply to all areas of the ORT System. The Contractor shall submit a Training Plan and Schedule to include System Operations, audits, Maintenance, Administration and Disaster Recovery. The Training Plan shall detail the scope of each training session by providing detailed content and the duration of each training session, as well as timing, logistics and equipment and materials necessary to conduct hands-on interactive training. The Training Plan shall be submitted to the Agency for review and Approval prior to the initiation of any training.

C-7.10.1 Overview of Training Program

The Contractor's program shall include formal and informal instruction, models, manuals diagrams and component manuals and catalogs as required. Where practical and useful, training should be hands on classroom training supplemented with computer based training. Contractor shall use actual System software and screens on a work station or work stations and actual equipment for the training. All training materials and manuals shall be produced in hard copies sufficient to provide one (1) copy for

each person being trained and one (1) reproducible set of documentation on compact disc that may be used for future training sessions.

Unless otherwise noted, the Contractor shall supply all of the items necessary to complete the delivery of the training program.

C-7.10.2 Training Plan

The Contractor shall submit a Training Plan for Acceptance by the Agency in accordance with the accepted Project Schedule. The Training Plan shall detail the following:

- Overall description of the training program;
- Proposed training delivery schedule;
- Names and descriptions of each training class;
- Purpose of each training class;
- Who should attend class;
- Qualifications requirements for trainer;
- Minimum qualifications for personnel attending class;
- Duration of the class (hours/days);
- Training materials, including manuals, guides and other supporting items, and techniques to be used;
- Required equipment; and
- Facility requirements.

The Contractor can assume that the Agency staff is generally qualified for the function for which they are being trained in (e.g., the Agency auditor has all required auditing training). Courses shall be limited to a maximum of four (4) hours per day.

C-7.10.3 Training Requirements

The Contractor shall provide the following training courses to the Agency personnel. Training manuals (including Contractor provided manuals or relevant portions thereof), guides, training aids, and student and instructor work books shall accompany the courses listed below:

a. **System Operation Overview**: To be attended by management personnel who require a general understanding of all aspects of the operation of the ORT System, including personnel from senior management, procurement, information technology and marketing and public information staff. Training includes an overview of all aspects of the System including lane operations, ORT Host CPS, *E-ZPass* CSC Interface, System Maintenance, network, and any other operational area of the ORT System

   Requirement: One session of course with a class size per session of up to twenty (20) people and a minimum of four (4) hours training per class.

- **ORT System Administration**: To be attended by all personnel who require a detailed understanding of the management, troubleshooting and administration of the software, database, applications, configurations and architecture of the ORT System, including the staff who will oversee the Contractor in the monitoring and management of the ORT System.

  Requirement: One session of course required with a class size of up to ten (10) people and a minimum of two (2) four (4) hour sessions per training class.

- **System Users**: To be attended by all personnel who require a detailed understanding of the operations of the System, use of the software for operational activities and how to access information and reports from the System on items such as status, alarms, performance, transactions and revenue, including the Agency project management and information technology personnel.

  Requirement: One session of course required with a class size of up to ten (10) people and a minimum of four (4) hours per training class.

- **Maintenance Oversight**: To be attended by the Agency management who require a training on the use of the MOMS and reporting aspects of the ORT System as part of Contract management for Maintenance activities by the Contractor.

  Requirement: One session of course required with a class size of up to ten (10) people and a minimum of four (4) hours per training class.

- **DVAS**: To be attended by all personnel who require training on the use of the Digital Video Auditing System (DVAS) to include effective use of search parameters to audit transactional data.

  Requirement: One session with a class size of up to ten (10) people and a minimum of two (2) hours per training class.

The Agency may require additional courses to be offered or additional personnel to be provided training. The Contractor shall accommodate these requests to the extent possible with on-site personnel and documentation that is readily available.

C-7.10.4 Training Facilities

The Agency will furnish classroom facilities or meeting space for all trainings, unless otherwise notified. Following the Agency review of Contractor's Training Plan, the Agency will confirm that it has the requisite space to accommodate the level of effort and physical requirements for each training session.

C-7.10.5 Scheduling and Preparation for Training

It shall be the Contractor's responsibility to provide sufficient notice as to the types of training it will provide and the timing for each training session. The Agency will identify a list of participants that the

Contractor shall notify to schedule their participation in the training. The Contractor shall perform all scheduling activities and shall make every attempt necessary to accommodate the maximum number of persons for each training session given scheduling conflicts. Contractor shall provide sufficient notice to allow participants a reasonable lead time. The Contractor shall notify the Agency of the dates or range of dates it would like to hold a training session at the Agency offices and shall coordinate with the Agency staff to arrange the proper classroom setting and to ensure computer hardware and software are installed and the space is adequately configured for each training session.

C-7.10.6 Training Materials

Draft copies of all training materials shall be submitted to the Agency for review, comment and Approval, prior to final printing of quantities required for training. The Agency shall have the right to require additional interim drafts at no additional cost should draft training materials submitted not be of adequate quality or have missing or incorrect information. For each course described in the section above, Contractor shall provide the materials listed below.

C-7.10.6.1 Instructor Guides

The Contractor shall provide an instructor guide for each training course. The guide shall include:

- Course agenda;
- Course objective;
- Procedures for managing training session;
- Resource and facilities required, including work stations, power and communications requirements;
- Detailed lesson plans;
- A description of training aids and items to aid in on the job performance (e.g., where applicable, pocket guides or reference sheets);
- Test to be administered to assure satisfactory completion; and
- Instructions for using any audio-visual support equipment or materials.

C-7.10.6.2 Training Aids

The Contractor shall provide training aids such as PowerPoint presentations, mock-ups, scale models, overhead transparencies, videotaped demonstrations, and simulations as are necessary to successfully complete the course agenda and meet the course objective.

C-7.10.6.3 Student Workbook

The Contractor shall provide for each course a student workbook which shall include but not be limited to course agenda, course objectives, schedule of sessions, copies of all overheads and visuals and lesson outlines and summaries. Materials such as operations and user manuals may be used to supplement the material provided in the student workbook. If such material is used appropriate cross-references shall be included in the Student Workbook so as to identify the complete set of training materials provided to the student.

C-7.10.6.4 Training Room Set-up and Software Installation

Contractor shall load any special software that needs to be loaded on the classroom computers (provided by the Contractor). The Contractor shall ensure that the software is operating as expected on each of the classroom computers and that appropriate communications are in place.

C-8 Maintenance Scope of Work

The Contractor shall be responsible for Maintenance of all portions of the ORT System that have been installed including Hampton and Hooksett locations as well as future ORT installations.

C-8.1 General Description of Maintenance and Software Support Services

The ORT System Maintenance and Software Services shall consist of all in-lane equipment and systems and ORT Host CPS equipment and software as further set forth in this RFP.

Hardware Maintenance, Software Maintenance and Support Services for the ORT System shall be provided by the Contractor for a period not to exceed five (5) years and optionally may include three (3), three (3) year extensions. This Maintenance period shall begin with the Provisional Project Acceptance of the ORT System as defined in the Agreement. Maintenance shall include new and existing systems.

Notwithstanding the above paragraph, the Contractor shall maintain the ORT System hardware and software for any time period in which the equipment is installed and placed into revenue service but has not passed required testing until such time as the Maintenance period commences. The Maintenance of the ORT System hardware and software provided prior to start of the Maintenance Period shall be provided at no additional cost to the Agency.

C-8.2 ORT System Maintenance and Software Continuous Support Services

The Contractor shall provide Maintenance and monitoring services on a 24/7 basis in order to meet the performance requirements of this document.

C-8.2.1 Summary Scope of Work

The Maintenance and Software Support Services Scope of Work shall include monitoring, preventive, predictive, corrective, and emergency Maintenance services and certain upgrades and Enhancements to be performed on all elements of the ORT System. The Maintenance and Software Support Services Scope of Work shall include but not limited to the following:

- In-lane ORT System (Hardware and Software);
- UPS Equipment;
- Enclosures and Racks;
- Equipment Mounting Brackets, Hardware and Structures;
- Cables, Wiring, and Terminations;
- Network Equipment, Communications Components, and Enclosures;

- ORT Host CPS (Hardware and Software);
- All Third Party Software;
- MOMS;
- System Administration;
- DVAS; and
- Software changes required such as version changes, configuration or parameter changes or minor changes to software or code.

The Contractor shall provide the required access, all tools, vehicles, training, and any other materials required to maintain the Systems at optimum operating levels.

C-8.2.2 Maintenance and Software Support Services/Requirements

C-8.2.2.1 In-Lane ORT System (Hardware and Software)

The Contractor shall perform the Maintenance and Software Support Services for all in-lane hardware and software procured, furnished, and installed as part of the ORT System. Maintenance items shall include but not be limited to the following:

1. Zone Controllers;
2. AVI system;
3. AVDC system;
4. VES;
5. All Cables, Wiring, Junction boxes, and Terminations;
6. All Conduits and Cable Trays;
7. All In-lane System Electronics and Controllers; and
8. All In-lane Contractor and Third-party Software.

All System administrative functions, if not automated, shall be performed at regular intervals as part of the preventive Maintenance services to ensure System performance is optimized. Daily monitoring of System operations shall be performed to verify System is functional, processes are being executed as scheduled, and system is operating to the required performance requirements set forth in this document. Daily monitoring shall include but not be limited to evaluating sample transactions data; confirming data transmission to the ORT Host CPS; confirming image transmission to the Image Server; performing routine diagnostics on all in-lane subsystems; reviewing comparative reports to identify System degradation; reviewing sample images; evaluating storage requirements, and reviewing error logs. As part of the Software Support Services the Contractor shall develop and test software as required to accommodate changes to Business Rules or lane configurations.

C-8.2.2.2 ORT System Miscellaneous Components

UPS Equipment: The Contractor shall perform Maintenance services on the UPS units that include, but are not limited to, a comprehensive visual, environmental, and electronic inspection of the UPS units in accordance with manufacturer's maintenance procedures, to ensure that the System and all components are performing to defined technical and environmental specifications. Battery inspection

and testing shall include temperature check of internal and/or external battery terminals, battery discharge test, verification of proper transfer to battery operation, and testing the static bypass. Complete functional verification shall include checking UPS event log for any alarms, verification of voltage and current to and from the unit and performing firmware and software updates.

Enclosures and Equipment Racks: Enclosures and equipment racks shall be inspected and maintained by the Contractor in full operational condition free of debris and dirt. Environmental control devices shall be inspected and maintained in accordance with manufacturer's specifications.

The Contractor shall inspect and maintain all equipment mounting hardware and brackets and shall also inform the Agency of any potential problems or issues observed with regard to the gantry structure or hardware or brackets provided by others.

Cables, Wiring, and Terminations: The Contractor shall inspect and test cables, wiring and terminations to detect problems and degradation. Any item not in compliance with the requirements of this Requirements and Deliverables shall be replaced and System shall be tested to confirm that it is fully functional.

C-8.2.2.3 Network Equipment and Communications Components

The Contractor shall maintain the toll collection network system that includes connection of the ORT in-lane equipment to the ORT Host CPS and to the disaster recovery site, excluding the Agency supplied network. The Contractor shall monitor the ORT System network, its connections, and its components in order to respond to any fault or problem with minimum down time. Contractor shall maintain all hardware, electrical, and wiring included between the in-lane equipment and ORT Host CPS, including but not limited to the following:

1. ORT System local area networks;
2. Routers, switches, and other signal directing equipment;
3. Ethernet, fiber optic, and other connecting wires and cables;
4. Data wire and cable terminations and splices; and
5. AC/DC power cables and connectors for LAN equipment.

The Contractor shall monitor the System's Wide Area and Local Area networks on a daily basis to verify optimal performance and full operations. Network monitoring and verification of connectivity to various devices within the Agency ORT System shall also be performed daily.

C-8.2.2.4 System Administration Services

The Contractor shall provide 24/7 System Administration Services on the ORT System to ensure that it is performing, and will continue to perform in accordance with the performance requirements set forth in Section C-2.8. System Administration Services shall include monitoring and corrective action to ensure System performance processes in accordance with this requirements and deliverables, to include database management and operation. This includes but is not limited to:

1. Daily, weekly, or periodic Maintenance necessary to maintain the System at required performance levels (for example: purging old files, adding new tables or directories, etc.);
2. Retrieval of data manually, if required;
3. Performing disaster recovery procedures as needed;
4. System shutdown and re-start, if required, to keep the System operational;
5. Re-establishment or re-installation of System files, programs and parameters, as required, following a failure or damage to the System;
6. Investigation and analysis of anomalies to include trend analysis;
7. Monitoring, notifications, and initiating corrective actions on application programs to meet requirements;
8. Performance of ad-hoc queries based on Agency requests and provide reports on all requests;
9. Provide user support to Agency personnel that require access to the ORT System;
10. Monitoring of error and System logs;
11. Third party software or firmware upgrades, as required;
12. Providing changes to configurable parameters as requested by the Agency;
13. Performance of software updates resulting from corrective action, business rule changes, and configuration changes;
14. Verification of successful download of Transponder Status Files daily and report the status;
15. Verify processes and scheduled job are successful;
16. Verification on a daily basis that transactions are being generated in the lanes and these transactions are being sent appropriately to the ORT Host CPS and then on to the *E-ZPass* CSC, and report the status;
17. Maintenance of up-to-date software backups and archiving (all System software and data);
18. Performing security software upgrades, data base upgrades and operating system upgrades;
19. Installation of new software and confirmation of successful installation;
20. Daily verification of image transfer from the in-lane VES to the image server;
21. Verification that the MOMS is receiving and processing System events and reporting the correct status;
22. Performance of regular virus protection updates in accordance with recommended Maintenance schedule; and
23. Verification of time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold and daylight savings changed to not affect operation.

C-8.2.2.5 ORT Plaza/Host System and Equipment

Maintenance services associated with the ORT Plaza/Host System and equipment shall include but not be limited to all hardware and software associated with:

1. Servers including operating system, databases, disks, hard drives, and backup systems;
2. ORT Host Central Processing System including the MOMS;
3. Software changes required to accommodate changes to Business Rules or lane configurations;

4. System monitoring; and
5. UPS.

C-8.3 Warranty Program

The Contractor shall develop, implement, and administer a Warranty program for all hardware, Contractor developed software, and third party software provided for the ORT System. The Contractor shall maintain warranty records and shall review software discrepancy and available patch reports to determine if the software requires upgrading. Refer to Appendix H, Section H-25.8: Warranty.

C-8.3.1 Hardware System Warranty

All hardware components furnished under the Contract shall be warranted by both the Contractor and manufacturer(s) to be free of defects in equipment and workmanship for a period of one (1) year minimum from issuance of letter from DOT of provisional or final acceptance as in Section C-6.8.1 Final Provisional Project Acceptance.

During the one-year all-inclusive warranty period, the Contractor shall provide on-site response to any service affecting; this includes Preventive Maintenance functions during this period.

Response time during any subsequent extended warranty or maintenance agreement can be mutually agreed upon by the parties, but generally shall be the same as under the initial warranty.

C-8.3.2 Software Warranty

All software and firmware furnished under the Contract shall be warranted by both the Contractor and manufacturer(s) to be free of defects in workmanship for the full initial Contract Term as well as any subsequent Contract term extension. The Contractor shall provide for and support the Software Warranty at no additional cost to the NHDOT.

All software and firmware shall remain in good working order in the sole judgment of NHDOT; and, shall meet or exceed the requirements of this RFP, the Contractor's published performance specifications and of the Contractor’s design.

Toll-free technical support shall be provided on a twenty-four (24) hour, seven (7) day per week basis during the warranty period.

All software and firmware provided under the Contract shall be free from defects under normal use and remain in good working order.

In addition, the Licensed Software and firmware shall perform in accordance with the requirements of this RFP, the Contractor's design, the Supplier’s published specifications and with the descriptions and documentation provided by the Contractor.

The software and firmware shall be provided for any equipment purchased pursuant to the Contract, including updates or new releases to such equipment.

The Contractor warrants that all software and firmware provided by the Contractor shall be of a compiled high level language that is commercially available and for which software tools are available.

The software and firmware shall not contain viruses, backdoor entry points or pre-programmed devices that shall cause any software utilized by NHDOT to be erased or become inoperable or incapable of processing accurately and in accordance with the requirements of this RFP.

The Contractor shall provide NHDOT with the ability to duplicate the software and firmware to function in accordance with the requirements of this RFP on hardware, i.e. SICK and Kapsch Readers, purchased pursuant to this Contract.

The Contractor warrants that it shall provide, at no additional charge, upgrades for a period of five (5) years to licensed and propriety software as the Suppliers make them available, but shall not substitute a later version of any software approved for use by NHDOT without NHDOT's approval.

The Contractor shall correct all material defects or malfunctions in the Software and Documentation discovered during the Warranty period and shall promptly provide NHDOT with corrected copies, without additional charge.

If software can only be corrected in conjunction with additional or revised hardware, the cost of this hardware shall be at the Contractor's expense.

C-8.3.3 Third Party Warranties

In addition to the hardware, software, firmware and E-ZPass transponder reader warranties, the Contractor hereby assigns to NHDOT, and NHDOT shall have the benefit of, any and all Subcontractors' and Suppliers' warranties and representations with respect to the hardware, software, firmware and transponder readers provided hereunder.

In the Contractor's agreements with Subcontractors and Suppliers, the Contractor shall require that such parties assign and furnish such warranties and representations to NHDOT.

C-8.3.4 Warranty Obligations

Without in any way limiting any rights NHDOT may have, the Contractor's obligation with respect to the hardware, software, firmware and transponder reader warranties includes the following:

- The Contractor's obligation with respect to the hardware, software, firmware and transponder warranty, shall include but not be limited to prompt repair or replacement at the Contractor's sole cost and expense, including the cost of removal of the unit of equipment (or part or component thereof) which proves defective or insufficient or proves to have failed to comply with the requirements of this RFP. The Contractor shall cause such prompt repair or replacement based on the performance requirements set forth in the RFP.

- In the event any Software or equipment does not satisfy the conditions of performance set forth in the Specifications, the Contractor's obligation is to promptly repair or replace such Software and Equipment at the Contractor's cost and expense. Alternatively, the Contractor may provide different equipment, software and services, as required, to attain the performance requirements set forth in the RFP, subject to prior approval by NHDOT.

C-8.4 Maintenance Support

The Contractor shall provide Maintenance support for the ORT System. Such support is not required to be on-site at all times but must be available to meet the performance requirements set forth in Section C-8.0. The purpose is to: Ensure proper management and control of all Maintenance operations including, but not limited to, ensuring work orders have been properly processed and completed; monitor System functions remotely to capture potential problems before they affect revenue collection; ensure preventative Maintenance is scheduled and carried out, and provide real time System status to the Agency as may be required. Maintenance support shall be responsible for duties including but not limited to the following:

1. Receipt and processing of all the MOMS messages and alerts;
2. Dispatch of technicians for all Maintenance events and activities;
3. Emergency response management;
4. Real time monitoring of all in-lane components' functioning and status;
5. Monitoring of LAN and WAN availability;
6. Monitoring of the ORT Host CPS;
7. Monitoring of all internal and 3rd Party interfaces and file exchanges;
8. Scheduling of preventative, corrective and predictive Maintenance activities;
9. Maintaining records of all Maintenance events and activities; and
10. Contact with the Agency regarding System issues, performance, and Maintenance scheduling.

Maintenance support shall be available 24/7 with qualified personnel and shall be connected to the Agency network system in order to allow the Agency personnel to have access to the ORT System Maintenance support shall have the capability to readily observe the activities at each tolling location on video monitors.

C-8.5 Maintenance Plan

The Contractor shall submit a detailed Maintenance Plan that covers all aspects of the Maintenance operation and services to be provided. The Maintenance Plan shall be submitted to the Agency for Approval and in accordance with the Approved project schedule, but no later than ninety (90) days prior to commencement of the Maintenance period.

The Maintenance Plan shall include but not be limited to the following:

1. A Maintenance organization with positions, titles, and staff identified to fill all identified Maintenance positions;
2. Descriptions of all staff positions, including responsibilities, scheduling, and authority;

3. Identification of the resources, equipment and facilities to be used in fulfilling the Maintenance and Software Support Services;
4. Policy and procedures for all Maintenance activities;
5. Notification and escalation procedures;
6. Tracking of Maintenance activities including action taken on work orders;
7. Spares inventory management;
8. Identification of on-site and remote coverage hours for personnel;
9. Means and methods for monitoring equipment and System status;
10. Document control plan;
11. Preventive Maintenance methodology and frequency;
12. Tracking asset inventories;
13. Special tools and test equipment that will be maintained on site;
14. MOT procedures and required authorization for lane closure requirements; and
15. Staff training plan.

The Maintenance Plan shall be updated periodically to reflect any changes to the policies or procedures for the Maintenance services. A version update sheet shall be included with the Maintenance Plan and the Maintenance Plan on file shall have the most recent version from the configuration management system. Any updates or changes to the Maintenance Plan shall be submitted to the Agency for review and Approval prior to incorporating the proposed changes or updates. No actions shall be taken by the Contractor regarding any proposed changes and/or updates without prior written approval by the Agency. All proposed changes and updates must be directed to the most current version of the Maintenance Plan.

C-8.6 Maintenance Requirements

C-8.6.1 Maintenance Coverage and Response Times

The Contractor shall provide 24/7 coverage for all Maintenance related activities. The Contractor shall post a weekly schedule identifying personnel and coverage for Maintenance activities, both on-site and on-call, as applicable. The Contractor shall provide to the Agency on a regular basis the updated schedule, active personnel list, and contact information.

Regardless of the coverage, on-site or on call, acknowledgement of receipt of notification of a Maintenance issue shall not exceed thirty (30) minutes after the notification was sent. Time to repair as determined by priority classification is prescribed below. Response to calls shall be determined by priority as described below:

1. **Critical Mission**: Defined as any malfunction or fault that will result in the immediate loss of revenue; closure of a lane; loss of audit data; loss of redundancy in any redundant System components, or hazard to personnel or driving public. This priority shall have a two (2) hour time to respond and repair. Examples of components or system in this category would include but not be limited to, AVDC including lane peripherals, lane or zone controllers, VES components, AVI including RF readers and antennas, and communication components.

2. **High Priority**: Defined as any malfunction or fault that will degrade the System performance, but not the operational ability of the System. This priority shall have a five (5) hour time to respond and repair.
3. **Medium Priority**: Defined as any action or event that has potential of resulting in a malfunction or degrading of the System performance. This priority shall have a twenty four (24) hour time to respond and repair.

Repair and Response time is defined as the combined time from failure notification to repair/correction of the failure; the period of time beginning when the Contractor receives notification of the Maintenance event and ending when the fault condition is corrected and returned to normal operations; however, failure of the System to notify the Contractor of a failure shall not be deemed a waiver of the response time requirement. In this case, notification shall be considered to commence upon the time of the actual system failure.

Response and repair times for every Maintenance event shall be recorded and reported and such reports shall be provided to the Agency in accordance with the reporting requirements of this document. Contractor failure to meet the response and repair time criteria described above shall result in liquidated damages as specified in Section C-8.17.3, Required Performance Measures and Liquidated Damages Summary.

C-8.6.2 Maintenance On-Line Management System (MOMS)

The Contractor shall provide a MOMS to monitor and facilitate the Maintenance of the ORT Systems. It is preferred but not required that the MOMS system be integrated with the existing ORT MOMS system. The server application and database shall reside on a dedicated MOMS server or integrated with the ORT Host CPS server as determined during the Design Phase. The MOMS application is a comprehensive tool used for monitoring and reporting System status. The Contractor shall ensure that the furnished MOMS shall have the following capabilities:

- Receive and monitor status messages from all devices, processes, and Systems.
- Capable of local manual entry or email entry by authorized Agency or Contractor personnel. Entry shall be recorded and automatically tracked to closure.
- Data is stored in a relational data base to permit data recovery and flexibility in reporting the raw data.
- Automatically generate and print or email daily and monthly performance reports as determined by the Agency during Design.
- Track device failures, process failures and service requests.
- Assign priorities and actions to events.
- Automatic notification to the Maintenance technicians via reports, email, and/or paging.
- Record time of acknowledgement, time to respond (both remotely and on-site) and time of repair by Contractor's Maintenance personnel assigned to problem.
- Automatic notification includes the Critical Mission fault designator and record status of Critical Mission, High, and Medium priority work order paging.

- Record completion of service calls as well as the ability to filter the records based on priority levels of calls.
- Maintain list of Contractors from where products are procured from to include 2nd source.
- All Warranty information on all equipment and third party software maintained in System.
- Maintain and track repair Maintenance activity.
- Asset management and spare parts inventory.
- Schedule preventive and predictive Maintenance activities.
- Manage the ORT System equipment inventory with purchase order generation for parts replacement.
- User level security.
- Automatic alert for spare parts levels, work order not closed out in specified time.
- Summarized and Detailed Alarm History.
- Work Order Status.
- Equipment Inventory.
- Preventive Maintenance.
- Corrective Maintenance.
- Equipment Use History.
- Equipment Repair History.
- Subsystem availability for toll zone controllers, AVI system, AVDC system, VES, applicable plaza or host servers, and MOMS server.
- Equipment versions, software versions, firmware versions and serial numbers for all equipment installed for the ORT System or related Enhancements to the existing Lane System; and Incident Logs and Lost Revenue Estimates.

The presence of a MOMS notification on the System workstation or via electronic notification shall constitute the start of the response time for purposes of measuring the Contractor's response time. Notwithstanding the foregoing, failure of the MOMs system to generate an alert shall not be deemed a waiver of the response time requirement. In this case, notification shall be considered to commence upon the time of the actual system failure.

Scheduling of all preventive and predictive maintenance activities shall be performed through the MOMS and automatic work orders shall be generated at the scheduled times. The MOMS shall have the ability to create manual work orders in events where one was not automatically created. The MOMS shall have the ability to determine response times, repair times, and lane down time from the data entered by the maintenance technician.

A spare parts inventory of equipment shall be maintained though the MOMS. Tracking and purchasing of all toll related equipment shall be done through the MOMS. When spare parts inventory reach a configurable threshold, automatic replenish alerts shall be generated.

C-8.6.2.1 Maintenance Summary Reports

The Contractor shall provide summary reports for the following reports to the Agency on a monthly basis and be readily available in detail or summary format over the network to the Agency personnel on

a daily, weekly or any time period determined by the Agency. Authorized personnel shall have the ability to generate various operational, management and performance reports from the MOMS, including but not limited to:

- Summarized and Detailed Alarm History – Summary of alarms that occurring during the selected parameters with the ability to drill into details.
- Maintenance Paging and Response History – Summary and drill down for each event requiring call out to any maintenance team with complete history.
- Work Order Status and Tracking – Summary and drill down into status of all work-orders and their history.
- Equipment Inventory and Tracking – Summary and drill down to all equipment in any/all inventory location(s).
- Preventive and Predictive Maintenance – Summary and drill down of all maintenance activities related to maintenance activities designed to prevent future failures within a selectable timeframe.
- Corrective Maintenance – Summary and drill down of all maintenance activities related to maintenance activities to correct failures within a selectable timeframe.
- Tolling Location Operational Status – real time status of the status of any tolling location.
- Equipment Use History – Summary and drill down for each piece of equipment use and location with complete history.
- Equipment Repair History – Summary and drill down for each piece of equipment's complete service history.
- Equipment versions – Summary and drill down of all equipment versions, software versions, firmware versions and serial numbers for all equipment installed for the ORT System or related Enhancements to the existing Lane System.
- Incident Logs and Lost Revenue Estimates – Summary and drill down for each incident resulting in lost revenue.
- Response and Repair Times:
    - Acknowledgement, Response (both remote and on-site) and Repair Times – Time to respond exceeding the allowed maximum. Each item shall be detailed with a description as to why the maximum times were not adhered with and any corrective actions to ensure these do not continue. Each item shall be detailed with a description as to why the maximum times were not adhered with and any corrective actions to ensure these do not continue.
    - Total down time of any lane or equipment for the preceding week – Summary of down time with ability to drill down to individual contributing reports.
- Total System Availability for all equipment, including but not limited to toll zone controllers, AVI system, AVDC system, VES, applicable plaza or host servers, and MOMS server:
    - Lane availability, weekly. Summary of Acknowledgement, Response (both remote and on-site) and Repair Times, per-lane summarized weekly.
    - System availability, weekly. Summary of Acknowledgement, Response (both remote and on-site) and Repair Times, System summarized weekly.

  - DVAS availability, weekly. Summary of Acknowledgement, Response (both remote and on-site) and Repair Times, System summarized weekly.
  - Equipment availability, weekly. Summary of Acknowledgement, Response (both remote and on-site) and Repair Times, Equipment summarized weekly.
- Detailed list of parts replaced as a result of Maintenance actions – Summary and drill down of all maintenance activities resulting in equipment replacement within a selectable timeframe.
- Status of removed parts and equipment - Detailed list of any piece of equipment in part or whole that is out of service for repair with drill down to capture nature of component replacement/repair, warranty work etc. to include parcel tracking for off-site repair.
- Trend analysis of repetitive failures – to be used to predict when failures are likely and preemptively replace items. Particularly for items that wear out.

C-8.6.2.2 Additional Summary Reports

The Contractor shall provide the Agency with any additional reports it may require in order to determine that the System is operationally sound, functionally efficient, and being maintained to the expected level. The Contractor shall provide all available resources in order to collect data and prepare the required reports.

C-8.6.3 Preventive Maintenance

The Contractor shall provide preventive Maintenance of the ORT System hardware, data processing units, and software. With respect to preventive Maintenance, the Contractor shall periodically inspect all of the equipment (including items such as fans, equipment racks, enclosures, alignments, environmental control units, filters, batteries, images, etc.) that constitute the ORT System, and make such repairs, adjustments, and replacements of components as may be necessary to maintain the equipment in normal operating condition. The computers and data processing units shall be periodically checked to verify that storage space is not reaching limits, disk are not fragmented or damaged, software being used is of latest version under configuration management, and data is being processed and transferred in an appropriate manner.

Preventative Maintenance shall be scheduled and performed by a Maintenance technician during the normal working hours when the Maintenance technicians are scheduled to be on-site. This work shall also include the cleaning of equipment in accordance with an Approved Maintenance schedule. Diagnostic aids, instruments and equipment to perform Preventive Maintenance equipment analysis shall be utilized by the Contractor as required.

The Contractor shall provide a preventive Maintenance schedule as a part of the Maintenance Plan described above. The schedule shall detail the preventive Maintenance to be performed on each equipment item and System, both on an in-field and where applicable, workshop basis. The schedule shall provide a description of the work to be performed, expected duration and the frequency. The preventive Maintenance schedule shall be entered into the MOMS and work orders shall be automatically created to alert Maintenance technicians of required preventive Maintenance.

All equipment and Systems must be provided preventive Maintenance in accordance with the original equipment manufacturer's guidelines. Any variations or exceptions must be noted by the Contractor and Approved in advance by the Agency.

Preventive Maintenance requiring toll lane closures shall be scheduled for off-peak travel periods, so that the work shall not interfere with normal traffic flow, unless otherwise Approved by the Agency.

Failure to perform required preventive Maintenance in accordance with the Approved schedule shall result in liquidated damages, as specified below in the Maintenance Performance Measurement Section C-8.17.

C-8.6.4 Predictive Maintenance

The Contractor shall establish a Predictive Maintenance program by which failure analysis can be determined by identifying continuing or repetitive failures through the MOMS records. The failure analysis shall take into account either or both specific components and subsystems. This information shall then be used to investigate and correct problems and failures that continue to occur on a particular item of equipment, subsystem, or component. The Contractor shall maintain all failure analysis documentation on-site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.

C-8.6.5 Corrective Maintenance

All work performed by the Contractor to correct problems, including but not limited to System or component performance, function, availability or Mean Time Between Failure (MTBF) in order to meet the requirements of the Contract shall be considered as Corrective Maintenance for which the Agency shall not pay any additional amounts above the Monthly Maintenance Fee, with the exception of replacement of any components or equipment that fail and are no longer under Warranty.

Notwithstanding the foregoing, for repeated failure of equipment, components, or Systems, the Contractor shall undertake an investigation as outlined in Section C-8.6.4. If the problem is determined by the Agency to be a pervasive defect, the Contractor shall replace and repair the problem equipment, component, or System at no additional charge to the Agency.

C-8.6.6 Upgrades and Enhancements

Software modifications that are required to maintain and support the System as a part of the normal course of business such as version changes, configuration or parameter changes or minor changes to software or code; or, changes that improve the Contractor's ability to maintain and support the System, shall not be considered upgrades or Enhancements that shall be paid for by the Agency.

Upgrades and Enhancements required for reasons such as to meet major changes to standards, statutes or interoperability requirements or the addition of new functionality; or, that provide the Agency with a demonstrable benefit in performance, costs or productivity, shall be proposed by the Contractor in

accordance with the requirements of the Agency's Change Request process and coordinated through the Agency and the New Hampshire Office of Information Technology. More detailed information is provided in Appendix J, Form 11.

C-8.6.7 Notifications

For purposes of measurement of performance and for the development of Maintenance policy and procedures, notification of System malfunctions, problems, and discrepancies may be provided to the Contractor in three (3) different methods, summarized below.

1. **Verbal Notification**: Defined as an in-person, telephone, or cell phone call. In all cases, the first conversation with, or notification of the Contractor shall signify the start of the response time for purposes of measuring the Contractor's response time.
2. **Written Notification**: Defined as a written description of a problem or condition, typically provided by the Agency. Written notification will be faxed or emailed to the Contractor. The receipt of fax or receipt of email time shall signify the start of the response time for purposes of measuring the Contractor's response time.
3. **MOMS Notification**: Defined as an automatic electronic notification through the MOMS software identifying a problem within the ORT System and sending out an automatic alert message by email, or other electronic means to a Contractor's Maintenance staff to respond to the failure. In addition to the Contractor notification, the alert shall be posted on the MOMS and a hard copy of every alert will be available to be printed. The presence of a MOMS notification on the System workstation shall constitute the start of the response time for purposes of measuring the Contractor's response time.

C-8.6.8 Recording of Maintenance Activities

In all cases, it shall be the Contractor's responsibility to log all reported Maintenance activities. The Contractor shall also document all information and issues related to a fault condition. The Contractor shall develop a report on the MOMS that can be identified by its unique tracking number and acquired through any variable associated with the report. For example, the report should be able to be queried via specific aspects such as location, component, or corrective action. This document shall be the mechanism by which an individual problem is tracked to completion. The document shall be identified as a Trouble Failure Report (TFR). The TFR shall contain as much information as possible in order for any person to reasonably determine the fault, when it was worked on, the corrective action, and any other information pertaining to the individual Maintenance event. Items to be contained on the TFR include:

1. Applicable Date / Time blocks (received, response, repair, closed out);
2. Location of fault (tolling location, lane, subsystem, etc.);
3. Failure component;
4. All codes and alerts associated with the failure;
5. Detailed description of corrective action;
6. Technician (s) who worked on the fault condition;
7. Serial number of failed component and any replacement components;

8. Notification date/time, arrival on site date/time, and repair complete date/time; and
9. Any other blocks or fields deemed necessary to adequately track and describe the Maintenance action.

Standard definitions and terminology shall be established to encourage consistency and limit discrepancies between reports. Specifically, if pull-down menus or similar selections are made available to the technician for input of items such as corrective action, each option should be clearly defined and its intended use must be defined in the technician training materials. The goal of this standard shall be to establish a consistent and traceable reporting of activities.

It is the Contractor's responsibility to ensure that their Maintenance staff has real time access to the MOMS and all the required connections are established and ongoing to ensure that the Maintenance staff maintains access, including required remote units.

C-8.7 Spare Parts

The Agency may provide limited storage facilities for the Contractor's use; however, should an Agency on-site facility not be available the Contractor shall then provide for the storage of spare parts. Contractor shall be responsible for the security, access, control, and inventory of all spare parts at the storage facility and shall be insured in this regard or as required in the Contract. The Contractor shall account for all spare parts and shall provide safeguards against theft, damage, or loss of the spare parts. The Contractor shall ensure that only spare parts required to service the Agency ORT equipment and System are stored at this facility.

C-8.7.1 Spare Part Inventory and Tracking

The Contractor shall monitor the inventory quantity and ensure that the inventory is maintained to the levels specified in the Contract. The Contractor shall keep accurate records of all parts entering and leaving inventory through the use of a MOMS Inventory and Repair database. This information shall be included and available on the MOMS. Required information includes:

- Parts entering inventory.
- Original equipment manufacturer (OEM) serial number.
- The Agency specific serial number/asset ID.
- Time and date part was dispensed.
- Purchase/replacement cost.
- The location within the ORT System where the part was dispatched and used.

The Agency shall have the right to audit the spare parts inventory at any time and reports shall be made available to support the audit.

The Contractor shall track all Warranty replacement. If the replaced part is under Warranty, the part shall be immediately replaced with a new part and the failed part shall be returned to the manufacturer. The replacement information shall be recorded in the System and associated with the returned part. If the replaced part is out of Warranty, the Contractor shall make every effort to repair the replaced item

to a usable status and place the part back into spares inventory. If the part is unable to be repaired, a new part shall be purchased and placed into spares inventory. The details of the repair efforts including problem, status, inventory, and repair disposition shall be included in the MOMS inventory and repair database.

C-8.7.2 Procurement and Control of Spare Parts

Thirty (30) days prior to the date the toll system is expected to be open to traffic, the Contractor shall have purchased and have on hand the agreed upon inventory of spare parts. The spare parts shall be purchased on behalf of the Agency and shall be owned by the Agency in a manner to ensure that the Agency receives the maximum benefit from any warranties associated with the spare parts. The cost of the spare parts shall not include any mark up and shall be in accordance with the agreed to price.

The Contractor shall cooperate with and assist the Agency as reasonably necessary to ensure that all spare parts, equipment, and other Agency owned property is stored or otherwise located on the Contractor's property shall not be subject to any risk of being confiscated, claimed, attached, withheld by the a landlord, creditor, or similar risk. This cooperation includes, but is not be limited to, affixing appropriate labeling to all property identifying it as the property of the Agency, with a the Agency specific serial number/asset ID.

If the Maintenance or storage facility is Contractor owned or leased, the facility shall be secured and connected to a security network system with alarm notification provided to the ORT Host. Further, it is required that the Agency shall have full and unrestricted access at all times to the Maintenance and or storage facility.

All spare parts and consumables shall be maintained by the Contractor free and clear of any liens and encumbrances of any kind whatsoever at a location or locations agreed upon by the Agency and the Contractor. The Agency shall have the right to inspect the spares and consumables inventory upon request.

Any spare parts that are lost or damaged due to the negligence, intentional act or omission of the Contractor or its employees, Subcontractors, agents, or invitees shall be replaced by the Contractor at its sole cost. The Agency may elect to assume responsibility at any time for storage of spare parts, and the Contractor shall deliver all spare parts to the Agency for storage after receipt of reasonable notice from the Agency.

C-8.7.3 Inventory Management

The Contractor's performance of the Maintenance Services is predicated on there being an adequate spare parts inventory available. The Contractor shall periodically update and recommend a spare part quantity to be maintained in order to support the ORT System functionality and operational readiness. The Contractor shall hold the Agency harmless in the event spare parts or consumables are not available as a consequence of the Contractor's failure to purchase or replenish the spare parts or consumables

Approved by the Agency. Additionally, the Contractor is fully responsible even if the Approved spare parts inventory is not adequate.

The Contractor shall provide all miscellaneous repair items and consumable materials that cost no more than $25.00 per item, at the Contractor's expense. These types of items shall include but not be limited to fuses, screws, touch-up paint, wire, connectors, labels, electrical tape, and any consumables required to comply with all requirements of this Agreement. The Contractor shall also provide at no cost to the Agency normal shop consumables, including but not limited to items such as solder, lubricants, cleaning rags, and batteries.

At the end of the Maintenance period, spare parts inventory turned over to the Agency shall be at 100 percent (100%) inventory level.

C-8.8 Audits

The Agency may require various audits for both financial and performance data regarding the ORT lanes, including SSAE16 (SOC1) type audits. These audits may address such items, but not limited to the following:

1. Internal control procedures
2. Revenue / transaction reporting
3. Violation reporting
4. Facility inspections
5. System processing and performance

The Contractor shall completely support the Agency in any audit activity relating to the ORT System.

C-8.9 Cooperation with Other Contractors and Providers

The Contractor may be required to work with or associate with other Contractors or providers in order to provide a fully integrated and operational System. The Contractor shall cooperate to the fullest extent with any other Contractor or provider in order to ensure that the ORT System and other functional elements of the ORT System do not conflict or cause any deterrent in capability or service to the traveling public or the Agency. The Contractor shall work with existing Lane System Contractors and other Agency service providers to develop all required interfaces and interface control documentation to allow for interface of the ORT System to the existing Lane System.

C-8.10 Emergency Response Management

The Contractor shall immediately respond to any emergency situation that may arise that has already or could potentially damage the ORT System. The Contractor shall be prepared to put forth all necessary resources to divert or correct an emergency condition. Such emergency conditions shall be handled in accordance with policies and procedures established and Approved by the Agency. The following are a few examples of emergency conditions:

1. Weather related
2. Vehicle accident

3. Third party (power outage)
4. Vandalism

C-8.11 Incident and Revenue Loss Reporting

The Contractor shall immediately notify the Agency of any incident whereby loss of revenue has occurred or could potentially occur. The Contractor shall take immediate action to rectify the condition and return the ORT System to normal functioning. An Incident Report shall be provided to the Agency. If the condition is determined to be due to the fault of the Contractor, damages and costs shall be the responsibility of the Contractor as set forth in this Agreement.

C-8.12 Maintenance Staffing, Materials and Training

C-8.12.1 Maintenance Staffing Requirements

The Contractor shall maintain adequate technical staff to perform Maintenance and Software Support Services on the system. The Contractor shall ensure that sufficient staffing is available to cover all Maintenance activities during the following periods:

1. Weekends
2. Holidays
3. Personnel on vacation/sick time
4. After regular scheduled work hours (on call)
5. Unexpected emergency or crisis

The Contractor shall provide personnel to perform the following functions. It shall be the Contractors responsibility to staff at appropriate levels to meet the requirements, using the Maintenance Plan as the guideline for staffing levels and full job descriptions:

1. **Maintenance Management**: Contractor's Maintenance management responsibilities include all Maintenance management business dealings with the Agency. Responsibilities include being the single point of contact for all work related issues including System problems, material issues, or Contractor personnel issues.
2. **Field Supervision**: The Field Supervisory functions include being responsible for the day to day operations of the technicians, ensuring that all required work is accomplished properly and efficiently.
3. **Monitoring Support**: Monitoring support functions shall include the monitoring of the ORT System operations and ensuring that Systems are properly functioning, and that the Maintenance and repair work are properly performed.
4. **Repair Shop Technical Staff**: Responsibilities include shop repairs of equipment and for shop level preventive Maintenance.
5. **Maintenance Technical Staff**: Responsibilities include responding to Maintenance activities and alerts and for field level preventive Maintenance. Maintenance technicians shall be qualified to troubleshoot Maintenance problems and identify the source of the problem.
6. **Network Engineering**: Network Administration shall include the configuration and Maintenance of the network systems in accordance with Section C-8.2.2.3.
7. **Data Base Administration**: Database Administration shall include management of the ORT Host CPS databases. The database administration shall cover all aspects of the ORT System database

and ensuring the database is optimized for peak performance. The responsibilities include the configuration and operation of the ORT System database and generation of database queries as requested by the Agency and other support personnel.

8. **Systems Engineering**: Responsibilities include the configurations and monitoring of all System processing and verify that all operations and processes are occurring as scheduled. All the MOMS alarms relating to process failures shall be investigated and resolved by the system engineering staff. Systems engineering responsibilities also include ensuring the proper configuration of all servers and coordinating all server Maintenance. System engineering responsibilities also include identifying issues, and communicating with the System software personnel and coordinating resolution of the problem. All user-related problems (application software) shall be handled by the system engineering personnel.
9. **Administrative Staff**: The administrative staff who support the Contractor's Maintenance organization for the performance of Maintenance functions and to provide adequate phone and administrative support.

C-8.12.2 Tools and Materials

The Contractor shall provide all vehicles, test equipment, tools, PDAs, pagers, cell phones, computers, and any other items required for the Maintenance staff to perform their Maintenance activities. The Contractor shall provide the Agency with the following tool and equipment listings:

- Tools and test equipment issued to Maintenance Technicians to be carried at all times;
- Tools and test equipment maintained by the Contractor and their location; and
- Any special tools and test equipment required and their location.

All test equipment shall be standard units that are capable of achieving the measurement they are intended to make.

C-8.12.3 Personnel Training

The Contractor shall provide trained qualified personnel technical staff to support the Maintenance activities described in this document. It is the Contractor's sole responsibility to develop training necessary to successfully perform all of the Maintenance actions required to keep the System operational.

All required training shall be completed prior to performing actual Maintenance activities with a revenue collection environment. In the event changes or modifications are made to the lane equipment or configuration, supplemental training shall be accomplished prior to the actual service date for the changes or modifications.

The Contractor shall provide training offered by Contractors and original equipment manufacturers for System components (VES equipment, AVI equipment, sensors, etc.) where available and required to properly operate, maintain, and repair such equipment.

C-8.12.4 Training Materials and Ongoing Education

Training material shall consist of Maintenance manuals, Contractor manuals, and any other documentation that provides for the efficient and affective Maintenance of the System and its components. The Contractor shall hold regular meetings with the Maintenance personnel to update Maintenance procedures, bring System changes to the attention of the technical staff, and discuss Maintenance issues the technical staff is having in the field. The Contractor shall provide the Agency with the meeting schedule in order to provide the Agency the opportunity to attend.

The Agency shall have the right to make recordings and copies of all training program materials. The Contractor shall provide releases from all employees and Subcontractors to allow unlimited, royalty free use and copies of recordings.

C-8.12.5 Training Program

The Contractor shall ensure that the Maintenance staff is properly trained for requirements of maintaining the System. The Contractor shall provide the necessary amount of classroom and On-the-Job Training (OJT) to all personnel in their respective area of responsibility in order to achieve the required performance metrics outlined in this document. The Contractor shall provide documentation that this initial training has been successfully completed. Various training programs the Contractor shall institute shall include, but not be limited to, the following:

1. Use of Maintenance documentation such as Maintenance manuals, drawings, Contractor manuals, and parts list;
2. A thorough understanding and operating knowledge of the MOMS is required of all Maintenance personnel;
3. Systems overview;
4. Scheduling, work assignments, transportation requirements and communications;
5. Documentation training, in order to properly fill out Maintenance documentation;
6. Preventative Maintenance of all Systems and subsystems;
7. Troubleshooting, diagnostics, repair, testing, and Maintenance follow up;
8. Spare parts and equipment provisioning;
9. Special use Maintenance tools; and
10. Forms and reports.

All ORT System Maintenance staff shall attend the training sessions. The Agency staff shall also be notified of and invited to attend any or all training sessions. The Contractor shall establish procedures for training new-hire or replacement personnel. New hire or replacement personnel must receive the same two (2) weeks classroom and OJT training as specified in this section before being assigned official Maintenance duties. Evidence of completion of such training shall be provided to the Agency upon request.

The system manager/supervisor shall keep accurate training records on all Maintenance personnel. The Agency shall be allowed to audit Maintenance personnel qualifications and training records at any time during the term of this contract.

The system manager/supervisor shall provide all training procedures and materials for Maintenance personnel for the Agency approval not less than thirty (30) days prior to the training start date.

C-8.12.6 Training Records

The Contractor shall keep accurate training records on all Maintenance personnel. The Agency shall be permitted to audit Maintenance personnel qualifications and training records at any time. Evidence of completion of training by Contractor personnel shall be provided to the Agency upon request.

C-8.13 Safety

The Contractor shall adhere to all applicable safety standards and guidelines for working on or around construction zones, energized equipment, active roadways, and a Maintenance environment, including but not limited to the following:

1. Agency safety procedures and guidelines
2. State of New Hampshire safety procedures and guidelines
3. OSHA
4. NEMA
5. NEC
6. FHWA
7. Any other local, state, or Federal ordinance, procedure, or guideline that provides for a safe operation and working environment.

C-8.14 Maintenance and Protection of Traffic

The Agency anticipates providing all maintenance and protection of traffic. Through the coordination of proposed maintenance of traffic planning as part of the Maintenance Plan development, a detailed procedure for requesting Maintenance of Traffic (MOT) for Maintenance activities shall be developed by the Contractor. The Contractor shall coordinate with NHDOT for the performance of all maintenance of traffic. Advanced planning shall be required to determine detailed procedures for the request for and coordination of MOT. Contractor shall work with NHDOT to develop as a part of the Maintenance Plan described above a maintenance and protection of traffic coordination procedure for approval by the Agency. For the calculation of response and repair times, the clock for determining Contractor performance shall stop upon request of MOT from NHDOT and shall start again once the site is handed over from NHDOT to the Contractor to perform Maintenance. The MOMS system shall track such events such that the response and repair times can be tracked as a part of the overall Maintenance performance monitoring for response and repair times.

Contractor shall adhere to the Approved MOT Plan when setting up, working under MOT and restoring lanes to traffic. Contractor shall also work with the Agency to coordinate MOT work and to adhere to

the Agency advance notice requirements for work in the lanes, both on a scheduled and emergency basis.

C-8.15 Reporting Requirements

The Agency and/or its representative shall have access to all Maintenance and service records at all times for review and audit.

C-8.15.1 Field and Shop Maintenance Records

The Contractor's Maintenance manager shall maintain current, complete, and accurate records for all field and shop Maintenance activities. The System shall generate a Trouble Failure Report (TFR) every time a Maintenance service (corrective or emergency) is performed. All preventative and predictive Maintenance activities shall be reported in the same manner as corrective or emergency Maintenance activities. The information shall be contained on the MOMS database.

The MOMS shall generate a summary report related to all Maintenance activities over a specified time period. This report shall include, but not limited to:

1. Type of notification;
2. System failure (Lane, Host, Network);
3. Location ID;
4. Lane #, if applicable;
5. Equipment failure and description;
6. Work or service performed;
7. Parts replaced, including serial numbers and other descriptions; and
8. Dates and times the action started and completed.

This summary report shall be generated monthly and distributed to the Agency.

C-8.16 On-Site Documentation

The Contractor shall maintain one (1) full set of all ORT System documentation including, but not limited to, as built drawings, toll equipment service manuals, computer manuals, financial audit and control manual, parts inventory lists and other data as may be required for record purposes. In addition, one (1) set of complete documentation shall be maintained at the Contractor's home office and one (1) set of complete documentation shall be maintained at the Agency's Headquarters.

The Contractor shall furnish all Maintenance personnel with appropriate System documentation as may be required to perform their respective duties. All System documentation shall be serially numbered and the assignment of all documentation to Maintenance personnel shall be recorded at the existing onsite location of the Contractor's local Maintenance support. The Contractor shall provide to the Agency a list of documentation assigned to Contractor personnel which shall be updated quarterly.

The documentation provided and/or assembled for the ORT System or Enhancements to the existing system to support the ORT System shall be considered highly confidential. The Contractor's employees

shall not reproduce the documentation or discuss the contents of the documentation with the Agency toll collectors or other unauthorized personnel.

The Agency will make available to the Contractor any relevant documentation that it maintains and that will assist in the Maintenance of the ORT System. However, the Agency will not guarantee the sufficiency, accuracy, or adequacy of any documentation provided.

The Contractor shall keep all documentation provided by the Agency current and usable for Maintenance of the ORT System.

C-8.17 Maintenance Performance Requirements

C-8.17.1 Maintenance Coverage and Response Times

Maintenance and Software Support Services shall be provided on a 24/7 basis. The 24/7 coverage shall be a combination of direct on site work hours and on call availability. The Contractor shall provide onsite personnel to the extent required to meet the Maintenance response times and any required preventative, predictive and corrective maintenance procedures. During those hours that a maintenance technician is not physically on site, coverage shall be performed via an on call basis.

The Contractor shall make every attempt to schedule potential ORT lane closure requirements outside of the peak traffic periods. Generally, peak travel times are applicable as indicated below but not limited to:

Between Labor Day and Memorial Day:

- Monday thru Thursday – No restrictions
- Friday – 2pm thru 7pm
- Saturday – 10am thru 4pm
- Sunday – 11am thru 7pm
- Holidays – 10am thru 8pm

Between Memorial Day and Labor Day:

1. Monday thru Thursday – 6am-9am and from 3pm-6pm
2. Friday – 9am – 9pm
3. Saturday – 8am – 7pm
4. Sunday – 9am – 10pm

In the event extended lane closures will be required to complete certain installation or Maintenance actions, such actions may have to be accomplished during night time hours. All lane closures are subject to the approval of the Agency.

The Contractor shall post a weekly schedule identifying personnel and times of who will be available on site for Maintenance activities. The schedule will also identify the personnel and times of who will be assigned on call for Maintenance activities. The Contractor shall provide to the Agency on a regular basis the updated schedule, active personnel list, and contact information.

Response and repair times for every Maintenance event shall be recorded and reported by the MOMS. Maintenance Response and Repair Times shall be provided in accordance with the reporting requirements of the Contract. The new MOMS shall be utilized that provides comprehensive reporting package that validates that the Contractor performance is in conformance with these Technical Requirements. The Contractor shall be accountable for meeting the response and repair times specified in this Contract, Required Performance Measures and Liquidated Damages Summary. Failure to meet the response and repair time criteria described above shall result in a penalty as specified in these Technical Requirements and in the terms of the Contract.

C-8.17.2 Performance Reviews

The Agency will conduct a review of the Contractor's performance on a monthly basis, utilizing all required System reports provided by the Contractor and reports generated and created by the MOMS and Host System. Performance reviews shall begin one (1) month after commencement of Maintenance and Software Support Services and will provide evaluation of the previous month of operation. Liquidated damages shall not begin to be assessed until the sixth month following the commencement of the Maintenance and Support Services, for the previous (fifth) month's performance.

C-8.17.3 Required Performance Measures and Liquidated Damages Summary

Contractor shall be required to meet Maintenance performance requirements that are detailed in this section. In addition to the Agency's other rights and remedies, the Agency may assess liquidated damages for failure to perform these Maintenance services, including, but not limited to, system performance, availability and mean time between failures, as further described in the in Table 3 and detailed further below:

Table 3: Summary Maintenance Performance Requirements

Performance Parameter	Sub-function	Performance Standard	Liquidated Damages
Time to Acknowledge	All Critical Mission Events	Acknowledge receipt of failure or priority event within sixty (60) minutes	$250 per occurrence
Individual Maintenance Event Repair Time	All Priority Events	Based on priority levels below.	$250 per hour per lane during peak hours and $125 per hour per lane off-peak.
Mean Time to Respond and Repair (MTTRR)	Critical Mission Response and Repair Time	Two (2) hour average repair time	$500 per occurrence For every additional delay of 24 hours an additional $100 per occurrence
	High Priority Response and Repair Time	Five (5) hour average repair time	$300 per occurrence For every additional delay of 24 hours an additional $100 per occurrence
	Medium Priority Response and Repair Time	Twenty-four hour average repair time	$100 per occurrence For every additional delay of 24 hours an additional $100 per occurrence
Mean Time Between Failures	Mean Time Between Failures for each Deployed	Exceeds calculated MTBF	$500 for each subsystem not meeting requirement

Availability	Deployed Lanes Availability	99.95% Availability	$500 for every .1% below requirement
	System Availability (ORT Host CPS and network)		
	DVAS Availability		
ORT Host CPS Processing	Transaction Processing	All lane transactions posted to the ORT Host database within one (1) calendar day of occurrence	$500 per day delayed per 1,000 transactions
	Transaction Processing	All transactions transmitted to the E-ZPass CPS within one (1) calendar day of occurrence (except for force majeure events)	
	Image Processing	All images transmitted to the VPC within one (1) calendar day of occurrence (except for force majeure events)	
	Transponder Status File Processing	All Transponder Status Files shall be transmitted to the zone and lane controllers within one (1) hour of receipt	
	Acknowledgement Files	All Files shall be transmitted to the within one (1) hour of receipt of original request	
Image Processing	Image Quality	Less than 20% of images that are rejected due to vendor adjustable attributes	$500 for every .1% above the requirement

In addition to the Agency's other rights and remedies, the Contractor shall also be responsible for damages associated with the loss of data and/or revenue for the failure of Agency's System. Such damages would include and are not limited to resources expended by the Agency resulting from failure of the Agency's ORT System as well as the value of any such lost data or revenue. Because this amount cannot be readily determined, liquidated damages shall be assessed for such failure. For every day in which the System fails to operate and revenue and/or data is lost due to the actions or inactions of Contractor, an amount equal to one thirtieth (1/30) of the monthly Maintenance fee and all lost revenue associated with the failure shall be assessed as liquidated damages against the Contractor. Revenue loss will be determined by the Agency, using data for comparable time periods where such loss cannot otherwise be directly determined.

Reports shall be developed by the Contractor to measure whether the performance standards have been met as noted in Section C-2.9. Where reports are used to measure performance, reports shall be generated by Contractor and provided to the Agency on a monthly basis, unless otherwise specified in the Contract. The reports shall be in a format approved by the Agency. The Agency shall have the right to audit Contractor and system records, date and reports to verify the accuracy of information provided, and if a discrepancy is found the Contractor shall pay the audit expenses.

C-8.17.4 Detailed Description of Performance Liquidated Damages

C-8.17.4.1 Acknowledgement Time

The Contractor shall acknowledge the receipt of notification of a Maintenance event or failure within sixty (60) minutes as defined in system Maintenance requirements.

- The acknowledgment time begins when the event is first reported and ends when the Contractor acknowledges the problem.
- The time does not include items that are classified as force majeure or duplicates.
- Damages begin to accrue after the first hour is exceeded, and each hour thereafter until the issue is acknowledged.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

C-8.17.4.2 Individual Maintenance Event Repair Time

The amount of time the Contractor has to make repairs is dependent on the priority and peak/off-peak travel times as defined in Section C-8.17.1.

- Repair time accounting begins when the event is acknowledged.
- The time does not include items that are classified as force majeure or duplicates.
- Damages begin to accrue after the repair time window is exceeded, and each hour thereafter until the issue is resolved.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

C-8.17.4.3 Mean Time to Respond and Repair (MTTRR)

The Contractor shall meet the required mean time to respond and repair (MTTRR). This requirement shall be measured for all deployed Sub-systems and Systems, in the month being reviewed, and shall be averaged over the month to determine if the Contractor has met the performance.

- The response time begins when the event is first reported and ends when the Contractor acknowledges the problem.
- Repair time accounting begins when the event is acknowledged.
- The time does not include items are classified as force majeure or duplicates.
- The Mean Time is determined by averaging all applicable events of the month being assessed.
- Response time damage assessment does not begin until and unless the Mean Time to Respond window is breached at which point all applicable events are included.
- The Repair time damage assessment does not begin until and unless the Mean Time to Repair window is breached for the particular priority/Peak-travel-time, at which point all applicable events are included.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

C-8.17.4.4 Mean Time Between Failures (MTBF)

The Contractor shall meet the required mean time between failures (MTBF). This reliability requirement shall be measured for each deployed subsystem identified in Section C-2.0. The measurement shall start upon commencement of the Maintenance task order and shall be taken for each month being reviewed;

however, for purposes of the liquidated damages assessment, performance shall be measured based on a cumulative and rolling average, including all previous months to determine the overall MTBF.

- MTBF shall be defined as:
  - Numbers of hours (days multiplied by 24) in time period multiplied by the number of deployed units of that subsystem, divided by the Number of Failures in the same time period for that subsystem.
- For every month that the Contractor does not meet the cumulative MTBF requirement, Contractor shall be subject to Liquidated Damages for each subsystem not meeting the MTBF.
- The time does not include items are classified as force majeure or duplicates.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

The reliability of the System components shall be calculated based on the following MTBF calculation:

MTBF = [(number of days x 24) x number of deployed units]/Number of Chargeable Failures

C-8.17.4.5 Availability

The Contractor shall demonstrate that both the ORT lanes, ORT Host and DVAS are operational and available to collect revenue.

- Events that contribute to Availability are those which had actual downtime.
- Have Mission Critical priority.
- Exceed Response time requirements and Exceed Repair time requirements.
- Calculated based on the number of available hours in the assessed month.
- Damages begin to accrue after the percentage of uptime requirement is breached and is calculated based on increments over the baseline amount.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

Calculations for Availability shall be the following calculation:

$$\textbf{Total \% Availability} = 100\% - \frac{\textbf{System Availability}}{\textbf{Hours System Not Available}}$$

C-8.17.4.6 ORT Host CPS Processing

All transactions/images/files and acknowledgement shall be processed and posted within the required timeframe.

- Transfers shall be acknowledged, validity and size verified.
- Damages begin to accrue after the time requirement is breached and is calculated based on increments of the number transactions represented by the files.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

C-8.17.4.7 Image Processing

The Contractor shall ensure that the images that are sent to the Back Office system are of quality that will allow license plates to be read by OCR and Human auditors. The Contractor shall ensure image

rejects from the Back Office that are for items that the Vendor controls such as camera settings, alignment, focus, contrast and lighting are assessed and appropriate adjustments made.

- Damages begin to accrue after the percentage of uptime requirement is breached and is calculated based on increments over the baseline amount.
- Refer to Table 3: Summary Maintenance Performance Requirements for specific amounts.

C-8.17.5 Annual ORT System Certification

Every year, after Commissioning for revenue collection, the Contractor shall perform an ORT System annual Certification Approved by the Agency for the ORT In-lane Systems and the ORT Host CPS. The Certification shall include, but not be limited to the following items:

- In-lane equipment tuning, alignments, adjustments, and/or calibrations;
- Computers, servers, and other data processing equipment performance and storage availability;
- Database Maintenance and availability;
- Network wiring and components;
- VES equipment;
- System reporting; and
- General System checkout.

Data for a twenty-four (24) hour period shall be collected and accuracy requirements verified. Discrepancies under the control of the Contractor shall be immediately corrected and verification provided to the Agency. The Contractor shall provide a detailed Annual Certification process for Approval by the Agency prior to executing the System Certification process. The Agency shall be notified not less than fourteen (14) calendar days prior to beginning the System Certification. The Agency shall monitor the test. The annual Certification process shall continue for the term of the Contract. NHDOT reserves the right to hold maintenance payments if the certification report is not received by October.

C-8.18 Security

C-8.18.1 Services and Work

All Contractors' personnel shall be subject to appropriate security and background checks to the satisfaction of the Agency. The Contractor shall obtain Approval from the Agency for all service personnel.

The services and work performed under the Contract are considered highly confidential. All employees of the Contractor shall not discuss their work with the Agency toll collectors, with other unauthorized personnel, or any individuals not directly associated with the Agency. Contact with Toll Collectors shall be limited to problem data gathering only and not solution audit information.

The Agency will identify and designate primary points of contact for the Contractor communications. Under most circumstances, the Contractor shall limit communication with the Agency to the Agency's designated points of contact.

Discussion of any services or work performed on the Agency toll system with the media, in oral presentations, in written publications or in any other form must be approved in advance by the Agency.

C-8.19 Confidentiality

The Contractor shall keep all information regarding its activities pursuant to the ORT System confidential and shall communicate such information only with authorized Agency personnel or the Agency designated representatives.

C-8.20 Data Migration

The Contractor shall provide full and complete migration of data from the legacy system to the new system. Full and complete migration shall mean all data.

The exact details of the data to be migrated shall be identified and defined in the approved Data Migration Plan.

Further, completion of all data migration shall mean that it has been successfully transferred to the new system, has succeeded in all validation requirements, and is being processed by the new system without fault, failure, or discrepancy.

C-8.20.1 Legacy System Data Migration Support

NHDOT's current ORT provider has been retained under the current Contract to provide data migration support to the new ORT System.

The Contract shall be advised that if in the course of the design, development or implementation it feels that any changes to the current ORT System, there may be the potential that data migration support efforts from the legacy provider are deviated from the scope of work. In such case the Contractor shall responsible for any additional costs to support the change in scope of work for data migration support from the legacy provider.

C-8.20.2 Data Migration Plan

As an initial step and key component to data migration the Contractor shall prepare a Data Migration Plan.

The Data Migration Plan shall provide a detailed and comprehensive approach to completing the data migration process ranging from initial analysis and design activities to final data validation and live system processing and operations.

The Data Migration Plan shall also define the data to be migrated over from the legacy system to the new.

At a minimum the Data Migration Plan shall address the following elements:

1. Background Statement – Overview of the project, a high-level description or design of the target system, and the impact of the migration to the success of the project.
2. Defined Scope – A clearly defined scope of efforts including expectations, assumptions, resource needs (internal and external), objectives, and production results.
3. Data – Definition of data to be migrated.
4. Out of Scope Items – Areas and aspects which are deemed out of scope or not necessary as part of the data migration process.
5. Success Criteria – The criteria for deeming migration successful. This shall include elements such as testing, validation, and that all migrated data fully complies and supports the target system's functionality.
6. Risk Factors and Mitigation – Identification of any potential risk factors and or mitigation efforts in achieving successful migration as per the success criteria.
7. Data Migration Management – This section of the Plan shall describe the approach that the Contractor shall implement to ensure effective migration.
8. Data Migration Delivery – This section shall detail the data analysis, migration design requirements, testing, and implementation efforts for data migration.

C-8.20.3 Data Migration Management

The Contractor shall provide a distinct focus on the migration activities throughout the course of the project.

As part of the Data Migration Plan, the Contractor shall provide details regarding how they shall manage, carry out, and deliver a successful data migration project.

Specifically these details shall address at a minimum:

1. Data Migration Team and Organization;
2. Migration Approach;
3. Required Deliverables;
4. Data Migration Tasks; and
5. Data Migration Schedule.

C-8.20.4 Data Migration Team

The Contractor shall identify the key personnel that would be part of the data migration effort. This should also include any required resource personnel external to the Contractor's team as well including any NHDOT staff and legacy system personnel.

At minimum the Contractor's data migration team personnel shall fulfill the following roles:

1. Migration Manager
2. Migration Architect
3. Migration Developer
4. Data Analyst
5. Systems Engineer
6. Quality Assurance

The Contractor may satisfy multiple roles by a single person; however, it must be clearly represented that there is no conflict in responsibility.

The QA Manager shall be independent of the other roles.

In addition to the Contractor roles, the plan shall also define the expected roles, personnel, and/or staff required from the legacy system provider and NHDOT, including the expected time commitments anticipated over the life of the data migration efforts.

C-8.20.5 Migration Approach

The Contractor shall provide a narrative approach to represent how the migration team shall conduct and complete the data migration project. This narrative shall explain, in detail, the various steps, including methodology, standards, and processes required to deliver a successful data migration.

Particular attention should be given to Quality Assurance and Control (QA/QC) within the approach description to ensure that each step of the process is integrated with quality processes or measures. This is especially important in understanding the full data models and supporting processes in both the source and the target systems.

Comprehensive data quality analysis and profiling shall be performed in the legacy system to fully gauge the level of data cleansing and transformation that shall be required to effect a solid, high-quality migration.

The approach shall also contain a detailed timeline of each event or task required to complete the data migration.

The timeline should focus on identification of tasks, durations, resources, and dependencies (both internal and external) that may affect progress.

C-8.20.6 Data Migration Required Deliverables

The Data Migration Plan shall also identify and define any deliverables that are needed as part of the data migration effort. These may include such items as:

1. Data Profiling Analysis
2. Data Migration Design Requirements
3. Data Mapping and Transformation Specifications
4. Configuration Management Process/Plan
5. Success Criteria
6. Data Validation Plan
7. Data Migration Test Plan and Procedures
8. Risk Assessment Matrix

C-8.20.7 Data Migration Tasks

C-8.20.7.1 Requirements Analysis

The Contractor shall conduct a requirements analysis as part of the delivery process.

This analysis shall begin with a data analysis of the legacy system where the Contractor shall work with the legacy provider to obtain a full snapshot of the legacy data. It is preferred that this snapshot be contained in a dedicated, separate environment that is isolated from any production environment for better in-depth analysis.

As a result, the data analysis shall provide the following:

1. Data to be migrated;
2. Data elements needed for migration (and those that are not);
3. Understanding of legacy data structure and data dictionary;
4. Identify gaps and transformations to meet new business rules and policies;
5. Identify data quality issues that may impact migration or functionality in the target system;
6. Identify interface needs and potential impacts; and
7. Identify historical version changes to the legacy system.

C-8.20.7.2 Specifications Development

In an effort to convey accurate expectations, the Contractor shall work with NHDOT to complete the requirements analysis. Based on this analysis, the Contractor shall then begin to develop detailed specifications for executing the data migration process.

As part the specification development, the Contractor shall work with the current Contractor and focus on such items as:

1. Identifying which legacy data to migrate
2. Mapping of legacy data to target system tables and columns
3. Definition of all data transformations to support the mapping requirements, especially with respect to domain sets
4. Identification of all data quality repairs or improvements to support target system functionality
5. Identification of assumptions and risk elements
6. New System Configuration Requirements
7. Identification of data elements, which may not be migrated
8. Identification of potential security impacts (i.e. changes in password standards)
9. Protecting Personal Identifiable Information (PII)

C-8.20.7.3 Development and Unit Testing

Development and performance of unit testing to verify migration strategies shall be performed by the Contractor, using a snapshot of the legacy database which has been isolated from any production environment.

The Contractor shall perform the migration efforts in accordance with the standard process of Extract, Transform, and Load (ETL). All data migration processes shall be based upon automated ETL processing and/or repeatable executable scripts. None of the processes shall use ad-hoc scripts or direct updates.

Both the legacy and new system environments shall also be isolated from any application development or testing to ensure the integrity of the data, test results, and processes.

The Contractor shall ensure that the production application is adequately synchronized with the pre-production system used during migration.

As necessary, the Contractor shall provide updates to any portion of the migration specifications document as a result of unit testing.

As unit testing and development are completed, the Contractor shall certify that the test procedures used are adequate for formal migration and validation.

The Contractor shall identify any discrepancies and or exceptions and subsequently refine the test procedures if necessary. Certification may include legacy and target system reports, screenshots, or other user interfaces that represent to NHDOT and any stakeholder that there is an accurate method to validate formal migration.

C-8.20.7.4 Formal Migration Testing and Validation

Formal data migration testing shall be accomplished over two distinct steps including an initial Trial Migration Test and Full Migration Test.

The intent of the Trial Migration Test is to identify any anomalies, inconsistencies, or other problems with the adequacy of the data migration and test procedures. Trial Migration testing shall be performed using a subset of data from legacy database as provided by and agreed to with the current Contractor, but with validation focusing on a predetermined subset of data for efficient detail comparison. In the event of any script or test procedure issues, the Contractor shall address these items and retest.

Once Trial Migration testing has been performed to an acceptable level as determined by NHDOT, the Contractor shall then begin Full Migration testing. Under this phase, the same full legacy database snapshot shall be used as with the Trial Migration test. However, focus shall be shifted to observing and recording the speed of execution, exercising the complete set of validation tasks, and identifying any remaining debugging efforts.

C-8.20.7.5 Implementation

Once both stages of migration testing have been successfully completed, the Contractor shall then begin the actual process of data migration from the legacy system to the new system.

As part of the Data Migration Plan, the Contractor shall describe the implementation strategy by identifying each task or effort required. Identification of these efforts shall be provided in a

comprehensive and tightly orchestrated document, with appropriate detail so as to minimize any potential for misunderstanding of the objective or directed intent.

The Contractor shall also clearly identify the expected or required resources to complete each task in the Data Migration Plan. This may include personnel, equipment, technologies, or any other internal/external resource.

The Contractor shall also clearly define the role and expected duty of each data migration staff resource.

The Contractor shall develop a check list and use it to systematically verify that each identified task is ready for migration.

As a supplement to the initial timeline provided as part of the Data Migration Plan, the Contractor shall prepare an updated detailed scheduled of events for completing the full data migration. The updated schedule shall contain information such as event dates, durations, dependencies, resources, staff, locations of staff, etc. The schedule shall also indicate any major milestones within the data migration process.

As the migration effort progresses, the Contractor shall document, track and prioritize any and all issues that may be encountered. This shall be in a punch list format. Resolution to any issue shall also be tracked within the punch list including reasons for failure/issue, steps taken to resolve the failure/issue, and scale of impact.

C-9 Information Technology Requirements

C-9.1 Operations

C-9.1.1 Secure Hosting Environment

The Contractor shall maintain a secure hosting environment providing all necessary hardware, software, and Internet bandwidth to manage the application and support users with permission based logins.

C-9.1.2 State Access

State access will be via VPN or Internet Browser.

C-9.1.3 Third Party Access

At the State's option, authorized third parties may be given limited access by the Contractor to certain levels of the State's system through the VPN or through a separate network connection that meets the Contractor's specifications.

C-9.1.4 Browser Version

The browser version must adhere to the current State of NH standard at the time of implementation, which is currently Internet Explorer 9. The State of NH does not support Flash or Java. The desktop version must be compatible with the current State of NH standard operating system, which is Windows 7 64-bit.

C-9.1.5 Internet Connectivity at the State

The State will be responsible for equipment, labor, and /or services necessary to set-up and maintain the internet connectivity at the State and/or other third party sites.

C-9.1.6 State Internet Service Provider

The Contractor will not be responsible for network connection issues, problems or conditions arising from or related to circumstances outside the control of the Contractor, ex: bandwidth, network outages and/or any other conditions arising on the State's internal network or, more generally, outside the Vendor's firewall or any issues that are the responsibility of the State Internet Service Provider.

C-9.1.7 Class A Data Center

The Vendor shall provide a secure Class A Data Center providing equipment (including dedicated servers), an on-site 24/7 system operator, managed firewall services, and managed backup Services.

C-9.1.8 Data Center Air Conditioning

Data Center Air Conditioning used to control temperature and humidity in the Data Center. Temperature ranges shall be between 68 º and 75 °F.

C-9.1.9 Data Center Humidity

Data Center Humidity shall be non-condensing and be maintained between 40% and 55% with a maximum dew point of 62 °F.

C-9.1.10 Data Center Back-Up Power

Uninterruptible power supplies shall be sized to sustain computer systems and associated components for, at a minimum, the amount of time it takes for a backup generator to take over providing power. Where possible, servers shall contain redundant power supplies connected to commercial power via separate feeds.

C-9.1.11 Data Center Generator

Data Center Generator shall be sufficient to sustain computer systems and associated components for, at a minimum, the amount of time it takes for commercial power to return. Fuel tanks shall be large enough to support the generator at -full load for a period not less than one and a half (1 ½) days of operation.

C-9.1.12 Data Center Floor

A raised floor is required for more uniform air circulation in the form of a plenum for cold air as well as to provide space for power cabling and wetness monitoring.

C-9.1.13 Data Center Fire Protection System

Fire detectors in conjunction with suppression gaseous systems must be installed to reduce the risk of loss due to fire.

C-9.1.14 Data Center Physical Security

The Data Center must be physically secured – restricted access to the site to personnel with controls such as biometric, badge, and others security solutions. Policies for granting access must be in place and followed. Access shall only be granted to those with a need to perform tasks in the Data Center.

C-9.1.15 Monitoring of Applications and Servers

The Vendor must monitor the application and all servers.

C-9.1.16 Management of Databases and Services

The Vendor shall manage the databases and services on all servers located at the Vendor's facility.

C-9.1.17 Server Patches

The Vendor shall install and update all server patches, updates, and other utilities within sixty (60) days of release from the manufacturer.

C-9.1.18 Monitoring System, Security and Application Logs

The Vendor shall monitor System, security, and application logs.

C-9.1.19 Sharing Data Resources

The Vendor shall manage the sharing of data resources.

C-9.1.20 Daily Back-Ups

The Vendor shall manage daily backups, off-site data storage, and restore operations.

C-9.1.21 Physical Hardware Monitoring

The Vendor shall monitor physical hardware.

C-9.1.22 Security Breach Notification to the State

The Vendor shall immediately report any breach in security to the State of New Hampshire.

C-9.2 Disaster Recovery

C-9.2.1 Disaster Recovery Procedures

The Vendor shall conform to adequate disaster recovery procedures as approved by the State of New Hampshire.

C-9.2.2 Disaster Recovery-Recovery of Lost State Data

The Vendor shall have documented disaster recovery plans that address the recovery of lost State data as well as their own. Systems shall be architected to meet the defined recovery needs.

C-9.2.3 Disaster Recovery Methods-Procuring Additional Hardware

The disaster recovery plan shall identify appropriate methods for procuring additional hardware in the event of a component failure. In most instances, systems shall offer a level of redundancy so the loss of a drive or power supply will not be sufficient to terminate services however, these failed components will have to be replaced.

C-9.2.4 Back-Up Schedule/Procedure

The Vendor shall adhere to a defined and documented back-up schedule and procedure.

C-9.2.5 Back-Up Copies

Back-up copies of data are made for the purpose of facilitating a restore of the data in the event of data loss or System failure.

C-9.2.6 Server Back-Up

Scheduled backups of all servers must be completed regularly. At a minimum, Bluehost servers shall be backed up nightly, with one (1) daily, one (1) weekly, and one (1) monthly backup stored in a secure location to assure data recovery in the event of disaster.

C-9.2.7 Frequency of Back-Up

The minimum acceptable frequency is differential backup daily, and complete backup weekly.

C-9.2.8 Back-Up Devices

Tapes or other back-up media tapes must be securely transferred from the site to another secure location to avoid complete data loss with the loss of a facility.

C-9.2.9 Data Encryption

If the State data is personally identifiable, the data must be encrypted in the operation environment and on the backup tapes.

C-9.2.10 Data Recovery

In the event that recovery back to the last backup is not sufficient to recover State Data, the Vendor shall employ the use of database logs in addition to backup media in the restoration of the database(s) to afford a much closer to real-time recovery. To do this, logs must be moved off the volume containing the database with a frequency to match the business needs.

C-9.2.11 Network Architecture

C-9.2.12 Hosting Services

The Vendor must operate the hosting Services on a network offering adequate performance to meet the business requirements for the State application. For the purpose of this RFP, adequate performance is defined as ninety-nine percent (99.0%) uptime, exclusive of the regularly scheduled maintenance window.

C-9.2.13 Redundant Network Connections

The Vendor shall provide network redundancy deemed adequate by the State by assuring redundant connections provided by multiple Internet Vendors, so a failure of one (1) Internet connection will not interrupt access to the State's application.

C-9.2.14 Internet Service Provider

Where redundant connections are not provided, then the Internet Vendor who provides the Internet service to the Vendor must have their service supplied by a provider(s) that has multiple feeds to ensure a failure in one (1) of the larger carriers will not cause a failure of the State's Service.

C-9.2.15 Redundant Network Architecture

The Vendor's network architecture must include redundancy of routers and switches in the Data Center.

C-9.2.16 Remove Access

Remote access shall be customized to the State's business application. In instances where the State requires access to the application or server –resources not in the DMZ, the Vendor shall provide remote desktop connection to the server through secure protocols such as a Virtual Private Network (VPN).

C-9.3 Hosting Security

C-9.3.1 Security Measures

The Vendor shall employ security measures ensuring the State's application and data is protected.

C-9.3.2 Encryption

If the State data is hosted on multiple servers, data exchanges between and among servers must be encrypted.

C-9.3.3 Servers and Device Requirements

All servers and devices must have currently-supported and hardened operating systems, the latest anti-viral, anti-hacker, anti-spam, anti-spyware, and anti-malware utilities. The environment, as a whole, shall have aggressive intrusion-detection and firewall protection.

C-9.3.4 Component Infrastructure

All components of the infrastructure shall be reviewed and tested to ensure they protect the State's hardware, software, and its related data assets. Tests shall focus on the technical, administrative and physical security controls that have been designed into the System architecture in order to provide confidentiality, integrity and availability.

C-9.3.5 Development/Maintenance of Code

In the development or maintenance of any code, the Vendor shall ensure the Software is independently verified and validated using a methodology determined appropriate by the State. All software and hardware shall be free of malicious code.

C-9.3.6 Notification of Security Breaches

The Vendor shall notify the State's Project Manager of any security breaches within two (2) hours of the time the Vendor learns of their occurrence.

C-9.3.7 Security Vulnerability Cooperation

The Vendor shall ensure its complete cooperation with the State's Chief Information Officer in the detection of any security vulnerability of the Vendor' hosting infrastructure and/or the application.

C-9.3.8 Security Breach

The Vendor shall be solely liable for costs associated with any breach of State data housed at their location(s) including but not limited to notification and any damages assessed by the courts.

C-9.3.9 Scheduled and Unscheduled Security Audits

The Vendor shall authorize the State to perform scheduled and random security audits, including vulnerability assessments, of the Vendor' hosting infrastructure and/or the application upon request.

C-9.3.10 System Security

The Vendor shall provide fire detection and suppression system, physical security of and infrastructure security of the proposed hosting facility. The environmental support equipment of the Vendor website hosting facility: power conditioning; HVAC; UPS; generator must be acceptable to the State.

C-9.4 Service Level Agreement

C-9.4.1 System Support and Maintenance

The Vendor's System support and maintenance shall commence upon the Effective Date and extend through the end of the Contract term, and any extensions thereof.

C-9.4.2 Hardware/Software Specifications

The Vendor shall maintain the hardware and Software in accordance with the Specifications, terms, and requirements of the Contract, including providing, upgrades and fixes as required.

C-9.4.3 System Hardware/Software

The Vendor shall repair or replace the hardware or Software, or any portion thereof, so the System operates in accordance with the Specifications, terms, and requirements of the Contract.

C-9.4.4 Hosting Server Availability

The hosting server for the State shall be available twenty-four (24) hours a day, seven (7) days a week except for during scheduled maintenance.

C-9.4.5 System Functionality

The Vendor will guide the State with possible solutions to resolve issues to maintain a fully functioning, hosted System.

C-9.4.6 Regularly Scheduled Maintenance

A regularly scheduled maintenance window shall be identified (such as weekly, monthly, or quarterly) at which time all relevant server patches and application upgrades shall be applied.

C-9.4.7 Training, Upgrades and Changes

The Vendor will give two (2) business day's prior notification to the State's Project Manager of all changes/updates and provide the State with the training due to the upgrades and changes.

C-9.4.8 Maintenance Window

The Vendor shall guarantee ninety-nine percent (99.0%) uptime, exclusive of the regularly scheduled maintenance window.

C-9.4.9 Change Management Policy

The Vendor shall use a change management policy for notification and tracking of change requests as well as critical outages.

C-9.4.10 Critical Outages

A critical outage will be designated when a business function cannot be met by a nonperforming application and there is no work around to the problem.

C-9.4.11 Hosting Infrastructure

All hardware and software components of the Vendor's hosting infrastructure shall be fully supported by their respective manufacturers at all times. All critical patches for operating systems, databases, web services, etc., shall be applied within sixty (60) days of release by their respective manufacturers.

C-9.4.12 Maintenance Records

The Vendor shall maintain a record of the activities related to repair or maintenance activities performed for the State and shall report quarterly on the following: Server up-time; all change requests implemented, including operating system patches; all critical outages reported including actual issue and resolution; and number of deficiencies reported by class with initial response time as well as time to close.

C-9.5 Application Requirements – Technical and Application Security

C-9.5.1 Graphical User Interface Technologies

The Solution must use Graphical User Interface Technologies.

C-9.5.2 Client Solution

The Solution must support this client - Microsoft Win7, Office Professional Version 2010, and Internet Explorer 9+.

C-9.5.3 Version Control

The Solution must use a version control system for code management.

C-9.5.4 JAVA

The Solution must not require JAVA.

C-9.5.5 Authentication of System Client Application

Verify the identity or authenticate all system client applications before allowing use of the system to prevent access to inappropriate or confidential data or services.

C-9.5.6 Authentication of System Users

Verify the identity or authenticate all of the system's human users, before allowing them to use its capabilities, to prevent access to inappropriate or confidential data or services.

C-9.5.7 User Names

Enforce unique user names.

C-9.5.8 Password Complexity for Administrator Accounts

Enforce complex passwords for Administrator Accounts of ten characters or more in accordance with DoIT's statewide *User Account and Password Policy.*

C-9.5.9 Password Complexity for General Users

Enforce the use of complex passwords for general users using capital letters, numbers, and special characters in accordance with DoIT's statewide *User Account and Password Policy.*

C-9.5.10 Password Encryption

Encrypt passwords in transmission and at rest within the database.

C-9.5.11 Password Expire Requirement

Expire passwords after 90 Days.

C-9.5.12 Client Application Security

Authenticate users and client applications to prevent access to inappropriate or confidential data or services.

C-9.5.13 Authorization Credentials

Provide ability to limit the number of people that can grant or change authorizations.

C-9.5.14 Enforcement of Session Timeouts

Establish ability to enforce session timeouts during periods of inactivity.

C-9.5.15 Prevention of Critical Application Security Flaws

Ensure application has been tested and hardened to prevent critical application security flaws. (At a minimum, the application shall be tested against all flaws outlined in the Open Web Application Security Project (OWASP) Top Ten (http://www.owasp.org/index.php/OWASP_Top_Ten_Project)).

C-9.5.16 Authentication of Credentials

The application shall not store authentication credentials or sensitive Data in its code.

C-9.5.17 Audit Attempted Access

Audit all attempted accesses that fail identification, authentication, and authorization requirements.

C-9.5.18 Application Log Activities

The application shall log all activities to a central server to prevent parties to application transactions from denying that they have taken place. The logs must be kept for three (3) years.

C-9.5.19 Application Termination of Session

The application must allow a user to explicitly terminate a session. No remnants of the prior session should then remain.

C-9.5.20 Software and System Use

Use only the Software and System Services designed for use.

C-9.5.21 Application Data

The application Data shall be protected from unauthorized use when at rest.

C-9.5.22 Data Communications

Keep any sensitive Data or communications private from unauthorized individuals and programs.

C-9.5.23 Application Enhancements

Subsequent application Enhancements or upgrades shall not remove or degrade security requirements.

C-9.5.24 Change Management Documentation and Procedures

Create change management documentation and procedures.

C-9.6 End of Contract Term Transition

C-9.6.1 End of Term Transition

Transition activities of this Contract shall overlap with start-up activities for a Successor.

The Contractor shall meet the following requirements for transition of all or part of the production ORT operations. The transition shall take place within one-hundred-eighty (180) Calendar Days of notification from NHDOT.

C-9.6.2 Transition Requirements

The Contractor shall confer and cooperate with the Successor to determine the activities required to transition the ORT Systems in an orderly manner and to allow the transition to occur without interruption of services or operations under the existing Contract.

The Contractor shall designate a Transition Manager who shall serve as the single point of contact for transition related activities.

Within one hundred twenty (120) Calendar Days of notification from NHDOT of its intention to transition to the Successor, the Contractor shall develop the Transition Plan and Data Migration Plan per the requirements noted ion Section C-8.20.2.

The Contractor shall develop, seek NHDOT Approval for, and manage an issue resolution process for the transition.

NHDOT may request that certain transition related documentation or functions be transferred to the Successor before the final transition date. The Contractor shall respond to such requests from NHDOT within ten (10) Calendar Days. Additionally the Contractor shall provide database design information and access to the Successor for the ORT System.

The Contractor shall provide sufficient System and maintenance experienced personnel during the entire transition period to ensure that the qualities of services are maintained at the levels required by the Contract.

The Contractor shall review and update ORT System related business processes, procedures, database, business rules, and related documentation as a part of the transition process. The Contractor shall add any missing information and correct any deviations from current operating protocol and route to NHDOT for review and approval per current Contract requirements.

C-9.6.3 End of Term Transition Plan

Prior to the start of operations, the Contractor shall develop and submit an End of Term Transition Plan for NHDOT review and approval. The End of Term Transition Plan shall describe the steps the Contractor shall take to support transition of the Contractor's Services in two specific situations as follows:

1. End of Contract Termination -This component of the End of Term Transition Plan shall describe the approach the Contractor shall take to support the transition to the Successor due to the end of the Contract term. The Contractor's plan shall include a timeline for supporting the start-up of such an effort, the lead times required by the Contractor, the Contractor resources required, and any assumptions underlying the resource estimates.
2. Early Termination -This component of the End of Term Transition Plan shall describe the steps the Contractor shall take to transition the ORT System to another entity upon receiving notification from NHDOT of its intent to terminate the contract. This plan shall include a detailed outline of the phase-out period, the time period during which equipment or Systems shall be removed or Services terminated, due to Contract termination. The period of transition shall not exceed six (6) months and shall include planning, documentation, data migration, training, and completion of the transition.

The plan shall describe how the Contractor shall meet with replacement Staff or contractors to facilitate handover of all NHDOT data maintained in the System and any other information and property of NHDOT. The plan shall demonstrate how the Contractor shall ensure there are no disruptions to the ORT System.

NHDOT may instruct the Contractor to modify the End of Term Transition Plan from time to time to ensure this provision for seamless operations is met. The Contractor shall update its End of Term Transition Plan as appropriate and resubmit it for review and approval by NHDOT annually or after material changes in the Contractor's System, architecture, location(s), or operations (including contracted Services).

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TABLE C-1: RESPONSIBILITY MATRIX

Item	Element / Task / Component / Sub-system Description	ORT System Integrator			NHDOT			Civil Contractor			Civil Designer			Comments and Other Responsibilities / Information [1]
		1	2	3	1	2	3	1	2	3	1	2	3	
1	Overhead ORT structure (Gantries)	B	C	B	B	B	B	C	A	A	A	B	B	NHDOT and System Integrator will provide preliminary design requirements; civil designer will complete design, Civil Contractor will furnish shop drawings and install overhead structures. System Integrator shall review and approve civil designer design and Civil Contractor shop drawings related to toll equipment.
2	ORT Lanes Roadway Infrastructure	B	C	C	B	C	C	C	A	A	A	C	C	Civil designer to layout the ORT roadway infrastructure according to geometric requirements of plaza. System Integrator shall provide ORT Zone layout of loops, conduit and pull boxes to the Civil Designer. . System Integrator shall also review and approve the ORT Zone layout as required during construction.
4	ORT Toll equipment plus Mounting hardware	A	A	A	B	B	B	C	C	B	B	B	B	System Integrator shall provide design specification for equipment mounts, and furnish and install all mounting brackets, hardware and all toll system equipment
5	ORT AVI -Antennas and Readers, Mounting hardware	A	A	A	B	B	B	C	B	B	B	B	B	System Integrator shall provide and install *E-ZPass* Group compliant AVI equipment per the quantity identified by the System Integrator's design to satisfy the toll system requirements specified.
6	Signage, sign supports, and mounting	C	C	C	B	B	B	C	A	A	A	B	B	Civil Contractor will be responsible for all signage related activities.
7	Toll collection system equipment enclosures and equipment mounting pads/spaces	B	A	A	B	B	B	C	A	A	A	B	B	Civil Contractor shall provide mounting space for equipment enclosures, to include the template of required footprint and conduit per the Contractor's design input.
8	Power from Drop to ORT Enclosures	B	A	A	B	B	B	C	A	A	A	B	B	Civil Contractor shall be responsible for providing the prime power and the electrical connectivity (including conduit and panels) between the demarcation and the enclosure service panels at the plaza or in the plaza tunnel for the System Integrator. System Integrator shall provide the power from their service panel to Zone controller, UPS, Host etc.
9	Toll collection equipment conduits or ducts and junction/pull boxes from shelter/enclosure to gantry and lane equipment.	A	B	B	B	B	B	C	A	A	A	B	B	Civil Contractor is responsible to provide conduits between the equipment enclosure locations to the gantries and to all equipment installed in the lane. System Integrator to provide specifications for the required conduit.
10	Toll Equipment Cable and Wiring	A	A	A	B	B	B	C	C	C	B	C	C	The System Integrator shall furnish and install all cables and wiring required to fully connect and operate the Toll System with the exception of the power supplied by the Civil Contractor under Item #7.
11	Toll System Design/installation drawings	A	A	A	B	B	B	C	C	C	B	B	B	The System Integrator shall provide all design drawings and documentation required for the installation of the Toll System to the civil designer and shall review and approve civil designer's design and Civil Contractor shop drawings.
12	Toll System Network components	A	A	A	B	B	B	C	C	B	B	C	B	The Toll System Integrator shall furnish and install any network wiring or devices to interconnect with the appropriate LAN or WAN system.
13	ORT HOST (Central) Processing System hardware	A	A	A	B	C	B	C	C	B	B	C	B	The System Integrator shall furnish and install all Host computers, servers, and other required processing components as required to upgrade the system.
14	UPS - Equipment	A	A	A	B	C	B	C	B	B	B	B	B	The System Integrator shall furnish and install additional Plaza UPS (if needed) for ORT Toll Equipment per System Integrator specifications.
15	Maintenance of Traffic for ORT Toll Collection System Installation	B	C	B	B	B	B	B	A	B	A	B	B	The System Integrator shall provide input to civil designer for MOT plan requirements and System Integrator shall furnish all MOT for toll equipment related installation and testing.
16	Maintenance of Traffic for Gantry Installation and related Civil Work	C	C	C	B	B	B	C	A	A	A	B	B	The civil designer shall design typically MOT plans for the work and Civil Contractor shall furnish all MOT for roadway, gantry, and other civil work. Final detailed MOT packages shall be submitted by the Civil Contractor to NHDOT for approval.
17	Toll plaza design and construction permits (not related directly to toll system equipment design or installation)	C	C	n/a	B	B	n/a	C	C	n/a	A	A	n/a	The civil designer shall be responsible for obtaining the required permits for the design of the toll plaza infrastructure modifications.
18	FCC licenses and permitting for ORT toll system	B	B	n/a	A	A	n/a	C	C	n/a	C	C	n/a	System Integrator shall be responsible for identifying requirements for and obtaining all required permits or licenses related specifically to the toll system design or installation. System Integrator shall be responsible for updates to or new licenses and permits if needed.

Legend:

A = Primary Responsibility - The identified party has the primary responsibility for completion of the item	1 = Design
B = Support / Coordination -The identified party provides either support or coordination to assist the primary responsible party with successful completion of the item	2= Procurement
C = No Responsibility - The identified party has no action for the item	3 = Installation and/or Construction

Note 1: System Integrator shall be responsible for the performance of the System upon such approval, in accordance with the Contract Documents.

APPENDIX D: TOPICS FOR MANDATORY NARRATIVE RESPONSES

Contractors must provide narrative responses to each of the information requests and questions listed below. These responses should be included in Section IV of the Proposal and should be identified by the sub-section (question) numbers referenced below:

D-1 Equipment Reuse/Transition Plan

With the understanding that the primary objective is provide a cost effective and reliable solution to both maintenance and upgrades to the current ORT, please provide details as to your proposed approach for establishing and carrying out maintenance activities while at the same time providing ORT upgrades, replacement and/or modifications. Details shall specifically address such issues as equipment reuse, replacement and subsequently the plan for future replacement of reused equipment to maintain adequate system availability.

The Transition Plan shall, at a minimum, include the assumption of operations over existing ORT and new locations, operational requirements, maintenance requirements, interfaces, communications and network and/or equipment installation for the ORT Plaza/Host System and its interface to either the Central Host System or *E-ZPass* CSC. The installation, Commissioning and Acceptance of ORT in-lane equipment, the transition (where applicable) to ORT Operations and the System Acceptance shall also be addressed.

The ORT System Transition activities shall be coordinated with the existing service providers and Approved by the Agency in order to not interfere with on-going and continuing Agency Maintenance and operational requirements. It is critical that customers are not impacted during the transition to the new ORT System.

D-2 Data Migration Strategy

Discuss your understanding and proposed approach in achieving successful data migration from the legacy system to the new system. Specifically address, at a minimum, the following:

1. Data migration methodology and schedule;
2. Processes, steps, tools required;
3. Experience with similar data migration efforts;
4. Testing & Data Validation;
5. Resources and dependencies (i.e. from the legacy Contractor);
6. External resource needs; and
7. Risk identification and mitigation strategies.

D-3 ORT System

Discuss your understanding and proposed approach in implementing the ORT Lane system. Specifically address, at a minimum, the following:

1. Describe your proposed vehicle classification subsystem design and/or logic and how it will achieve the Agency's accuracy requirements.

2. Describe how the proposed classification subsystem addresses the requirement to classify dual tire vehicles including processing rules and any perceived challenges.
3. Describe the vehicle Framing Logic that allows the System to meet the Agency's accuracy requirements, especially regarding minimum separation requirements.
4. Describe the Transaction Processing Logic that allows the System to meet the Agency's accuracy requirements.
5. Describe the processing of images that allow the System to meet the Agency's accuracy requirements. Include image sizing details.
6. Describe your proposed OCR solution.
7. Describe the processing of vehicle straddling lanes and travel on the shoulder.
8. Identify the proposed AVDC System and how it meets the Agency's accuracy requirements. Describe how the proposed AVDC System addresses the requirement to classify dual tire vehicles. Further, describe how the redundancy requirements related to vehicle detection are met and how the AVDC System will function in a degraded mode operation.
9. Provide details on the Kapsch interface and integration and how the Agency's AVI requirements are satisfied. Where possible, provide a discussion of how interface and integration has been handled on previous projects.
10. Describe how the System will operate in degraded mode. Specifically, detail how the System will operate to ensure revenue stream is protected when each of the major components (including lane controller) fails.
11. Provide a description of the proposed System bandwidth requirements with back-up details and a diagram of the proposed System network architecture that presents all of the (toll system) Local Area Network (LAN), including Proposer's Design for redundancy to meet the network requirements in accordance with (scope of work).
12. Provide details of the System's ability to handle single point of failures within each subsystem and handling of degraded mode operations and their impact on transaction processing and toll revenue shall be explained.
13. Explain the Proposer's solution and the flexibility in the Design to address national Interoperability requirements relating to inclusion of multiprotocol readers and/or the inclusion of multiprotocol transponders; modifying and adapting the Design to incorporate new readers, antennas types and locations, and supporting the transition to the new interoperable solution with limited interruptions to the revenue collection.
14. Describe the proposer's approach to providing redundancy, data resiliency and high availability.

D-4 Roadway Design

Discuss your understanding and proposed approach in the Roadway Design. Specifically address, at a minimum, the following:

- Address any roadway design or construction constraints or requirements associated with the installation, testing and operation of your proposed System, including but not limited to, choice of

roadway surface materials, roadway reinforcement placement and materials, and overhead gantry structure requirements. Also, specifically address:

- Provide the minimum length of drivable roadway surface needed upstream and downstream of gantry location required for conducting the OFIT and Commissioning activities prior to opening to traffic.
- The proposed roadway surface to be provided in the immediate area of the toll gantries (and for the AVDC installation) will be Portland Cement Concrete. Provide, to the extent possible given AVDC design assumptions at this stage, any pavement or subsurface related design requirements of your proposed System, including the extent of final surface installed prior to handover of the site for System installation and any pavement or subsurface material requirements (such as but not limited to, pavement reinforcement limitations and metallic object considerations).
- Provide, to the extent possible given design assumptions at this stage, the functional requirements of the toll gantries (provided by others). Such functional requirements would typically include but not be limited to, equipment loads and locations, mounting requirements, overall structure frequency and stiffness requirements, and minimum deflections.
- For overhead structure designs:
    - (i) Provide physical location requirements (transversely, longitudinally and vertically) for all (toll system) components to be located on the overhead structure. Spatial location requirements for each component shall be provided relative to the whole of the proposed (toll system) and at least one element of the physical roadway for transverse and vertical dimensions (such as edge of shoulder, edge of travel way, pavement surface). Longitudinal dimensions shall reference the first element of the (toll system) in the direction of travel or some other similar, readily referenced feature of the proposed (toll system).
    - (ii) Provide the range and typical physical mounting requirements for all (toll system) components required as part of the proposed solution to be mounted on the overhead structure. Physical mounting requirements shall include the type, size and configuration of hard mounting points on the mounting arms/overhead structure to which the proposed toll system component would typically mount either directly or via a typical mounting bracket. An example of a typical hard mounting point would be a metal pipe of a specified diameter.
- Provide requirements for in-pavement sensors and any other subsurface requirements, including requirements for pavement materials, extents, or similar. Examples of other subsurface requirements may include but are not limited to, restrictions on metallic features within proximity of pavement sensors.
- Provide direction to civil designer for space requirements for Equipment racks and cabinets mounted within the toll equipment building. Include drawings of all Equipment and servers that will be installed within the equipment racks/toll equipment building.

D-5 Physical Changes

Provide drawings or schematics for all lane modes that detail any new or proposed changes to current equipment and components with respect to mounting requirements, including equipment/component layout within the lane, booth and or plaza.

D-6 Integration with Readers

This project includes integration of the Kapsch JANUS® readers. Describe your experience handling multi-protocol readers, including up to three (3) protocols and your experience with E-ZPass.

D-7 Degraded mode operation

For each of the lane modes of operation describe how the lane subsystem(s) will operate in degraded mode and or levels of degraded mode. Specifically, detail how the ORT will operate to ensure accuracy and accountability of revenue if a failure of such items as overhead scanners, ETC subsystem, lane controller, VES subsystem, etc. occurs.

D-8 DVAS Solution

Provide details on the proposed DVAS solution, specifically the ability to be integrated with the ORT user interface, and general capabilities and installation requirements. Provide details on challenges and or expectation related to required bandwidth and networking improvements, which may be required to support DVAS.

D-9 MOMS Implementation

Discuss your proposed Maintenance-On-Line Management System (MOMS):

- Explain how equipment and process failures of the ORT will be tracked through MOMS in real time. Further explain how, through the use of MOMS and established procedures the Contractor would address and rectify issues/problems.
- Discuss your proposed Maintenance-On-Line Maintenance System (MOMS) and explain how equipment and process failures for the ORT System will be tracked through MOMS.
- Describe maintenance notification and ticket tracking process for the ORT System.

D-10 Network Architecture Drawings

Provide drawings or schematics detailing the network architecture layout, including all connections to external interfaces and existing Lane System components. Also provide a narrative discussion on the estimated and proposed (if necessary) changes to the network architecture including bandwidth requirements.

D-11 Test

Discuss your Test Plan approach; how system testing is conducted, and specifically what tests, test functions, and test methods are being proposed to ensure the proposed System meets the requirements of the Agency. Also, please discuss your requirements for on-site testing, including any required participation by the Agency or other parties and distance requirements for

accelerating and stopping required (number of feet upstream and downstream of gantry location) to test the ORT System at the toll location. Provide a sample Test Plan.

D-12 Software Ownership

Describe your proposed Terms and Conditions for ownership or licensing of the System Software given the Agency's requirements noted Appendix H of the RFP. Contractors should be aware that the Agency's ability to own, operate, maintain and adapt the Software beyond the base requirements will be an evaluation criteria. Specifically address:

- What Software, if any, will be provided to the Agency with a perpetual, royalty free, non-exclusive license to allow the Agency to use, operate translate, reproduce, modify (including potential modification and/or maintenance by a third party), and adapt for its own purposes upon any event of termination, cancellation or conclusion of the Contract?
- What System Software, if any, including that developed exclusively for the Agency will be owned by the Agency?
- What third party Software is being proposed?

D-13 Timely Delivery

Discuss the approach to delivering the System in the timeframe specified, highlighting the major challenges and issues and how these will be addressed. Wherever possible, discuss examples of previous projects your team has worked on where similar challenges were encountered and how they were addressed. Discuss what efforts are required of the Agency or other third parties in order to meet the required opening date and what conditions, if any, must be met in order to meet the opening date.

With consideration of the delivery deadlines and potential penalties for late delivery, provide details on your document management approach to ensure timely submittal of documentation.

D-14 Security

Please provide a plan outlining the security features of your proposed solution. This plan should include, but not be limited to the following topics:

- How do you plan to secure both wired and wireless implementations?
- What level encryption do you plan to implement on the wired and wireless implementation?
- How are end-users and administrators authenticated to your product?
- How do end-users and administrators gain access to reports, data sets, etc. (e.g. via roles)?
- Fully describe how reports and data are protected from unauthorized users.
- Describe how row-level access to the data is attained.
- What level of encryption is used on passwords, data, reports, etc.?
- How will your architecture interface with the State firewall?
- How does any web-based client differ in terms of security from the standalone client?
- How will your proposed solution be isolated from your other customers?
- How do you identify and address security violation or intrusions?

- Describe the identification and authentication methods used to ensure that users and any interfacing applications are identified and that their identities are properly verified.
- Describe the authorization methods used to ensure that users and client applications can only access Data and services for which they have been properly authorized.
- Describe the immunity methods used to ensure that unauthorized malicious programs (e.g., viruses, worms and Trojan horses) do not infect the application.
- Describe the methods used to ensure that communications and Data integrity are not intentionally corrupted via unauthorized creation, modification or deletion.
- Describe the testing methods conducted to load and stress test your software to determine its ability to withstand Denial of Service (DoS) attacks.
- Describe your Software patch schedule employed to protect the Software from new security vulnerabilities as they arise.

D-15 End-User System Access

Discuss the ORT functional capabilities for allowing authorized end users (NHDOT, Contractor Operations Staff, etc.) to easily view via such interfaces as:

- A dashboard landing page, etc., the lifecycle of accounts, conversions, transactions; images;
- Violation notices; correspondence, and payment processing events, including all applicable workflow progressions;
- Escalations;
- Processing via external interfaces;
- Processing via filters and identification of filter results;
- Quality control steps;
- Identification of all System processes involved in the processing; and
- Tracking of user names associated with all manual processing, and time stamps associated with each step.

D-16 Project Delivery Approach

With the understanding that the primary objectives of this procurement are to provide a new ORT, system administration, operation, maintenance and migration of data from the existing ORT, please provide details as to your proposed approach for establishing and carrying out development activities, data migration and cutover to the new ORT.

Provide a draft Schedule. Discuss the approach to delivering the ORT in the timeframe specified, highlighting the major challenges and issues and how these will be addressed. Wherever possible, discuss examples of previous projects your team has worked on where similar challenges were encountered and how they were addressed. Discuss what efforts are required of the Agency or other third parties in order to meet the required opening date and what conditions, if any, must be met in order to meet the opening date.

- Identify timeframes for major milestones, including timing for discontinuing legacy Systems;
- Discuss cost implications of the plan, including implications on maintenance fees; and

- Address the level of risk associated with the plan.

D-17 Ad-Hoc Reporting

In this Software Solution, the State seeks capability to produce ad-hoc reports from the production System. Provide an overview of the ad-hoc reporting capability to be provided in the proposed Solution. If a third-party tool is employed, identify and describe the tool. Discuss capability, sophistication, and ease of use, including training required.

D-18 Warranty & Maintenance

Describe your approach to providing system Warranty and Maintenance. Define what basic software maintenance is included in the annual maintenance cost and further what upgrades and Enhancements are to be included in the annual maintenance cost. Additionally, describe specifically what upgrades or Enhancements would not be included in the annual maintenance cost and would be subject to a Change Order to the Contract. Finally, the Contractor shall identify the software maintenance processes and methods for monitoring, tracking, performing and reporting on all software versions, updates and patches.

D-19 Architecture & Design

Provide a description of the technical architecture of the proposed Solution. The following topics, at a minimum, should be addressed:

- Is the proposed Software based upon an n-tiered, browser-based architecture?
- Does any part of the proposed Solution require Software (other than a browser) to be installed on the client workstation? If yes, describe Software that must be installed and the access authorization level required to install it.
- Is the operating System and the database platform a supported configuration of the proposed System?
- Are there any components of the System that must reside on another platform?
- What application servers are used to support the proposed Solution?
- What add-on or third-party Software is required to support the functionality desired by the State?
- What programming languages are used for development, configuration, and customization of the proposed Solution?
- What components of the software, such as middleware, are proprietary?
- What is the growth potential of the proposed System?
- What is the timeframe for technical obsolescence of the proposed Software? (For the purpose of this question, the version of the proposed Software would be considered obsolete when support is no longer available.)
- What type of staffing is typically required to support the proposed product for a client of the size and complexity of the State of New Hampshire? (Discuss both number of staff and skills required.)
- When was the core software written?

D-20 Backup and Disaster Recovery

The State seeks a sound backup and disaster recovery provision as part of the Solution. Describe the tools used for backup and disaster recovery of applications and data. Describe the impact of the proposed backup process on the operation of the System. Also, address the following:

- Use of and method for logging and journalizing;
- Single points of failure and recommended approaches for their elimination;
- Approach to redundancy; and
- Impact of Software license fees.

D-21 Availability

Explain how the proposed System meets or exceeds the Agency's availability requirements for existing systems as well as new and future systems. Provide examples of past performance wherever possible.

APPENDIX E: STANDARDS FOR DESCRIBING CONTRACTOR QUALIFICATIONS

Contractor qualifications are important factors in selecting a qualified firm. To facilitate evaluation of Contractor qualifications, the Agency seeks information about:

- Corporate qualifications of each Contractor proposed to participate in the Project;
- Proposed team organization and designation of key staff;
- Individual qualifications of the candidate for the role of Project manager; and
- Individual qualifications of candidates for other key staff roles. This appendix identifies specific information that must be submitted.

E-1 Required Information on Corporate Qualifications

Information is required on all Contractors that will participate in the Project. Contractors submitting a Proposal must identify all Subcontractor(s) to be used.

E-2 Contractor and Subcontractors

The Contractor submitting a Proposal to this Project must provide the following information:

E-2.1.1 Contractor and Subcontractor Overview

Using Form 3 in Appendix J, Contractor and Subcontractor Information Statement, provide the requested information for the Contractor and all Subcontractors (2 page limit).

E-2.1.2 Financial Strength

Provide the following:

- The current Dunn & Bradstreet report on the firm;
- The firm's two (2) most recent audited financial statements; or
- The firm's most recent un-audited, quarterly financial statement.

E-2.1.3 Past Performance

Using Form 5 in Appendix J:, Past Performance, identify and describe any litigation, dispute proceedings and arbitration proceedings related to performance in which any principle participant or Subcontractor has been involved in the past ten (10) years. Discuss merits, current status and, if available, outcome of each matter.

E-2.1.4 Reference Projects

Using Form 6 in Appendix J: Contractor Reference Project, provide descriptions of a minimum of three (3) most recent projects of a similar nature to this Project that includes both implementation and maintenance. An additional project description may be included at Contractor's option.

E-2.1.5 Key Staff References

Using Form 7 in Appendix J: Key Staff References, provide descriptions of a minimum of one (1) project of a similar nature and where a similar role was fulfilled to this Project for each key staff person

identified below in Team Organization and Designation of Key Contractor Staff identified. An additional project description for key staff may be included at Contractor's option.

E-3 Team Organization and Designation of Key Contractor Staff

Provide an organizational chart depicting the Contractor Project team and Project organization. This chart shall identify specific key staff of the Contractor, any Subcontractors, and the Agency roles and shall identify all positions at least one (1) level below key staff.

Define the responsibilities, length of assignment, the percentage of time that the resource will be dedicated to this Project for that length of assignment and whether the resource is local (does not require travel expenses when working on the Project) for each of the roles depicted in the organizational chart. Key staff who must be identified by name include:

1. Project Principal;
2. Project Manager;
3. Quality Assurance Manager;
4. Assistant Project Manager;
5. Installation Manager; and
6. Maintenance Manager.

A single team member may be identified to fulfill the staff requirement in multiple areas, with the exception of Project Manager.

E-4 Candidates for Project Manager, Installation Manager and Maintenance Manager

Qualifications of the Project Manager are particularly critical. Therefore, the Agency requires that the Project Manager be clearly identified.

The Agency requires that the Project Manager and Installation Manager be assigned full time, on site for the duration of installation of the Project. The Maintenance Manager shall be assigned full time, onsite from go live through Provisional Project Acceptance.

For the Project Manager candidate, provide a resume not to exceed three (3) pages (does not count towards overall page limit) in length addressing the following:

- The candidate's educational background;
- An overview of the candidate's history;
- The candidate's project experience, including project type, project role and duration of the assignment;
- Any significant certifications held by or honors awarded to the candidate; and

- At least three (3) references, with contact information that can address the candidate's performance on past projects.

Candidates for Key Contractor (Excluding Project Manager) Staff Roles

Provide a resume not to exceed two (2) pages (does not count towards overall page limit) in length for each key Contractor staff position on the Project team. Each resume should address the following:

- The individual's educational background;
- An overview of the individual's history;
- The individual's project experience, including project type, project role and duration of the assignment;
- Any significant certifications held by or honors awarded to the candidate; and
- At least three (3) references, with contact information, that can address the individual's performance on past projects.

APPENDIX F: PRICING WORKSHEETS

Contractors shall complete the Pricing Worksheet forms that are included as a separate Excel Workbook (See Form 10 in Appendix J) in their entirety using the Price Proposal Instructions Sheets.

A Contractor's Cost Proposal must be based on the worksheets formatted as described in this Appendix.

F-1 General Instructions

The Proposed Price Proposal shall be completed in accordance with the following instructions:

1. The Proposed Price Proposal shall be submitted on the Price Proposal Forms included in RFP Appendix J.
2. The Price Proposal Forms shall constitute the full and complete Price Proposal for compensation for performance of the Contractor's obligations and Work under this Project.
3. The Price Proposal Forms must be completed in their entirety. The Price Proposal Forms for the Project are as follows:

    - Project Summary Sheet (Sheet 1)
    - Detail Cost Sheets (Sheet 2), (2-1 thru 2-7):
        i. Sheet 2-1: Design, Testing and Implementation
        ii. Sheet 2-2: Bedford Hardware Cost
        iii. Sheet 2-2a: Spare Parts List
        iv. Sheet 2-3: Bedford Civil Cost
        v. Sheet 2-4: Warranty and Maintenance
        vi. Sheet 2-5: Dover ORT including Maintenance Cost
        vii. Sheet 2-6: Rochester ORT including Maintenance Cost
        viii. Sheet 2-7: Future Cost
    - Direct Labor Rates (Sheet 3)

2. Do not fill in any grayed-out cells on the Price Proposal Forms nor make any other entry on or alteration to the Price Proposal Forms other than in accordance with these Price Proposal Instructions.
3. NHDOT may waive or correct any error appearing in the Price Proposal Forms if the correct amount can be clearly ascertained from the information provided; however, NHDOT is under no obligation to do so. In the event of a mathematical miscalculation, the correct sum shall control.
4. An officer or an individual otherwise authorized in writing by an officer of the Proposer to sign the Contract must also sign and date each Price Proposal Sheet in the appropriately provided signature line. The Signatures shall indicate approval and commitment for the entire completed Price Proposal form.

5. All elements of the Price Proposal must be completed. If zero (0) quantities are included in the Proposal, a zero (0) must be entered into the corresponding cell. In addition, all items identified by NHDOT in the price sheets will be assumed to be included in the Proposal unless such items are specifically identified as an exception in Appendix J, Form 8: Compliance Matrix.
6. NHDOT reserves the right to reject the submittal if it is not completed in accordance with the instructions set forth herein.
7. Please review all Terms and Conditions of the Contract Documents, as well as these Price Proposal Instructions, prior to completing the Price Proposal Forms.
8. The Price Proposal Forms are provided in Excel format worksheets for ease of completion and checking. Instructions for completion of each of the Price Proposal Forms are provided below.
9. The Price Proposal Forms provided do not contain any preset formulas, calculations, macros, etc. The Proposer shall ensure that any and all formulas used in completing the forms are the sole responsibility of the Proposer and further that the NHDOT shall make no representations as to the accuracy of any formulas used.
10. When submitting in electronic form, the Proposer may submit in both Excel and PDF formats.
11. The Price Proposal shall be inclusive of all costs, fees and applicable taxes associated with the Project necessary to meet the requirements of the Project as described in the RFP including, but not limited to Appendix C of the RFP. No price escalation will be allowed above the cost provided on the Price Proposal Forms to complete the Work except as may be allowed for future deployments.

F-2 General Instructions on Completing the Price Proposal Forms

1. The Price Proposal Forms are provided per the sheets listed above. The entire Price Proposal Form is comprised of three (3) components: the Project Summary Sheet (Sheet 1); seven (7) supporting Detail Cost Sheets (Sheets 2-1 thru 2-7); and a Direct Labor Rate Sheet (Sheet 3).

2. The Project Summary Sheet is intended to represent a summary of the total project cost based on the costs provided from each of the supporting Detail Cost Sheets.

3. For Project Summary Sheet line items requiring Detail Cost Sheets, these have been labeled to identify the corresponding detail sheet.

4. Additional line items in the Project Summary Sheet do not require Detail Cost Sheets.

5. Proposers are required to verify for themselves that their formulas and calculations are performing correctly.

6. The Direct Labor Rate Sheet will be used for cost determination in the event of any additional or out of scope work requested of or assigned to the Contractor.

Completion of Project Summary Sheet (Sheet 1)

The total price of the Contract shall be the aggregate of all line item costs included for each year of the Contract Project Summary Sheet (Sheet 1). Sheet 1, Project Summary Cost, shall represent ALL costs associated with completing the scope of work as defined in Appendix C of this RFP.

The total cost shall include, without limitation, all overhead, burden, profit, taxes, duties, fees, Contractor-acquired permits, licenses, warranties and other items necessary for the Contractor to complete the Work. No price escalation will be allowed unless noted in the future ORT price proposal forms.

The Contractor shall not provide any narrative or other additional text (i.e. exceptions, clarifications, assumptions, etc.) in the Price Proposal. Doing so shall be regarded as grounds for disqualification of their proposal.

As Sheet 1 is primarily a summary of the Detail Cost Sheets, the Proposer shall first begin by completing the Detail Cost Sheets (Sheets 2-1 thru 2-7).

1. For each of the Detail Cost Sheets, in the columns provided under each cost component, enter a description for each cost component in as much detail as space allows.
2. For each cost component, provide the lump sum or unit cost per the sheet.
3. Provide a total cost for the Detail Cost Sheet.
4. Complete the Summary Sheet by carrying forward the total values from each of the Detail Cost Sheets.
5. On the Direct Labor Rate Sheet (Sheet 3), provide the personnel category name and the associated fully burdened labor rate. Positions included in the price form are examples; Contractors shall edit this form as needed.

F-3 Pricing Worksheets

The Pricing Worksheets are included as a separate Excel Workbook as an electronic attachment with this RFP document. See Form 10 in Appendix J.

APPENDIX G: SECURITY AND CERTIFICATES

G-1 SECURITY

G-1.1 Application Security

IT Security involves all functions pertaining to the securing of State Data and systems through the creation and definition of security policies, procedures and controls covering such areas as identification, authentication and non-repudiation.
This shall include but is not limited to

- Develop software applications based on industry best practices and incorporating information security throughout the software development life cycle
- Perform a Code review prior to release of the application to the State to move it into production. The code review may be done in a manner mutually agreeable to the Contractor and the State. Copies of the final, remediated results shall be provided to the State for review and audit purposes
- Follow change control process and procedures relative to release of code
- Develop applications following security-coding guidelines as set forth by organizations such as, but not limited to Open Web Application Security Project (OWASP) Top 10, SANS Common Weakness Enumeration (CWE) Top 25 or CERT Secure Coding.
- Make available to the for review and audit purposes all software development processes and require training for application developers on secure coding techniques.

G-1.2 PCI DSS Payment Application Data Security Standard (PA DSS)

Applicability:
Agencies utilizing a third-party "service provider" to process merchant cards are subject to complying with Requirement 12.8 of the PCI Data Security Standard (PCI DSS), which requires a "written agreement" addressing PCI DSS responsibilities. The requirement is one of the items included in the Self-Assessment Questionnaire (SAQ C or SAQ D) that the NHDOT must answer annually.

Compliance:
NH State Agencies are required to adhere to the Payment Card Industry Data Security Standard (PCI DSS) promulgated by the PCI Security Standards Council. Whereas the Contractor processes, transmits, and/or stores cardholder data in the performance of services provided to the NHDOT, and is therefore considered a "service provider" under Requirement 12.8 of the PCI DSS. Requirement 12.8.2 of the PCI DSS requires the NHDOT to maintain a written agreement that includes an acknowledgement that the service provider is responsible for the security of cardholder data that the service provider possesses; and Requirement 12.8.4 of the PCI DSS requires the NHDOT to maintain a program to monitor the service provider's PCI DSS compliance status at least annually. As the Contractor's product is part of the processing, transmission, and/or storage of cardholder data in the performance of services provided to the NHDOT, it is hereby agreed that:

1. Contractor agrees that it is responsible for the security of all cardholder data that it obtains or possesses, including but not limited to the functions relating to storing, processing, and transmitting the cardholder data.

2. Contractor attests that, as of the effective date of this Amendment, it has complied with all applicable requirements to be considered PCI DSS compliant, and has performed the necessary steps to validate its compliance with the PCI DSS.

3. The Contractor agrees to supply the current status of the Contractor's PCI DSS compliance, and evidence of its most recent validation of compliance upon execution of this addendum to the NHDOT. The Contractor must supply to the NHDOT an attestation of compliance at least annually.

4. The Contractor will immediately notify the NHDOT if it learns that it is no longer PCI DSS compliant and will immediately provide the NHDOT the steps being taken to remediate the non-compliance status. In no event shall the Contractor's notification to the NHDOT be later than seven (7) calendar days after the Contractor learns it is no longer PCI DSS complaint.

5. The Contractor acknowledges that any indemnification provided for under the Contract referenced above applies to the failure of the Contractor to be and to remain PCI DSS compliant.

G-2 CERTIFICATES

G-2.1 Certificate of Good Standing

As a condition of Contract award, the Contractor, if required by law, must furnish a Certificate of Authority/Good Standing dated after April 1, 2015, from the Office of the Secretary of State of New Hampshire. If your company is not registered, an application form may be obtained from:

Secretary of State
State House Annex
25 Capitol Street
Concord, New Hampshire 03301
603-271-3244

If your company is registered, a Certification thereof may be obtained from the Secretary of State.

Note: Sovereign states or their agencies may be required to submit suitable substitute documentation concerning their existence and authority to enter into a Contract

G-2.2 Certificate of Authority/Vote

The Certificate of Authority/Vote authorizes, by position, a representative(s) of your corporation to enter into an agreement or amendment with the State of New Hampshire. This ensures that the person signing the agreement is authorized as of the date he or she is signing it to enter into agreements for that organization with the State of New Hampshire

The officer's signature must be either notarized or include a corporate seal that confirms the title of the person authorized to sign the agreement. The date the Board officer signs must be on or after the date the amendment is signed. The date of the notary signature must match the date the Board officer signs.

You may use your own format for the Certificate of Authority/Vote as long as it contains the necessary language to authorize the agreement signatory to enter into agreements and amendments with the State of New Hampshire as of the date they sign.

CERTIFICATE OF AUTHORITY/VOTE CHECKLIST

SOURCE OF AUTHORITY

Authority must come from the **governing body,** either:

(1) a **majority voted** at a meeting, or
(2) the body provided **unanimous consent in writing**, or
(3) the organization's **policy or governing document** (bylaws, partnership agreement, LLC operating agreement) authorizes the person to sign

SOURCE OF AUTHORITY WAS IN EFFECT ON DAY AGREEMENT OR AMENDMENT WAS SIGNED

Certificate must show that the person signing the Contract **had authority when they signed the Agreement or Amendment,** either:

(1) Authority was **granted the same day** as the day the Agreement or Amendment was signed, or
(2) Authority was **granted after** the day the agreement or amendment was signed and the governing body ratifies and accepts the earlier execution, or
(3) Authority was **granted prior** to the day the agreement or amendment was signed and it has not been amended or repealed as of the day the Contract was signed.

APPROPRIATE PERSON SIGNED THE CERTIFICATE

The person signing the certificate may be the same person signing the Agreement or Amendment only if the certificate states that the person is the **sole director** (for corps) or **sole member** (for LLCs).

APPENDIX H: STATE OF NEW HAMPSHIRE TERMS AND CONDITIONS

Notice:	This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the Contract.

AGREEMENT

The State of New Hampshire and the Contractor hereby mutually agree as follows:

GENERAL PROVISIONS

H-1 Identification

1.1 State Agency Name		1.2 State Agency Address	
1.3 Contractor Name		1.4 Contractor Address	
1.5 Contractor Phone Number	1.6 Account Number	1.7 Completion Date	1.8 Price Limitation
1.9 Contracting Officer for State Agency		1.10 State Agency Telephone Number	
1.11 Contractor Signature		1.12 Name and Title of Contractor Signatory	
1.13 Acknowledgement: State of _____, County of _____ On _____, before the undersigned officer, personally appeared the person identified in block 1.12, or satisfactorily proven to be the person whose name is signed in block 1.11, and acknowledged that s/he executed this document in the capacity indicated in block 1.12.			
1.13.1 Signature of Notary Public or Justice of the Peace *[Seal]*			
1.13.2 Name and Title of Notary or Justice of the Peace			
1.14 State Agency Signature Date:		1.15 Name and Title of State Agency Signatory	
1.16 Approval by the N.H. Department of Administration, Division of Personnel *(if applicable)* By: Director, On:			
1.17 Approval by the Attorney General (Form, Substance and Execution) *(if applicable)* By: On:			
1.18 Approval by the Governor and Executive Council *(if applicable)* By: On:			

2. EMPLOYMENT OF CONTRACTOR/SERVICES TO BE PERFORMED. The State of New Hampshire, acting through the agency identified in block 1.1 ("State"), engages Contractor identified in block 1.3 ("Contractor") to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT A which is incorporated herein by reference ("Services").

3. EFFECTIVE DATE/COMPLETION OF SERVICES.
3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement as indicated in block 1.18, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.14 ("Effective Date").
3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed. Contractor must complete all Services by the Completion Date specified in block 1.7.

4. CONDITIONAL NATURE OF AGREEMENT. Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds, and in no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to terminate this Agreement immediately upon giving the Contractor notice of such termination. The State shall not be required to transfer funds from any other account to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

5. CONTRACT PRICE/PRICE LIMITATION/ PAYMENT.
5.1 The Contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT B which is incorporated herein by reference.
5.2 The payment by the State of the Contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance hereof, and shall be the only and the complete compensation to the Contractor for the Services. The State shall have no liability to the Contractor other than the Contract price. 5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.

5.4 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8.

6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/ EQUAL EMPLOYMENT OPPORTUNITY.
6.1 In connection with the performance of the Services, the Contractor shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal opportunity laws. This may include the requirement to utilize auxiliary aids and services to ensure that persons with communication disabilities, including vision, hearing and speech, can communicate with, receive information from, and convey information to the Contractor. In addition, the Contractor shall comply with all applicable copyright laws.
6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of race, color, religion, creed, age, sex, handicap, sexual orientation, or national origin and will take affirmative action to prevent such discrimination.
6.3 If this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all the provisions of Executive Order No. 11246 ("Equal Employment Opportunity"), as supplemented by the regulations of the United States Department of Labor (41 C.F.R. Part 60), and with any rules, regulations and guidelines as the State of New Hampshire or the United States issue to implement these regulations. The Contractor further agrees to permit the State or United States access to any of the Contractor's books, records and accounts for the purpose of ascertaining compliance with all rules, regulations and orders, and the covenants, Terms and Conditions of this Agreement.

7. PERSONNEL.
7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.

7.2 Unless otherwise authorized in writing, during the term of this Agreement, and for a period of six (6) months after the Completion Date in block 1.7, the Contractor shall not hire, and shall not permit any Subcontractor or other person, firm or corporation with whom it is engaged in a combined effort to perform the Services to hire, any person who is a State employee or official, who is materially involved in the procurement, administration or performance of this Agreement. This provision shall survive termination of this Agreement.
7.3 The Contracting Officer specified in block 1.9, or his or her successor, shall be the State's representative. In the event of any dispute concerning the interpretation of this Agreement, the Contracting Officer's decision shall be final for the State.

8. EVENT OF DEFAULT/REMEDIES.
8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):
8.1.1 failure to perform the Services satisfactorily or on schedule;
8.1.2 failure to submit any report required hereunder; and/or
8.1.3 failure to perform any other covenant, term or condition of this Agreement.
8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:
8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) days from the date of the notice; and if the Event of Default is not timely remedied, terminate this Agreement, effective two (2) days after giving the Contractor notice of termination;
8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;
8.2.3 set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or
8.2.4 treat the Agreement as breached and pursue any of its remedies at law or in equity, or both.

9. DATA/ACCESS/CONFIDENTIALITY/ PRESERVATION.
9.1 As used in this Agreement, the word "data" shall mean all information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.
9.2 All data and any property which has been received from the State or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.
9.3 Confidentiality of data shall be governed by N.H. RSA chapter 91-A or other existing law. Disclosure of data requires prior written approval of the State.

10. TERMINATION. In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall deliver to the Contracting Officer, not later than fifteen (15) days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. The form, subject matter, content, and number of copies of the Termination Report shall be identical to those of any Final Report described in the attached EXHIBIT A.

11. CONTRACTOR'S RELATION TO THE STATE. In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

12. ASSIGNMENT/DELEGATION/SUBCONTRACTS. The Contractor shall not assign, or otherwise transfer any interest in this Agreement without the prior written notice and consent of the State. None of the Services shall be subcontracted by the Contractor without the prior written notice and consent of the State.

13. INDEMNIFICATION. The Contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against any and all losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based or resulting from, arising out of (or which may be claimed to arise out of) the acts or omissions of the Contractor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

14. INSURANCE.
14.1 The Contractor shall, at its sole expense, obtain and maintain in force, and shall require any Subcontractor or assignee to obtain and maintain in force, the following insurance:
14.1.1 comprehensive general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than $1,000,000per occurrence and $2,000,000 aggregate ; and
14.1.2 special cause of loss coverage form covering all property subject to subparagraph 9.2 herein, in an amount not less than 80% of the whole replacement value of the property.
14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.
14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or his or her successor, a certificate(s) of insurance for all insurance required under this Agreement. Contractor shall also furnish to the Contracting Officer identified in block 1.9, or his or her successor, certificate(s) of insurance for all renewal(s) of insurance required under this Agreement no later than thirty (30) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference. Each certificate(s) of insurance shall contain a clause requiring the insurer to provide the Contracting Officer identified in block 1.9, or his or

her successor, no less than thirty (30) days prior written notice of cancellation or modification of the policy.

15. WORKERS' COMPENSATION.
15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A ("Workers' Compensation").
15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any Subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. Contractor shall furnish the Contracting Officer identified in block 1.9, or his or her successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any Subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

16. WAIVER OF BREACH. No failure by the State to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event of Default, or any subsequent Event of Default. No express failure to enforce any Event of Default shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other Event of Default on the part of the Contractor.

17. NOTICE. Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

18. AMENDMENT. This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no such approval is required under the circumstances pursuant to State law, rule or policy.

19. CONSTRUCTION OF AGREEMENT AND TERMS. This Agreement shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

20. THIRD PARTIES. The parties hereto do not intend to benefit any third parties and this Agreement shall not be construed to confer any such benefit.

21. HEADINGS. The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

22. SPECIAL PROVISIONS. Additional provisions set forth in the attached EXHIBIT C are incorporated herein by reference.

23. SEVERABILITY. In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

24. ENTIRE AGREEMENT. This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Agreement and understanding between the parties, and supersedes all prior Agreements and understandings relating hereto.

H-25 General Contract Requirements

H-25.1 State of NH Terms and Conditions and Contract Requirements

The Contract terms set forth in Appendix H: State of New Hampshire Terms and Conditions shall constitute the core for any Contract resulting from this RFP.

H-25.2 Contractor Responsibilities

The Contractor shall be solely responsible for meeting all requirements, and Terms and Conditions specified in this RFP, its Proposal, and any resulting Contract, regardless of whether or not it proposes to use any Subcontractor.

The Contractor may subcontract Services subject to the provisions of the RFP, including but not limited to, the terms and conditions in Appendix H: State of New Hampshire Terms and Conditions. The Contractor must submit with its Proposal all information and documentation relating to the Subcontractor necessary to fully respond to the RFP, which must include Terms and Conditions consistent with this RFP. The Contractor shall remain wholly responsible for performance of the entire Contract regardless of whether a Subcontractor is used. The State will consider the Contractor to be the sole point of contact with regard to all contractual matters, including payment of any and all charges resulting from any Contract.

H-25.3 Project Budget/Price Limitation

The State has funds budgeted for this Project, subject to Appendix H: State of New Hampshire Terms and Conditions, Section H-4: Conditional Nature of Agreement and Section H-5: Contract Price/Price Limitation/Payment.

H-25.4 State Contracts

The State of New Hampshire intends to use, wherever possible, existing statewide software and hardware contracts to acquire supporting software and hardware. Where these differences are identified during the design process, the cost of owner supplied hardware or software shall be subtracted from the Contract value accordingly for the corresponding items.

H-25.5 Contractor Staff

In the Proposal, the Contractor shall assign and identify a Project Manager and key Contractor staff, in accordance with the Requirements and Deliverables of Appendix C: System Requirements and Deliverables and Appendix E: Standards for Describing Contractor Qualifications.

The Contractor's selection of a Project Manager will be subject to the prior approval of the State. The State's approval process may include, without limitation, at the State's discretion, review of the proposed Project Manager's resume, qualifications, references and background checks, and an interview. The Contractor's Project Manager must be qualified to perform the obligations required of

the position under the Contract, have full authority to make binding decisions, and shall function as the Contractor's representative for all administrative and management matters. The Project Manager must be available to promptly respond during Normal Working Hours within two (2) hours to inquiries from the State, and be at the site as needed. The Contractor must use his or her best efforts on the Project.

The Contractor shall not change key Contractor staff and Project Manager commitments (collectively referred to as "Project Staff") unless such replacement is necessary due to sickness, death, termination of employment, or unpaid leave of absence. Any such changes to the Contractor's Project Staff shall require the prior written approval of the State. Replacement Project Staff shall have comparable or greater skills with regard to performance of the Project as the staff being replaced and be subject to the provisions of this RFP and any resulting Contract.

The State, at its sole expense, may conduct reference and background checks on the Contractor's Project Staff. The State shall maintain the confidentiality of reference and background screening results. The State reserves the right to reject the Contractor's Project Staff as a result of such reference and background checks. The State also reserves the right to require removal or reassignment of the Contractor's key Project Staff found unacceptable to the State.

Notwithstanding anything to the contrary, the State shall have the option to terminate the Contract, at its discretion, if it is dissatisfied with the Contractor's replacement Project Staff.

H-25.6 Change Orders

The State may make changes or revisions at any time by written Change Order. Within five (5) business days of a Contractor's receipt of a Change Order, the Contractor shall advise the State, in detail, of any impact on cost (e.g., increase or decrease), the Schedule, or the Project Management Plan.

A Contractor may request a change within the scope of the Contract by written Change Order, identifying any impact on cost, the Schedule, or the Project Management Plan. The State shall attempt to respond to a Contractor's requested Change Order within five (5) business days. The State, which includes the requesting Agency and the Department of Information Technology, must approve all change orders in writing. The State shall be deemed to have rejected the Change Order if the parties are unable to reach an agreement in writing.

All Change Order requests from the Contractor to the State and the State acceptance of the Contractor's estimate for a State requested change, will be acknowledged and responded to, either acceptance or rejection, in writing. If accepted, the Change Order(s) shall be subject to the Contract amendment process, as determined to apply by the State.

H-25.7 Licenses

The State has defined the Software license grant rights, Terms and Conditions, and has documented the evaluation criteria.

H-25.7.1 Software and Documentation Copies

The Contractor shall provide the State with up to twelve (12) hard copy versions of the Software's associated Documentation and one (1) electronic version in Microsoft WORD and PDF format. The State shall have the right to copy the Software and its associated Documentation for its internal business needs. The State agrees to include copyright and proprietary notices provided to the State by the Contractor on such copies.

H-25.7.2 Restrictions

Except as otherwise permitted under the Contract, the State agrees not to:

a. Remove or modify any program markings or any notice of the Contractor's proprietary rights;
b. Make the programs or materials available in any manner to any third party for use in the third party's business operations, except as permitted herein; or
c. Cause or permit reverse engineering, disassembly or recompilation of the programs.

H-25.7.3 Title

The Contractor must hold the right to allow the State to use the Software or hold all title, right, and interest (including all ownership and intellectual property rights) in the Software and its associated Documentation.

H-25.7.4 Third Party

The Contractor shall identify all third party contracts to be provided under the Contract with the Contractor's Proposal. The terms in any such contracts must be consistent with this RFP and any resulting Contract, including, but not limited to Appendix H: State of New Hampshire Terms and Conditions General Provisions Form P-37.

H-25.8 Warranty

H-25.8.1 Warranty Period

The Warranty Period will initially commence upon the State issuance of Final System Acceptance and will continue for one (1) year.

H-25.8.2 Warranties

H-25.8.2.1 System

The Contractor shall warrant that the System, including but not limited to the Software and the individual modules or functions, must operate in conformance with the specifications, terms, and requirements of the Contract, including but not limited to all elements, i.e., the software, hardware, and any interfaces.

H-25.8.2.2 Software

The Contractor shall warrant that the Software is properly functioning within the System, compliant with the requirements of the Contract, and will operate in accordance with the Specifications.

Software shall be archived and or version controlled through the use of software.

H-25.8.2.3 Non-Infringement

The Contractor shall warrant it has good title to, or the right to allow the State to use all Services, equipment, and Software provided under this Contract, and such Services, equipment, and Software ("Material") do not violate or infringe any patent, trademark, copyright, trade name or other intellectual property rights or misappropriate a trade secret of any third party.

H-25.8.2.4 Viruses; Destructive Programming

The Contractor shall warrant that the Software will not contain any viruses, destructive programming, or mechanisms designed to disrupt the performance of the Software in accordance with the Specifications.

H-25.8.2.5 Compatibility

The Contractor shall warrant all System components, including any replacement or upgraded System Software components provided by the Contractor to correct Deficiencies or as an Enhancement, shall operate with the rest of the System without loss of any functionality.

H-25.8.2.6 Professional Services

The Contractor shall warrant all Services provided under the Contract will be provided in a professional manner in accordance with industry standards and that Services will comply with performance standards.

H-25.8.2.7 Hardware

The Contractor shall warrant all materials, equipment, labor furnished or performed under the Contract and other hardware items provided by the Contractor or by any of its Subcontractors of any tier for the Project shall:

- meet the applicable functional requirements of the Contract as detailed in Appendix C: Requirements and Deliverables;
- be new at the time furnished;
- be free of all liens, encumbrances and other rights and interests of third parties; and
- be free of defects.

The Contractor, at its option, shall at no charge either repair any warranted product not meeting these requirements with new or reconditioned parts, or replace it with the same or an equivalent product, subject to the Notice provisions set forth herein.

The Contractor shall be responsible for all warranty covered repair work and for identification of failures as set forth in Appendix C: Requirements and Deliverables. The Contractor shall provide comprehensive and continuing warranty repair and restoration services on all aspects of the delivered equipment including, but not limited to, hardware and software products during the Warranty Period. Any warranty from a Subcontractor or supplier to the Contractor, which exceeds this time period, shall be extended to the State for the same period of time as given to the Contractor.

Replacement parts and repairs provided pursuant to corrective work hereunder shall be subject to prior Approval by the State and shall be tendered and performed in the same manner and extent as items originally delivered. The Contractor warrants such redesigned, repaired, or replaced work against defective design, materials, and workmanship for the remainder of the warranty period of the replaced part, or a period of six (6) months from the date of acceptance of the new (or repaired) part by the State, whichever occurs later.

H-25.8.3 Warranty Services

The Contractor shall agree to maintain, repair, and correct Deficiencies in the System Software, including but not limited to the individual modules or functions, during the Warranty Period at no additional cost to the State, in accordance with the Specifications and terms and requirements of the Contract, including without limitation, correcting all errors, Defects and Deficiencies; eliminating viruses or destructive programming; and replacing incorrect, Defective or Deficient Software and Documentation.

Warranty Services shall include, without limitation, the following:

a. Maintain the System Software in accordance with the Specifications, terms, and requirements of the Contract;
b. Repair or replace the System Software or any portion thereof so the System operates in accordance with the Specifications, terms, and requirements of the Contract;
c. The Contractor shall have available to the State, from November 1st to April 30th, on-call telephone assistance, with issue tracking available to the State, twenty four (24) hours per day and seven (7) days a week with an email/telephone response within two (2) hours of request, with assistance response dependent upon issue severity;
d. On-site additional Services within four (4) business hours of a request;
e. Maintain a record of the activities related to Warranty Repair or maintenance activities performed for the State;
f. For all Warranty Services calls, the Contractor shall ensure the following information will be collected and maintained:
    1. Nature of the Deficiency;

2. Current status of the Deficiency;
3. Action plans, dates, and times;
4. Expected and actual completion time;
5. Deficiency resolution information;
6. Resolved by;

H-1 Identifying number i.e. work order number; and
H-2 Issue identified by.

g. Software problems manifest themselves in several ways, the results of which are termed either as errors, defects, bugs or a malfunction. These software problems are defined as follows:
   1. Error/Bug - A problem found in the development environment before the product is placed in production or service.
   2. Defect - Any functional, equipment, or system problems that are identified that does not conform to the system or product's specifications. An Error or Bug causes a defect to occur in system/software.
   3. Malfunction - A malfunction is produced by a program defect or bug that causes a program to work poorly, produce incorrect results, or crash.

The Contractor must work with the State to identify and troubleshoot potentially large-scale Software failures, problems or Deficiencies by collecting the following information:

1. Mean time between reported Deficiencies with the Software;
2. Diagnosis of the root cause of the problem; and
3. Identification of repeat calls or repeat Software problems.

h. All Deficiencies found during the Warranty Period and all Deficiencies found with the Warranty Releases shall be corrected by the Contractor no later than five (5) business days, unless specifically extended in writing by the State, at no additional cost to the State.

If in the Event of Default, the Contractor fails to correct the Deficiency within the allotted period of time (see above), the State shall have the right, at its option: 1) to declare the Contractor in default, terminate the Contract, in whole or in part, without penalty or liability to the State; 2) return the Contractor's product and receive a refund for all amounts paid to the Contractor, including but not limited to, applicable license fees within ninety (90) days of notification to the Contractor of the State's intent to request a refund; and 3) to pursue its remedies available at law or in equity.

Notwithstanding any provision of the Contract, the State's option to terminate the Contract and pursue the remedies above will remain in effect until satisfactory completion of the full Warranty Period.

H-25.9 Ongoing Software Maintenance and Support Levels

The Contractors shall submit, in their Proposals, copies of their proposed maintenance and support agreement for software maintenance and support Work following the completion of the Warranty Period. That agreement shall not contain any terms or provisions that conflict with this RFP, including

but not limited to, the State's Terms and Conditions, licensing or warranty requirements set forth in Appendix H: General Contract Requirements. The Contractor's standard maintenance and support form will not be acceptable. This ongoing support will be included in the optional two (2), three (3) year extensions of this Contract.

All software and firmware furnished under the Contract shall be warranted by both the Contractor and manufacturer(s) to be free of defects in workmanship for a period of four (4) years after the one (1) year all-inclusive warranty. All software and firmware shall remain in good working order in the sole judgment of the State; and, shall meet or exceed the requirements of the RFP Technical Specifications.

The Contractor will not be responsible for maintenance or support for Software developed or modified by the State.

H-25.9.1 Maintenance Releases

The Contractor shall make available to the State the latest program updates, general maintenance releases, selected functionality releases, patches, and documentation that are generally offered to its customers, at no additional cost.

H-25.9.2 Maintenance and Support Levels

Maintenance support provided by the Contractor shall be set forth in Appendix C: Requirements and Deliverables.

H-25.10 Administrative Specifications

H-25.10.1 Travel Expenses

The State will not be responsible for any travel or out of pocket expenses incurred in the performance of the Services of this RFP. The State will reimburse for any travel or out of pocket expenses incurred in the performance of any Services deemed to be outside the scope of this RFP, i.e. Change Request and Work Orders.

H-25.10.2 Shipping and Delivery Fee Exemption

The State will not pay for any shipping or delivery fees unless specifically itemized in the Contract.

H-25.10.3 Access/Cooperation

As applicable, and reasonably necessary, and subject to the applicable State and federal laws and regulations and restrictions imposed by third parties upon the State, the State will provide the Contractor with access to all program files, libraries, personal computer-based systems, software packages, network systems, security systems, and hardware as required to complete the Contracted Services.

The State will use reasonable efforts to provide approvals, authorizations, and decisions reasonably necessary to allow the Contractor to perform its obligations under the Contract.

H-25.10.4 State-Owned Documents and Data

The Contractor shall provide the State access to all Documents, State Data, materials, reports, and other work in progress relating to the Contract ("State Owned Documents"). Upon expiration or termination of the Contract with the State, the Contractor shall turn over all State-owned Documents, State Data, material, reports, and work in progress relating to this Contract to the State at no additional cost to the State. State-Owned Documents must be provided in both printed and electronic format.

H-25.10.5 Intellectual Property

For all Software, pre-existing and developed, the Contractor shall provide a perpetual license back to the State that allows for the State and DoIT use of the software and right to the Source Code. The State and DoIT may maintain and/or modify the source code for the State's use but agrees not to sell or provide the source code to others at the conclusion of the Maintenance Contract or at a point to be determined by the State.

In no event shall the Contractor be precluded from developing for itself, or for others, materials that are competitive with, or similar to custom software, modifications developed in connection with performance of obligations under the Contract. In addition, the Contractor shall be free to use its general knowledge, skills, experience, and any other ideas, concepts, know-how, and techniques that are acquired or used in the course of its performance under this agreement.

All Third-Party software required to operate and maintain the system shall be registered in the name of the State.

H-25.10.6 DoIT Required Work Procedures

All work done must conform to standards and procedures established by DoIT and the State.

H-25.10.7 Computer Use

In consideration for receiving access to and use of the computer facilities, network, licensed or developed software, software maintained or operated by any of the State entities, systems, equipment, Documentation, information, reports, or data of any kind (hereinafter "Information"), the Contractor understands and agrees to the following rules:

a. Every Authorized User has the responsibility to assure the protection of information from unauthorized access, misuse, theft, damage, destruction, modification, or disclosure.
b. Information shall be used solely for conducting official State business, and all other use or access is strictly forbidden including, but not limited to, personal, or other private and non-State use and at no time shall the Contractor access or attempt to access any information without having the express authority to do so.

c. At no time shall the Contractor access or attempt to access any information in a manner inconsistent with the approved policies, procedures, and/or agreements relating to system entry/access.
d. All software licensed, developed, or being evaluated by the State cannot be copied, shared, distributed, sub-licensed, modified, reverse engineered, rented, or sold, and at all times the Contractor must use utmost care to protect and keep such software strictly confidential in accordance with the license or any other Agreement executed by the State. Only equipment or software owned, licensed, or being evaluated by the State, can be used by the Contractor. Personal software (including but not limited to palmtop sync software) shall not be installed on any equipment.
e. If the Contractor is found to be in violation of any of the above-stated rules, the User may face removal from the State Contract, and/or criminal or civil prosecution, if the act constitutes a violation of law.

H-25.10.8 Email Use

Mail and other electronic communication messaging systems are State of New Hampshire property and are to be used for business purposes only. Email is defined as "internal email systems" or "State-funded email systems." The Contractor understands and agree that use of email shall follow State standard policy (available upon request).

H-25.10.9 Internet/Intranet Use

The Internet/Intranet is to be used for access to and distribution of information in direct support of the business of the State of New Hampshire according to State standard policy (available upon request).

H-25.10.10 Regulatory/Governmental Approvals

Any Contract awarded under the RFP shall be contingent upon the Contractor obtaining all necessary and applicable regulatory or other governmental approvals.

H-25.10.11 Force Majeure

Neither the Contractor nor the State shall be responsible for delays or failures in performance resulting from events beyond the control of such party and without fault or negligence of such party. Such events shall include, but not be limited to, acts of God, strikes, lock outs, riots, acts of War, epidemics, acts of Government, fire, power failures, nuclear accidents, earthquakes, and unusually severe weather.

Except in the event of the foregoing, Force Majeure events shall not include Contractor's inability to hire or provide personnel needed for the Contractor's performance under the Contract.

H-25.10.12 Confidential Information

In performing its obligations under the Contract, the Contractor may gain access to information of the State, including Confidential Information. The Contractor shall not use information developed or

obtained during the performance of, or acquired, or developed by reason of the Contract, except as is directly connected to and necessary for the Contractor's performance under the Contract.

The Contractor agrees to maintain the confidentiality of and to protect from unauthorized use, disclosure, publication, and reproduction, all information of the State that becomes available to the Contractor in connection with its performance under the Contract, regardless of its form. Subject to applicable federal or State laws and regulations, Confidential Information shall not include information which: (i) shall have otherwise become publicly available other than as a result of disclosure by the receiving party in breach hereof; (ii) was disclosed to the receiving party on a non-confidential basis from a source other than the disclosing party, which the receiving party believes is not prohibited from disclosing such information as a result of an obligation in favor of the disclosing party; (iii) is developed by the receiving party independently of, or was known by the receiving party prior to, any disclosure of such information made by the disclosing party; or (iv) is disclosed with the written consent of the disclosing party. A receiving party also may disclose Confidential Information to the extent required by an order of a court of competent jurisdiction.

Any disclosure of the State's information shall require prior written Approval of the State. The Contractor shall immediately notify the State if any request, subpoena or other legal process is served upon the Contractor regarding the State's information, and the Contractor shall cooperate with the State in any effort it undertakes to contest the subpoena or other legal process.

In the event of unauthorized use or disclosure of the State's information, the Contractor shall immediately notify the State, and the State shall immediately be entitled to pursue any remedy at law, including, but not limited to injunctive relief.

Insofar as the Contractor seeks to maintain the confidentiality of its confidential or proprietary information, the Contractor must clearly identify in writing the information it claims to be confidential or proprietary, as further set forth in Section 4.8 of this RFP. The Contractor acknowledges the State is subject to the Right to Know law, RSA Chapter 91-A. The State shall maintain the confidentiality of the identified Confidential Information insofar as it is consistent with applicable laws or regulations, including but not limited to, RSA Chapter 91-A. In the event the State receives a request for the information identified by the Contractor as confidential, the State shall notify the Contractor and specify the date the State will be releasing the requested information. Any effort to prohibit or enjoin the release of the information shall be the Contractor's sole responsibility and at the Contractor's sole expense. If the Contractor fails to obtain a court order enjoining the disclosure, the State shall release the information on the date specified in the State's notice to the Contractor without any State liability to the Contractor.

This Section shall survive termination or Contract Conclusion.

H-25.10.13 Contractor's Relation to the State

In the performance of the Contract, the Contractor is in all respects an Independent Contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents, or members shall have authority to bind the State or receive any benefits, worker's compensation or other emoluments provided by the State to its employees.

H-25.10.14 Insurance

The Contractor shall, at its sole expense, obtain and maintain in force, and shall require any Subcontractor or assignee to obtain and maintain in force, the insurance as set forth in New Hampshire DOT Standard Specification for Road and Bridge Construction, Section 107.11 *Responsibility for Damage Claims*.

Additional insurance required for this Project include:

- Pollution/Environmental Impairment Liability Coverage

  Insurance for this coverage shall meet the New Hampshire DOT Standard Specification under Section 107.17 *Hazardous Materials*.

- Professional Liability Coverage:

  Professional Liability Insurance in the amount of $1,000,000 shall be obtained by the Contractor and any design professionals retained by Contractor for the Project.

- Inland Marine:

  All tools and equipment that the Covered Party has at the job Site or is owned by the Covered Party are the responsibility of the Covered Party, respectively. The Agency assumes no responsibility for the protection, maintenance, or repair of any tools or equipment.

  All materials required by the Contract that can be damaged, stolen, or lost, must be insured by the Covered Party as any partial payments made to the Covered Party are deemed to be payment for such materials.

  Proof of coverage for applicable limits shall be provided on the Certificate of Insurance. The transportation risk must be included.

- Deductibles or Self Insured Retentions:

  All deductibles and self-insured retentions are the sole responsibility of the Covered Party. Deductibles or Self-Insured Retentions must be shown on the Certificate of Insurance. No retention (deductible) shall be more than $75,000.

H-25.10.14.1 Standard Policy Forms

The policies shall be the standard policy forms and endorsements approved for use in the State of New Hampshire by the New Hampshire Department of Insurance, and issued by insurers licensed in the State of New Hampshire or underwriters acceptable to the State, and authorized to do business in the State of New Hampshire. Each certificate of insurance shall contain a clause prohibiting cancellation or modifications of the policy earlier than ten (10) days after written notice thereof has been received by the State.

H-25.10.14.2 Insurance Certificates

The Contractor shall furnish to the Insurance Certificate Holder the certificate(s) of insurance for all insurance required under the Contract. The Contractor shall also furnish to the Insurance Certificate Holder certificate(s) of insurance for all renewal(s) of insurance required under the Contract no later than fifteen (15) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached to the Contract and are incorporated therein by reference.

The ACORD Insurance Certificate should note the Certificate Holder in the lower left hand block including State of New Hampshire, Department Name, and name of the individual responsible for the funding of the Contracts and his/her address.

Department of Transportation, Bureau of Turnpikes funded projects the Certificate Holder and address should be identified as:

State of New Hampshire
Department of Transportation
Attn: John Corcoran
36 Hackett Hill Road, Hooksett, NH 03106.

H-25.10.14.3 Waiver of Rights of Recovery and Waiver of Rights of Subrogation

The Certificate of Insurance must evidence a Waiver of Recovery and Waiver of Subrogation in favor of the Agency and all Additional Insureds where applicable on all policies including Workers' Compensation and Employers Liability.

The Covered Party waives all rights of recovery against the Agency and all the additional insureds for loss or damage covered by any of the insurance maintained by the Covered Party pursuant to this Contract.

The Covered Party hereby waives, and shall cause its insurance carriers to waive, all rights of subrogation against the Agency and all the additional insureds for loss or damage covered by any of the insurance maintained by the Covered Party pursuant to this Contract.

If any of the policies of insurance required under this Contract require an endorsement to provide for the waiver of subrogation set forth in c, above, then the named insureds of such policies will cause them to be so endorsed.

H-25.10.14.4 Claims Made Policy Forms:

Should any of the required liability coverages be on a "Claims Made" Basis, coverage must be available for the duration of the Contract and for a minimum of three (3) years following the completion of the Contract.

H-25.10.14.5 Review of Insurance Requirements by the Covered Party's Insurance Representative:

The Covered Party warrants that this Contract has been thoroughly reviewed by the Covered Party's insurance agent(s)/broker(s), who have been instructed by the Covered Party to procure the insurance coverage required by this Contract.

The amount of insurance provided in the aforementioned insurance coverages, shall not be construed to be a limitation of the liability on the part of the Covered Party.

Any type of insurance or any increase in limits of liability not described above which the Covered Party requires for its own protection or on account of statute shall be its own responsibility and at its own expense.

The carrying of insurance described herein shall in no way be interpreted as relieving the Covered Party of any responsibility or liability under the Contract.

In the event of a failure of the Covered Party to furnish and maintain said insurance and to furnish satisfactory evidence thereof, the Agency shall have the right (but not the obligation) to take out and maintain the same for all parties on behalf of the Covered Party who agrees to furnish all necessary information thereof and to pay the cost thereof immediately upon presentation of an invoice.

In no event shall the Contractor or any Consultant begin Work until Certificates of Insurance showing coverage in the aforementioned amounts required for the Contract is received and approved by the Agency. Any Work performed without having the Certificates of Insurance received and approved by the Agency is at the Contractor and Consultant's own and sole risk

H-25.10.14.6 Licensed Sureties and Insurers; Certificates of Insurance

The following shall be required in addition to the requirements in New Hampshire DOT Standard Specification Section 107.11 related to this topic:

Contractor shall deliver to Agency, with copies to each additional insured indicated in the Contract Documents, certificates of insurance (and other evidence of insurance requested by Agency or any other additional insured) which Contractor is required to purchase and maintain in accordance with the requirements stated within this RFP and referenced documents.

H-25.10.15 Waiver of Event of Default

No failure by the State to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event of Default, or any subsequent Event of Default. No express

failure to enforce any Event of Default shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other Event of Default on the part of the Contractor.

H-25.10.16 Notice

Any notice by a party to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the following addresses.

TO CONTRACTOR:
[Name]
[Address]
[City, State] [Zip]
[Telephone Number]

TO STATE:
State of New Hampshire
Department of Transportation
Bureau of Turnpikes,
36 Hackett Hill Road
Hooksett, NH 03106
(603) 485-3806

H-25.10.17 Amendment

The Contract may be amended, waived, or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver, or discharge by the Governor and Executive Council of the State of New Hampshire.

H-25.10.18 Construction of Contract and Terms

The Contract shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns. The wording used in the Contract is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

H-25.10.19 Third Parties

The parties hereto do not intend to benefit any third parties and the Contract shall not be construed to confer any such benefit.

H-25.10.20 Headings

The headings throughout the Contract are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of the Contract.

H-25.10.21 Exhibits

The Exhibits referred to in and attached to the Contract are made a part of the Contract as if fully included in the text.

H-25.10.22 Special Provisions

See Appendix C: Requirements and Deliverables for specific requirements.

H-25.10.23 Severability

In the event of any of the provisions of the Contract are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of the Contract will remain in full force and effect.

H-25.10.24 Venue and Justification

Any action on the Contract may only be brought in the State of New Hampshire Merrimack County Superior Court.

H-25.10.25 Survival

The terms, conditions and warranties contained in the Contract by their context are intended to survive the completion of the performance, cancellation or termination of the Contract shall so survive.

H-25.10.26 Entire Agreement

The Contract, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Contract and understanding between the parties, and supersedes all prior Contracts and understandings pertaining to the Project.

H-25.11 Pricing

H-25.11.1 Activities/Deliverables/Milestones Dates and Pricing

Deliverables dates and pricing schedules are provided in Appendix C: Requirements and Deliverables.

H-25.11.2 Software Licensing, Maintenance, Enhancements, and Support Pricing

The Contractor must provide the minimum Software support and Services through Software licensing, maintenance, Enhancements, and support as detailed in Section H-25.9: Ongoing Software Maintenance and Support Levels.

For Software licensing, maintenance, and support costs, complete a worksheet including all costs. The worksheets are provided in Appendix J: Forms.

H-25.11.3 Invoicing

The Contractor shall submit correct invoices to the State for all amounts to be paid by the State. All invoices submitted shall be subject to the State's written approval, which shall not be unreasonably withheld. The Contractor shall only submit invoices for Services or Deliverables as permitted by the Contract. Invoices must be in a format as determined by the State and contain detailed information,

including without limitation: itemization of each Deliverable and identification of the Deliverable for which payment is sought, and the Acceptance date triggering such payment; date of delivery and/or installation; monthly maintenance charges; and any other Project costs or retention amounts if applicable.

H-25.11.4 Overpayments to the Contractor

The Contractor shall promptly, but no later than fifteen (15) business days, pay the State the full amount of any overpayment or erroneous payment upon discovery or notice from the State.

H-25.11.5 Credits

The State may apply credits due to the State, arising out of this Contract, against the Contractor's invoices with appropriate information attached.

H-25.11.6 Records Retention and Access Requirements

The Contractor shall agree to the conditions of all applicable State and federal laws and regulations, which are incorporated herein by this reference, regarding retention and access requirements, including without limitation, retention policies consistent with the Federal Acquisition Regulations (FAR) Subpart 4.7 Contractor Records Retention.

The Contractor and its Subcontractors shall maintain books, records, documents, and other evidence of accounting procedures and practices, which properly and sufficiently reflect all direct and indirect costs, invoiced in the performance of their respective obligations under the Contract. The Contractor and its Subcontractors shall retain all such records for three (3) years following termination of the Contract, including any extensions. Records relating to any litigation matters regarding the Contract shall be kept for one (1) year following the termination of all litigation, including the termination of all appeals or the expiration of the appeals period.

Upon prior notice and subject to reasonable time frames, all such records shall be subject to inspection, examination, audit and copying by personnel so authorized by the State and federal officials so authorized by law, rule, regulation or Contract, as applicable. Access to these items will be provided within Merrimack County of the State of New Hampshire, unless otherwise agreed by the State. Delivery of and access to such records shall be at no cost to the State during the three (3) year period following termination of the Contract and one (1) year term following litigation relating to the Contract, including all appeals or the expiration of the appeal period. The Contractor shall include the record retention and review requirements of this section in any of its Subcontracts.

The State agrees that books, records, documents, and other evidence of accounting procedures and practices related to the Contractor's cost structure and profit factors shall be excluded from the State's review unless the cost or any other Services or Deliverables provided under the Contract is calculated or derived from the cost structure or profit factors.

H-25.11.7 Accounting Requirements

The Contractor shall maintain an accounting system in accordance with generally accepted accounting principles (GAAP). The costs applicable to the Contract shall be ascertainable from the accounting system and the Contractor shall maintain records pertaining to the Services and all other costs and expenditures.

H-25.11.8 Contract Security/Performance Bond

The Contractor shall furnish the State with a Performance Bond in an amount equal to one-hundred percent (100%) of the total value of the Implementation within ten (10) business days of receipt of notice of intent to award a Contract. The Contractor shall bear the full expense of both the initial expense and the annual premiums for the Performance Bond. If such is not provided, the award may be nullified.

The Performance Bond shall be in a form and substance satisfactory to the State. The Performance Bond shall be maintained by the Contractor in full force and effect until Final Project Acceptance. The Contractor or any of its sureties shall not be released from their obligations under the Performance Bond from any change or extension of time, or termination of this Contract. The Performance Bond shall contain a waiver of notice of any changes to this Contract or the Deliverables or the Specifications, or of any Change Orders.

A licensed insurance company authorized to do business in the State of New Hampshire shall issue the Performance Bond made payable to the State of New Hampshire. The Performance Bond shall contain the Contract number and dates of performance. The Contractor shall extend the validity and enforcement of the Performance Bond for said periods if the State exercises an option to extend the Contract for any additional period(s).

The Performance Bond shall secure the performance of the Contractor, including without limitation performance of the Work in accordance with the Project Management Plan and providing Deliverables in accordance with the Specifications, and shall secure any damages, cost or expenses resulting from the Contractor's default in performance or liability caused by the Contractor. The Performance Bond shall become payable to the State for any outstanding damage assessments made by the State against the Contractor if there is a termination for default. An amount up to the full amounts of the Performance Bond may also be applied to the Contractor's liability for any administrative costs and/or excess costs incurred by the State in obtaining similar software, deliverables, other products, and work to replace those terminated as a result of the Contractor's default. In addition to this stated liability, the State may seek other remedies.

The State reserves the right to review the Performance Bond and to require the Contractor to substitute a more acceptable Performance Bond in such form(s) as the State deems necessary prior to acceptance of the Performance Bond.

H-25.12 Termination

This Section H-25.13 shall survive termination or Contract conclusion.

H-25.12.1 Termination for Default

Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):

Form 1: Failure to perform the Services satisfactorily or on schedule;
Form 2: Failure to submit any report required; and/or
Form 3: Failure to perform any other covenant, term or condition of the Contract.

Upon the occurrence of any Event of Default, the State may take any one or more, or all, of the following actions:

Form 1: Unless otherwise provided in the Contract, the State shall provide the Contractor written notice of default and require it to be remedied within, in the absence of a greater or lesser specification of time, within thirty (30) days from the date of notice, unless otherwise indicated within by the State ("Cure Period"). If the Contractor fails to cure the default within the Cure Period, the State may terminate the Contract effective two (2) days after giving the Contractor notice of termination, at its sole discretion, treat the Contract as breached and pursue its remedies at law or in equity or both.

Form 2: Give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under the Contract and ordering that portion of the Contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines the Contractor has cured the Event of Default shall never be paid to the Contractor.

Form 3: Set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default.

Form 4: Treat the Contract as breached and pursue any of its remedies at law or in equity, or both.

Form 5: Procure Services that are the subject of the Contract from another source and the Contractor shall be liable for reimbursing the State for the replacement Services, and all administrative costs directly related to the replacement of the Contract and procuring the Services from another source, such as costs of competitive bidding, mailing, advertising, applicable fees, charges or penalties, and staff time costs; all of which shall be subject to the limitations of liability set forth in the Contract.

In the event of default by the State, the Contractor shall provide the State with written notice of default, and the State shall cure the default within thirty (30) days.

Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant shall survive termination or Contract Conclusion.

H-25.12.2 Termination for Convenience

The State may, at its sole discretion, terminate the Contract for convenience, in whole or in part, by thirty (30) days written notice to the Contractor. In the event of such termination for convenience, the State shall pay the Contractor the agreed upon price, if separately stated, for Deliverables for which Acceptance has been given by the State. Amounts for Services or Deliverables provided prior to the date of termination for which no separate price is stated will be paid, in whole or in part, generally in accordance with Appendix F: Pricing Worksheet Instructions.

During the thirty (30) day period, the Contractor shall wind down and cease its Services as quickly and efficiently as reasonably possible, without performing unnecessary Services or activities and by minimizing negative effects on the State from such winding down and cessation of Services.

H-25.12.3 Termination for Conflict of Interest

The State may terminate the Contract by written notice if it determines a conflict of interest exists, including but not limited to, a violation by any of the parties hereto of applicable laws regarding ethics in public acquisitions and procurement and performance of Contracts.

In such case, the State shall be entitled to a pro-rated refund of any current development, support and maintenance costs. The State shall pay all other contracted payments that would have become due and payable if the Contractor did not know, or reasonably did not know, of the conflict of interest.

In the event the Contract is terminated as provided above pursuant to a violation by the Contractor, the State shall be entitled to pursue the same remedies against the Contractor as it could pursue in the event of a default of the Contract by the Contractor.

H-25.12.4 Termination Procedure

Upon termination of the Contract, the State, in addition to any other rights provided in the Contract, may require the Contractor to deliver to the State any property, including without limitation, Software and Written Deliverables, for such part of the Contract as has been terminated.

After receipt of a notice of termination, and except as otherwise directed by the State, the Contractor shall:

a. Stop work under the Contract on the date, and to the extent specified, in the notice;
b. Promptly, but in no event longer than thirty (30) days after termination, terminate its orders and Subcontracts related to the work which has been terminated and settle all outstanding liabilities and all claims arising out of such termination of orders and Subcontracts, with the approval or

ratification of the State to the extent required, which approval or ratification shall be final for the purpose of this Section;

c. Take such action as the State directs, or as necessary to preserve and protect the property related to the Contract which is in the possession of the Contractor and in which the State has an interest;
d. Transfer title to the State and deliver in the manner, at the times, and to the extent directed by the State, any property which is required to be furnished to the State and which has been accepted or requested by the State; and
e. Provide written certification to the State that the Contractor has surrendered to the State all said property.

H-25.13 Limitation of Liability

H-25.13.1 State

Subject to applicable laws and regulations, in no event shall the State be liable for any consequential, special, indirect, incidental, punitive, or exemplary damages. Subject to applicable laws and regulations, the State's liability to the Contractor shall not exceed the total Contract price set forth in the Contract Agreement, Appendix H-5: Contract Price/Price Limitation/Payment.

Notwithstanding the foregoing and any provision of this Contract to the contrary, in no event does the State waive its sovereign immunity or any applicable defenses or immunities.

H-25.13.2 The Contractor

Subject to applicable laws and regulations, in no event shall the Contractor be liable for any consequential, special, indirect, incidental, punitive or exemplary damages and the Contractor's liability to the State shall not exceed two times (2X) the total Contract price set forth in the Contract Agreement, Appendix H-5: Contract Price/Price Limitation/Payment . Notwithstanding the foregoing, the limitation of liability shall not apply to the Contractor's indemnification obligations set forth in Appendix H-13: Indemnification and confidentiality obligations in Appendix H-25.10.12: Confidential Information, which shall be unlimited.

H-25.13.3 State's Immunity

Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant shall survive termination or Contract conclusion.

H-25.13.4 Survival

This Contract Agreement, Section H-25.14: Limitation of Liability shall survive termination or Contract conclusion.

H-25.14 Change of Ownership

In the event the Contractor should change ownership for any reason whatsoever, the State shall have the option of continuing under the Contract with the Contractor, its successors or assigns for the full remaining term of the Contract; continuing under the Contract with the Contractor, its successors or assigns for such period of time as determined necessary by the State; or immediately terminate the Contract without liability to the Contractor, its successors or assigns.

H-25.15 Assignment, Delegation and Subcontracts

The Contractor shall not assign, delegate, Subcontract, or otherwise transfer any of its interest, rights, or duties under the Contract without the prior written consent of the State. Such consent will not be unreasonably withheld. Any attempted transfer, assignment, delegation, or other transfer made without the State's prior written consent shall be null and void and may constitute an event of default at the sole discretion of the State.

The Contractor shall remain wholly responsible for the performance of the entire Contract regardless of whether assignees, delegates, Subcontractors or other transferees ("Assigns") are used, unless otherwise agreed to in writing by the State and the Assigns fully assumes in writing any and all obligations and liabilities under the Contract from the Effective Date. In the absence of a written assumption of full obligations and liabilities of the Contract, any permitted assignment, delegation, subcontract or other transfer shall neither relieve the Contractor of any of its obligations under the Contract nor shall it affect any remedies available to the State against the Contractor that may arise from any event of default of the provisions of the Contract. The State will consider the Contractor to be the sole point of contact with regard to all contractual matters, including payment of any and all charges resulting from the Contract.

H-25.16 Dispute Resolution

Prior to the filing of any formal proceedings with respect to a dispute (other than an action seeking injunctive relief with respect to intellectual property rights or Confidential Information), the party believing itself aggrieved (the "Invoking Party") shall call for progressive management involvement in the dispute negotiation by written notice to the other party. Such notice shall be without prejudice to the Invoking Party's right to any other remedy permitted by this Agreement.

H-25.17 Venue and Jurisdiction

Any action on the Contract may only be brought in the State of New Hampshire's Merrimack County Superior Court.

H-25.18 Project Holdback

The State will withhold five percent (5%) of the agreed Deliverables pricing tendered by the Contractor in this firm and fixed price engagement until final project acceptance.

H-25.19 Escrow of Code

The Contractor will enter into a source and configuration code escrow agreement, with a State approved escrow agent. The proposed escrow agreement shall be submitted with the Contractor's Proposal for review by the State. The escrow agreement requires the Contractor to put the Contractor Software source and configuration code in escrow. The source code shall be released to the State if one of the following events has occurred:

a. The Contractor has made an assignment for the benefit of creditors; or
b. The Contractor institutes or becomes subject to a liquidation or bankruptcy proceeding of any kind; or
c. A receiver or similar officer has been appointed to take charge of all or part of the Contractor's assets; or
d. The Contractor or its Subcontractor terminates its maintenance and operations support Services for the State for the Software or has ceased supporting and maintaining the Software for the State, whether due to its ceasing to conduct business generally or otherwise, except in cases where the termination or cessation is a result of the non-payment or other fault of the State; or
e. The Contractor defaults under the Contract; or
f. The Contractor ceases its on-going business operations or that portion of its business operations relating to the licensing and maintenance of the Software.

APPENDIX I: TERMS AND DEFINITIONS

The following general Contracting Terms and definitions apply except as specifically noted elsewhere in this document.

Acceptance	Notice from the State that a Deliverable has satisfied Acceptance Test or Review.
Acceptance Letter	An Acceptance Letter provides notice from the State that a Deliverable has satisfied Acceptance Tests or Review.
Acceptance Period	The timeframe during which the Acceptance Test is performed.
Acceptance Test Plan	The Acceptance Test Plan provided by the Contractor and agreed to by the State that describes at a minimum, the specific Acceptance process, criteria, and Schedule for Deliverables.
Access Control	Supports the management of permissions for logging onto a computer or network.
Agency	"Agency" shall mean the Bureau or Department, both as defined herein.
Agency Representative	In the context of Appendix C: System Requirements and Deliverables, the Bureau's designated representative. Also referred to as "Agency's Designated Representative".
Agreement	A Contract duly executed and legally binding.
Appendix	Supplementary material that is collected and appended at the back of a document.
Approve	"Approve" and its variations (e.g., "Approval") when capitalized in this RFP refers to the State's Acceptance of a Document, condition, action or Deliverable in writing for its own internal purposes. The State's Approval shall not be construed to mean the State's endorsement or assumption of liability, nor shall it relieve the Contractor of its responsibilities under the Contract.
Audit Trail Capture and Analysis	Supports the identification and monitoring of activities within an application or system.
Breach or Breach of Security	Unlawful and unauthorized acquisition of unencrypted computerized data that materially compromises the security, confidentiality or integrity of personal information maintained by a person or commercial entity.
Bureau	New Hampshire Department of Transportation (NHDOT), Bureau of Turnpikes, 36 Hackett Hill

	Road, Hooksett, NH 03106.
Business Day	The twenty-four (24) hour day expressed from 00:00 AM to 24:00 AM in military time.
Certification	The Contractor's written declaration with full supporting and written Documentation (including without limitation test results as applicable) that the Contractor has completed development of the Deliverable and certified its readiness for applicable Acceptance Testing or Review.
Change Order or Change Request	Formal documentation prepared for a proposed change in the Specifications or the Contract Document.
Completion Date	End date for the Contract.
Confidential Information	Information required to be kept Confidential from unauthorized disclosure under the Contract.
Contract	The Agreement between the State of New Hampshire and a Contractor, which creates binding obligations for each party to perform as specified in the Contract Documents.
Contract Conclusion	Refers to the conclusion of the Contract, for any reason, including but not limited to, the successful Contract completion, termination for convenience, or termination for default.
Contract Documents	Documents that comprise this Contract.
Contract Managers	The persons identified by the State and the Contractor who shall be responsible for all contractual authorization and administration of the Contract. These responsibilities shall include but not be limited to processing Contract Documentation, obtaining executive approvals, tracking costs and payments, and representing the parties in all Contract administrative activities.
Contracted Contractor	The Contractor whose proposal or quote was awarded the Contract with the State and who is responsible for the Services and Deliverables of the Contract.
Custom Software	Software developed by the Contractor specifically for this project for the State of New Hampshire.
Data	State's records, files, forms, Data and other documents or information, in either electronic or paper form, that will be used/converted by the Contractor during the Contract Term.
Deliverable	A Deliverable is any Written, Software, or Non-Software Deliverable (letter, report, manual, book, other), provided by the Contractor to the State or

	under the terms of a Contract requirement.
Department	An agency of the State – N.H. Department of Transportation.
Department of Information Technology (DoIT)	The Department of Information Technology established under RSA 21-R by the Legislature effective September 5, 2008.
Design Documentation	System Design Documentation required under this Contract, including as example but not limited to: the Requirements Document, Software Development Plan, System Requirements Document and System Detailed Design Document.
Documentation	All information that describes the installation, operation, and use of the Software, either in printed or electronic format.
Digital Signature	Guarantees the unaltered state of a file.
Effective Date	The Contract and all obligations of the parties hereunder shall become effective on the date the Governor and the Executive Council of the State of New Hampshire approves the Contract.
Encryption	Supports the encoding of data for security purposes.
Enhancements	Updates, additions, modifications to, and new releases for the Software, and all changes to the Documentation as a result of Enhancements, including, but not limited to, Enhancements produced by Change Orders.
Event of Default	Any one or more of the following acts or omissions of a Contractor shall constitute an event of default hereunder ("Event of Default") 4. Failure to perform the Services satisfactorily or on schedule; 5. Failure to submit any report required; and/or 6. Failure to perform any other covenant, term or condition of the Contract
Existing Lane System	Existing Lane System and its variations, (e.g. Existing Lane Host Server, Existing Lane Contractor, Existing Lane System Central Host System, Existing Lane Host System) with Xerox.
Existing ORT System	Existing ORT System in Hooksett and Hampton and its variations, (e.g. ORT Host CPS) with Kapsch/Telvent.
E-ZPass Customer Service Center *(CSC)*	*E-ZPass* Back Office System.
Final Acceptance Test (FAT)	The Final Acceptance Test is a verification process performed in a natural storm event. The FAT

	verifies System functionality against predefined acceptance criteria that support the successful execution of approved maintenance solution(s).
Final System Acceptance	Final System Acceptance will be considered by the State to have occurred when, the State in its sole discretion, determines the Contractor has complied with all of the completion requirements set forth for the Project in the Contract Agreement.
Firm Fixed Price Contract	A Firm-Fixed-Price Contract provides a price that is not subject to increase, i.e., adjustment on the basis of the Contractor's cost experience in performing the Contract.
Governor and Executive Council	The New Hampshire Governor and Executive Council.
GUI	Graphical User Interface.
Identification and Authentication	Supports obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
Implementation	The process for making the System operational for processing the Data.
Information Technology (IT)	Refers to the tools and processes used for the gathering, storing, manipulating, transmitting, sharing, and sensing of information including, but not limited to, Data processing, computing, information systems, telecommunications, and various audio and video technologies.
Input Validation	Ensure the application is protected from buffer overflow, cross-site scripting, SQL injection, and canonicalization
Intrusion Detection	Supports the detection of illegal entrance into a computer system.
Invoking Party	In a dispute, the party believing itself aggrieved.
Key Project Staff	Personnel identified by the State and by the contracted Contractor as essential to work on the Project.
Licensee	The State of New Hampshire.
Maintenance	The phase of the Project immediately subsequent to Final System Acceptance to June 30, 2019 with the potential of three (3) – three (3) year optional extensions at the sole discretion of the State.
Non Exclusive Contract	A Contract executed by the State that does not restrict the State from seeking alternative sources for the Deliverables or Services provided under the

	Contract.
Non-Software Deliverables	Deliverables that are not Software Deliverables or Written. Deliverables, e.g., meetings, help support, services, other.
Normal Business Hours	Normal Business Hours – 8:00 a.m. to 5:00 p.m. EST, Monday through Friday excluding State of New Hampshire holidays. State holidays are: New Year's Day, Martin Luther King Day, President's Day, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving Day, and Christmas Day. Specific dates will be provided.
Notice to Proceed (NTP)	The State Contract Manager's written direction to the Contractor to begin work on the Contract on a given date and time.
Operating System	System is fully functional, all Data has been loaded into the System, is available for use by the State in its daily operations.
Operational	Operational means the System is operating and fully functional, all Data has been loaded; the System is available for use by the State in its daily operations, and the State has issued an Acceptance Letter.
Order of Precedence	The order in which Contract/Documents control in the event of a conflict or ambiguity. A term or condition in a document controls over a conflicting or ambiguous term or condition in a document that is lower in the Order of Precedence.
Project	The planned undertaking regarding the entire subject matter of an RFP and Contract and the activities of the parties related hereto.
Project Team	The group of State employees and contracted Contractor's personnel responsible for managing the processes and mechanisms required such that the Services are procured in accordance with the Project Management Plan on time, on budget and to the required specifications and quality.
Project Management Plan	A document describing the processes and methodology to be employed by the Contractor to ensure a successful project.
Project Managers	The persons identified who shall function as the State's and the Contractor's representative with regard to Review and Acceptance of Contract Deliverables, invoice sign off, and review and approval of Change Orders.

Project Staff	State personnel assigned to work with the Contractor on the project.
Proposer	Any individual, firm, or corporation who has submitted a Proposal on the Project and who has met the minimum requirements established by the State for Proposal evaluation. Also referred to as the "Contractor".
Proposal	The submission from a Contractor in response to the Request for a proposal or statement of work.
Review	The process of reviewing Deliverables for Acceptance.
Review Period	The period set for review of a Deliverable. If none is specified then the review period is fifteen (15) business days.
RFP (Request for Proposal)	A Request For Proposal solicits Proposals to satisfy State functional requirements by supplying data processing product and/or Service resources according to specific Terms and Conditions.
Role/Privilege Management	Supports the granting of abilities to users or groups of users of a computer, application or network.
Schedule	The dates described in the Project Management Plan for deadlines for performance of Services and other Project events and activities under the Contract.
SaaS	Software as a Service- Occurs where the COTS application is hosted but the State does not own the license or the code.
Service Level Agreement	A signed agreement between the Contractor and the State specifying the level of Service that is expected of, and provided by, the Contractor during the term of the Contract.
Services	The work or labor to be performed by the Contractor on the Project as described in the Contract.
Software	All custom Software and COTS Software provided by the Contractor under the Contract.
Software Deliverables	COTS Software and Enhancements.
Software License	Licenses provided to the State under this Contract.
Solution	The Solution consists of the total Solution, which includes, without limitation, Software and Services, addressing the requirements and terms of the Specifications. The off-the-shelf Software and configured Software customized for the State and provided by the Contractor in response to this

	RFP.
Specifications	The written Specifications that set forth the requirements which include, without limitation, this RFP, the Proposal, the Contract, any performance standards, Documentation, applicable State and federal policies, laws and regulations, State technical standards, subsequent State-approved Deliverables, and other Specifications and requirements described in the Contract Documents. The Specifications are, by this reference, made a part of the Contract as though completely set forth herein.
State	Reference to the term "State" shall include applicable agencies as defined in Section 1: INTRODUCTION of this RFP.
Statement of Work (SOW)	A Statement of Work clearly defines the basic requirements and objectives of a Project. The Statement of Work also defines a high level view of the architecture, performance and design requirements, the roles and responsibilities of the State and the Contractor. The SOW defines the results the Contractor remains responsible and accountable for achieving.
State's Confidential Records	The State's information regardless of its form that is not subject to public disclosure under applicable state and federal laws and regulations, including but not limited to RSA Chapter 91-A.
State Data	Any information contained within the State systems in electronic or paper format.
State Fiscal Year (SFY)	The New Hampshire State Fiscal Year extends from July 1st through June 30th of the following calendar year.
State Project Leader	The State's representative with regard to Project oversight.
State's Project Manager (PM)	The State's representative with regard to Project management and technical matters. The State's Project Managers are responsible for review and Acceptance of specific Contract Deliverables, invoice sign off, and Review and approval of a Change Orders.
Subcontractor	A person, partnership, or company not in the employment of, or owned by, the Contractor, which is performing Services under this Contract under a separate Contract with or on behalf of the Contractor.

System	All Software, specified hardware, and interfaces and extensions, integrated and functioning together in accordance with the Specifications.
System Integrator	The selected Contractor on this Project. See “”Contractor”.
Test Plan	A plan, integrated in the Project Management Plan, to verify the code (new or changed) works to fulfill the requirements of the Project. It may consist of a timeline, a series of tests and test data, test scripts and reports for the test results as well as a tracking mechanism.
Term	The duration of the Contract.
User Management	Supports the administration of computer, application and network accounts within an organization.
Contractor/Contractors	The contracted individual, firm, or company that will perform the duties and Specifications of the Contract.
Verification	Supports the confirmation of authority to enter a computer system, application or network.
Walk Through	A step-by-step review of a specification, usability features or design before it is handed off to the technical team for development.
Warranty Period	A period of coverage during which the contracted Contractor is responsible for providing a guarantee for products and services delivered. For this Contract the period will be one (1) year from the Provisional Final System Acceptance.
Warranty Releases	Code releases that are done during the warranty period.
Warranty Services	The Services to be provided by the Contractor during the Warranty Period.
Warranty Work	The Work to be provided during the Warranty Period under the terms of the Warranty as set forth in the Contract Documents.
Work	The term Work, as used herein, includes all work which, in the judgment of the State, is necessary for completion of the construction and the Project under the Contract Documents and includes, without limitation, all plant, labor, materials, equipment, systems, services and software and other facilities, installation, testing, operations and maintenance and other things necessary or proper for or incidental to the carrying out and completion of the terms of the Contract

	Documents. Furthermore, without limiting the generality of the foregoing, the Work includes and is the result of performing or furnishing Design professional services and construction and installed equipment required by the Contract Documents.
Project Management Plan	The overall plan of activities for the Project created in accordance with the Contract. The plan and delineation of tasks, activities and events to be performed and Deliverables to be produced under the Project as specified in Appendix C. The Project Management Plan shall include a detailed description of the Schedule, tasks/activities, Deliverables, critical events, task dependencies, and the resources that would lead and/or participate on each task.
Written Deliverables	Non-Software written deliverable Documentation (letter, report, manual, book, other) provided by the Contractor either in paper or electronic format.

APPENDIX J: FORMS

The following pages provide the referenced forms from the RFP document. Note that Form 6 is provided for information purposes only and not required to be completed as part of the RFP submission.

List of Forms Included:

- Form 1: Proposal Transmittal Letter
- Form 2: Contractor Inquiry Form
- Form 3: Contractor and Subcontractor Information Statement
- Form 4: Prime & Subcontractor Information Statement
- Form 5: Past Performance
- Form 6: Contractor Referenced Projects
- Form 7: Key Staff References
- Form 8: Compliance Matrix
- Form 9: Toll System Technology Change Request Form
- Form 10: Pricing Worksheet

APPENDIX K: Inventory List

K-1. Inventory List

K-2. Spare Parts List

APPENDIX L: Interface Control Documents (ICD's)

L-1. Final ICD ORT to Host- v1.3

Appendix M: Agreement for Existing ORT Toll Collection System (Hooksett/Hampton) with Kapsch

Appendix N: Bedford Main Plaza Drawing