I-4 Volume II - Technical Requirements

Section 1 - Project Description

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

Section 1  Project Description

A. General ................................................................................................................. 1
   1. Project Location................................................................................................. 1
   2. Design and Construction ................................................................................. 1
   3. Operations and Maintenance ......................................................................... 2
   4. Project Objectives............................................................................................ 3

B. I-4 ......................................................................................................................... 3
   1. I-4 Mainline ....................................................................................................... 3
   2. I-4 General Use Lanes Interchanges ................................................................. 4

C. Express Lanes and Exchanges ............................................................................ 4

D. Florida’s Turnpike Enterprise / CFX ................................................................. 5
   1. Turnpike Interchange ....................................................................................... 5
   2. SR 408 Mainline and Interchange .................................................................... 5

E. Approvals ........................................................................................................... 5

F. Utility Coordination/Adjustments ...................................................................... 7

G. Transit Accommodation ..................................................................................... 7

H. ITS/Systems Integration .................................................................................... 7

I. Landscape and Hardscape .................................................................................. 7
Section 1 Project Description

A. General

1. Project Location

The Project Limits means the limits of full typical section construction along I-4 (SR 400) and extend from West of Kirkman Road (Milepost 9.581) in Orange County to East of SR 434 (Milepost 4.017) in Seminole County. The Project passes through or lies immediately adjacent to the governmental jurisdictions of the City of Orlando, City of Winter Park, the Town of Eatonville, the Cities of Maitland and Altamonte Springs, as well as unincorporated areas of Orange and Seminole Counties.

I-4 is a limited access facility that includes interchanges with the following facilities within the Project Limits:

- Universal Boulevard
- Kirkman Road (SR 435)
- Grand National Boulevard/Caravan Court (New)
- Florida’s Turnpike (SR 91)
- Conroy Road
- John Young Parkway
- Orange Blossom Trail (SR 600, US 17-92)
- Michigan Avenue
- Kaley Street
- Spessard L. Holland East-West Expressway (SR 408)
- Anderson Street
- South Street
- Amelia Street
- Colonial Drive (SR 50)
- Ivanhoe Boulevard
- Princeton Street
- Par Avenue
- Fairbanks Avenue (SR 426)
- Lee Road (SR 423)
- Maitland Boulevard (SR 414)
- SR 436
- Central Parkway
- SR 434

2. Design and Construction

Concessionaire shall design and construct the Project as described herein and as shown in the Preliminary Design set forth in Appendix 20 (Preliminary Design) of the Agreement. Concessionaire shall be responsible for the performance of the Design Work and Construction Work in accordance with the Contract Documents. The Design Work and Construction Work shall include the following main components:
• Reconstruction and widening of I-4 Segments.
• Modification and construction of auxiliary lanes, braided ramps, crossroad bypasses and various geometric improvements to eliminate operational deficiencies caused by merge, diverge, and weaving segments along the Project.
• Establishing a mainline design speed at 60 mph or greater.
• Reconstruction, widening, milling and resurfacing of numerous intersecting streets, as listed in this Section.
• Other off-system improvements as described in the Off System Construction and Maintenance Agreements included in Volume III – Additional Mandatory Standards.
• Construction of four (4) Express Lanes, two (2) in each direction, for the length of the Project Limits
• Geometric improvements to the I-4/SR 408 (East-West Expressway) interchange and widening / reconstruction of the SR 408 mainline from west of Tampa Avenue to east of Delaney Avenue.
• Deployment of various Intelligent Transportation System (ITS) elements for the Express Lanes and General Use Lanes along I-4, the East-West Expressway and associated ramps, and various cross-streets as defined in Volume II, Section 3, Attachment 1.
• Preservation of an envelope within the specified limits of the Project Right of Way to accommodate construction of a future transit system as defined in the PD&E commitments and the Record of Decision for the Central Florida Light Rail Transit System Project.
• Construction of noise barriers, bridge works, drainage, Utility relocations, signing and pavement markings, signalization, lighting and landscaping.
• Establishment of tolling infrastructure including design and construction of toll gantries, toll buildings and conduits to support the tolling of the I-4 Express Lanes.
• The SR 408 improvements outside the O&M Limits shall be designed and constructed in accordance with the Contract Documents including Volume III – Additional Mandatory Standards, OOCEA Design Criteria.

3. Operations and Maintenance

The goal of FDOT is to ensure that the I-4 General Use Lane Segments and I-4 Express Lane Segments are managed, maintained and operated in accordance with the Contract Documents. From the date of NTP 2 and for the duration of the Term, Concessionaire shall be responsible for the O&M Work and ultimately handing back the facility in a manner that is compliant with the Handback Requirements described in Volume II, Section 5. In addition, Concessionaire shall be responsible for O&M Work for those specific areas impacted by any Advance Construction Activities authorized under Section 4.8.3 of the Agreement from the date of commencement of such activities until Substantial Completion.

Concessionaire shall turn over operation and maintenance responsibilities to the appropriate agency in areas of the Project outside the Operating Period O&M Limits upon Final Acceptance of the Project. Concessionaire shall be responsible for all warrantees and guarantees provided for materials and workmanship outside the O&M Limits per the Contract Documents, including the...
Statewide DRB Value Added Specifications and the Regional DRB Value Added Specifications.

Concessionaire shall be responsible for the operation and maintenance of the Project in accordance with the Operations and Maintenance requirements specified in Volume II, Section 4, which includes detailed requirements for the preparation of operations procedures and manuals, maintenance procedures and manuals, and maintenance management information systems. The operations and maintenance criteria have stringent requirements with respect to safety, operations activities, and maintenance activities as required in order to provide a safe environment for the public’s use of the facilities.

4. Project Objectives

FDOT’s principal goal is to provide a signature corridor that achieves the following primary objectives throughout the Term:

- Reduce congestion on Project-related facilities;
- Reduce traffic-related impacts to the environment;
- Obtain cost-effective financing and leverage available state funds and toll revenue to maximize funding for this and other regional projects eligible for federal transportation funding;
- Expedite delivery of Project improvements;
- Timely facility management and capacity improvements to maintain adequate service levels;
- High quality design and construction;
- Safe construction;
- High quality operations and maintenance service;
- Participation by disadvantaged business enterprises and Small Businesses, consistent with the Agreement and applicable laws and regulations;
- Cooperation and coordination with stakeholders in development, operation and maintenance of the Project;
- Opening the Express Lanes for tolling operations;
- Proactive approach to public outreach; and
- Expedited response to customer requests.

B. I-4

1. I-4 Mainline

I-4 currently has three General Use Lanes in each direction with zero, one or two auxiliary lanes between interchanges. Median widths vary throughout the Project, but opposing traffic shall always be separated by a variety of protective devices, including, for example, barrier walls. A grass median is located in the western-most and eastern-most portions of the Project. The proposed improvements shall replace the existing number of General Use Lanes in both directions, and replace the existing number of auxiliary lanes between interchanges.
2. I-4 General Use Lanes Interchanges

As presently configured, I-4 is served by a variety of interchange types. The following system interchanges are found within the Project Limits: Florida’s Turnpike (SR 91); East-West Expressway (SR 408); and Maitland Boulevard (SR 414).

The Preliminary Design depicts major improvements to the mainline interchanges to eliminate operational deficiencies. The Preliminary Design improvements accomplish this by removing left entrances and exits, introducing braided ramps, and eliminating on and off-ramps by combining ramp movements. The improvements either eliminate the mainline weaving segments or increase the weaving segment length.

The interchange improvements throughout the Project necessitate a number of new bridges and bridge replacements. Refer to Volume II, Section 3 for more information on the required bridge improvements.

C. Express Lanes and Exchanges

Four (4) proposed Express Lanes (two in each direction) will significantly improve the capacity and operations of the I-4 Segments. To maximize operational efficiency, the lanes will be tolled utilizing dynamic pricing.

The Express Lanes generally follow the profile of the General Use Lanes, requiring median bridge structures over the crossroads. The Express Lanes typical section shall include 10-foot outside shoulders, two 12-foot lanes, and 4-foot inside shoulders in each direction separated by a physical barrier. Concrete barrier wall shall provide separation between the Express Lanes and the General Use Lanes.

Ingress and egress to and from the Express Lanes shall be limited to two types of connections. The first type of connection is a slip ramp to/from the mainline. Slip ramps shall be used to connect the General Use Lanes to the Express Lanes. There are 6 sets (pairs) of intermediate slip ramps between the General Use Lanes and the Express Lanes. The General Use Lanes, Express Lanes and slip ramps shall be designed to include overlapping gores between the facilities with overlapping physical separation using barrier wall to prevent vehicles from traveling the wrong direction on a slip ramp. Acceleration lanes and deceleration lanes are required in the Express Lanes and General Use Lanes at slip ramp locations.

The second type of connection involves direct connect ramps. Direct connect ramps shall provide direct ingress/egress to/from the side street passing over/under I-4 and the Express Lanes without motorists having to enter onto the I-4 mainline General Use Lanes. The direct connect ramps typically involve a ramp connecting the Express Lanes with a relatively short and straight single lane ramp with retaining walls. The connection to the side street is typically made through a signalized T intersection configuration. There are five locations in the Project where direct connect ramps are to be placed: Grand National Boulevard, South Street, Anderson Street, Ivanhoe Boulevard, and Central Parkway.
Overhead static signs and dynamic message signs shall provide guidance and price information depending on the level of congestion within the Express Lanes in advance of the entrance to the Express Lane. Tolls will be collected electronically from seven Tolling Points located throughout the I-4 Express Lane Segments. Concessionaire shall be responsible for the construction and maintenance of the tolling gantry structure and related infrastructure, as described in the Tolling Infrastructure Support Requirements set forth in Volume II, Section 3, Attachment 2.

FTE will provide, install, operate and maintain the electronic tolling equipment for the Express Lanes, and will manage all SunPass customer services and violation enforcement. FDOT will set the toll rates and retain the toll revenue for the Term.

The tolling facilities along SR 408 are owned and operated by CFX. CFX will set the toll rates along SR 408 and retain this toll revenue for the Term.

D. Florida’s Turnpike Enterprise / CFX

1. Turnpike Interchange

The existing I-4/Florida’s Turnpike ramps shall be reconfigured to improve operations within the interchange. In addition, stormwater management facilities are required for the infield areas of the interchange.

A design-build project sponsored by FTE is underway which improves the I-4 eastbound on-ramp to alleviate queuing on the Florida’s Turnpike mainline.

2. SR 408 Mainline and Interchange

SR 408 is owned and maintained by CFX. The SR 408 mainline shall be improved/reconstructed from west of Tampa Avenue to east of Delaney Avenue. Portions of the proposed SR 408/I-4 interchange have been built under a previous contract (FBPC 242484-2-52-01).

Concessionaire shall expand the existing ramp toll plaza located at the SR 408 WB exit to Orange Blossom Trail by adding an additional cash/E-Pass lane and toll booth per the OOCEA Design Criteria located in Volume III - Additional Mandatory Standards. Integration of the additional cash/E-pass lane will be completed by a CFX vendor.

SR 408 improvements outside the O&M Limits shall be designed in accordance with the Contract Documents including Volume III – Additional Mandatory Standards, OOCEA Design Criteria. All ramps connecting SR 408 and I-4 are included in the O&M Limits for the duration of the Term.

E. Approvals

In November 1989, FDOT completed a Master Plan for improvements to I-4 from the Polk/Osceola County Line to U.S. 17-92 in Seminole County. The original I-4 Master Plan proposed highway improvements through 2010. The Master Plan recommended that the existing roadway be widened by up to sixteen (16) lanes with an envelope for transit in the median. In addition, it recommended modifications to several interchanges.
The Master Plan was approved by METROPLAN ORLANDO, formerly the Orlando Urban Area Metropolitan Planning Organization (MPO), in November of 1989.

In October 1996, FDOT completed the I-4 Multi-Modal Master Plan (MMMP) for the seventy-three (73) mile I-4 project through Central Florida. The I-4 MMMP limits extended from the Polk/Osceola County line to Interstate 95 in Volusia County. The I-4 MMMP was developed to identify the specific components of the I-4 improvements through 2020.

The I-4 MMMP was performed using a three (3)-tier analysis, in which a broad range of alternatives were evaluated and narrowed. Tier 1 dealt with a broad array of potential investment strategies, including roadway investments outside the I-4 Project. Nine (9) alternatives were selected for further analysis in Tier 2. Tier 2 was conducted as a Major Investment Study (MIS), in accordance with Federal law. The recommended design concept and scope were adopted by both METROPLAN ORLANDO and the Volusia County MPO. Tier 3 refined the basic Tier 2 design concept and scope into a Master Plan, which adheres to FDOT Interstate Highway Policy.

In September 1995, METROPLAN ORLANDO and the Volusia County MPO voted to adopt the I-4 MIS design concept and scope. In December 1995, both MPO’s approved their respective 2020 Long Range Transportation Plans (LRTP’s), which included the recommended I-4 MIS improvements. As a result of the recommendations presented in the I-4 MMMP and MIS, FDOT elected to go forward with the next phase of the I-4 Project facility development process through four (4) closely coordinated studies. These studies included three (3) PD&E studies for the I-4 highway sections:

- Section 1 from CR 532 (Osceola/Polk County Line) to West of SR 528 in Osceola and Orange County: Environmental Assessment, Finding of No Significant Impacts.
- Section 2 from SR 528 to East of SR 472, on Orange, Seminole and Volusia County: Environmental Impact Statement.
- Section 3 from East of SR 472 to I-95 in Volusia County: Environmental Assessment, Finding of No Significant Impacts.

In addition, a Preliminary Engineering Report (PER) and an Environmental Impact Statement (EIS) for a Light Rail Transit (LRT) system was concurrently developed. The LRT and I-4 studies represent freestanding projects capable of independent operation.

The Project is located within the limits of the Section 2 PD&E Study. The initial ROD for limits from West of Kirkman Road to the Orange/Seminole County Line in Orange County was executed on December 5, 2002. The ROD for the limits from the Orange/Seminole County Line to East of SR 434 in Seminole County was executed on December 8, 2005.

The System Access Modification Report (SAMR) was originally approved in June 2000, subsequently updated and approved in 2003, further updated and approved in 2011, and is currently under reevaluation and is pending approval. The SAMR for the interchanges inside the Project Limits was fully re-evaluated and approved on January 20, 2011, with a recent revision approved on October 10, 2013.
FDOT has completed design change reevaluations to address all changes to the Preliminary Design to date and updates to the various Project Commitments and environmental documentation.

F. Utility Coordination/Adjustments

Various overhead and underground Utilities may be impacted by the Work. Existing Utilities within the Project Limits, to the extent such locations are currently known by FDOT, are shown in the Utility base mapping files in the Reference Documents. Potential Utility conflict areas based on the Reference Design and the associated Utilities are identified in Utility Conflict Matrices provided in the Reference Documents.

Notwithstanding the foregoing, Concessionaire shall be responsible for locating all existing Utilities in accordance with Section 4.5.1.3 of the Agreement and otherwise complying with its obligations under Section 4.5 of the Agreement and Volume II, Section 3.E.

G. Transit Accommodation

Concessionaire shall coordinate the Work with existing transit operations and accommodate proposed transit facilities within the Project Limits. Refer to Volume II, Section 3.F for detailed information.

H. ITS/Systems Integration

Concessionaire shall be responsible for the design, construction, and integration of the existing, new, and permanent ITS within the Construction ITS Limits. Concessionaire shall be responsible for the maintenance of the existing new, and permanent ITS within the Maintenance ITS Limits. Concessionaire shall continue to provide the functionality of the existing ITS within the Construction ITS Limits. Concessionaire’s responsibility for installation and integration of ITS systems are described in Volume II Section 3 Attachment 1.

I. Landscape and Hardscape

Concessionaire shall design, construct and maintain landscape and hardscape elements for the Project within the O&M Limits which enhance the Project while minimizing the cost of maintenance. The required landscape and hardscape elements shall result in a signature Project in accordance with FDOT’s Bold Vision for Florida’s Highway Beautification as well as agreements/commitments with local agencies. Concessionaire’s responsibility for landscape and hardscape are described in Volume II, Section 3.P.
I-4 Volume II - Technical Requirements

Section 2 - Project Requirements and Provisions for Work

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

A. Abbreviations and Definitions ........................................................................................................... 1  
   1. Abbreviations ................................................................................................................................. 1  
   2. Definitions ................................................................................................................................... 3  
B. Governing Regulations, APL/QPL and Additional Mandatory Standards ............................................ 13  
C. Services Provided by FDOT ............................................................................................................ 21  
D. Project Right of Way Acquisition ..................................................................................................... 21  
   1. Project Right of Way ...................................................................................................................... 21  
   2. Additional Right of Way Needs ...................................................................................................... 24  
E. Geotechnical Services ....................................................................................................................... 24  
F. Railroad Coordination ...................................................................................................................... 25  
G. Survey .............................................................................................................................................. 25  
H. Submittals .......................................................................................................................................... 26  
   1. Plans and Calculations .................................................................................................................. 26  
   2. O&M Plans ................................................................................................................................. 35  
   3. Shop Drawings ............................................................................................................................. 35  
I. Project Schedule ............................................................................................................................... 41  
J. Meetings and Progress Reporting ................................................................................................... 46  
K. Public Involvement .......................................................................................................................... 47  
   1. General ......................................................................................................................................... 47  
   2. Community Awareness Plan (CAP) ............................................................................................ 47  
   3. Initial Public Information Meeting ............................................................................................... 48  
   4. Other Public Meetings ................................................................................................................ 48  
   5. Public Involvement Data ............................................................................................................... 49  
   6. Project Newsletter/Brochures ........................................................................................................ 49  
   7. Public Information during Construction ..................................................................................... 49  
   8. Public Information during Operations and Maintenance ............................................................ 50  
   9. Project Website/Hotline .............................................................................................................. 50  
  10. Media Relations and Access ......................................................................................................... 50  
L. QA/QC Plan ...................................................................................................................................... 51  
   1. Design ......................................................................................................................................... 51  
   2. Construction ............................................................................................................................... 51  
M. FHWA Project Management Plan / Financial Plan ........................................................................ 51  
N. Project Office .................................................................................................................................. 51  
O. On-the-Job Training ....................................................................................................................... 53  
P. Partnering Meeting .......................................................................................................................... 53  
Q. Construction Oversight Services ..................................................................................................... 53  
R. Materials Testing ............................................................................................................................. 53  
S. Adjacent Projects ............................................................................................................................. 53
T. Other General Requirements ................................................................. 54

U. Management Review Board .............................................................. 60
Section 2  Project Requirements and Provisions for Work

A.  Abbreviations and Definitions

1.  Abbreviations

The following abbreviations, when used in the Technical Volumes, represent the full text shown:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL</td>
<td>Approved Products List</td>
</tr>
<tr>
<td>APE</td>
<td>Average Pavement Elevation</td>
</tr>
<tr>
<td>AVL</td>
<td>Automatic Vehicle Location</td>
</tr>
<tr>
<td>BCR</td>
<td>Bridge Concept Report</td>
</tr>
<tr>
<td>BPC</td>
<td>Basic Project Configuration</td>
</tr>
<tr>
<td>CADD</td>
<td>Computer Aided Drafting and Design</td>
</tr>
<tr>
<td>CAP</td>
<td>Community Awareness Plan</td>
</tr>
<tr>
<td>CCTV</td>
<td>Closed Circuit Television</td>
</tr>
<tr>
<td>CFRC</td>
<td>Central Florida Rail Corridor</td>
</tr>
<tr>
<td>CMP</td>
<td>Corridor Master Plan</td>
</tr>
<tr>
<td>CMS</td>
<td>Changeable Message Sign</td>
</tr>
<tr>
<td>COS</td>
<td>Construction Oversight Services</td>
</tr>
<tr>
<td>CPAM</td>
<td>Construction Project Administration Manual</td>
</tr>
<tr>
<td>CPCH</td>
<td>CADD Production Criteria Handbook</td>
</tr>
<tr>
<td>CPM</td>
<td>Critical Path Method</td>
</tr>
<tr>
<td>CRA</td>
<td>Community Redevelopment Area</td>
</tr>
<tr>
<td>CRAS</td>
<td>Cultural Resource Assessment Survey</td>
</tr>
<tr>
<td>CSER</td>
<td>Contamination Screening Evaluation Report</td>
</tr>
<tr>
<td>CSL</td>
<td>Cross-Hole Sonic Logging</td>
</tr>
<tr>
<td>CSP</td>
<td>Conceptual Signing Plan</td>
</tr>
<tr>
<td>CSU/DSU</td>
<td>Channel Service Unit/Data Service Unit</td>
</tr>
<tr>
<td>DCIC</td>
<td>District Contamination Impact Coordinator</td>
</tr>
<tr>
<td>DMS</td>
<td>Dynamic Message Sign</td>
</tr>
<tr>
<td>EAG</td>
<td>Emergency Access Gate</td>
</tr>
<tr>
<td>EDMS</td>
<td>Electronic Document Management System</td>
</tr>
<tr>
<td>EDP</td>
<td>Emergency Distribution Panel</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>ELMS</td>
<td>Express Lane Management System</td>
</tr>
<tr>
<td>ELMS CCTV</td>
<td>ELMS Closed Circuit Television Cameras</td>
</tr>
<tr>
<td>ELMS DMS</td>
<td>ELMS Dynamic Message Sign</td>
</tr>
<tr>
<td>ELMS MVDS</td>
<td>ELMS Microwave Vehicle Detection Stations</td>
</tr>
<tr>
<td>ELS</td>
<td>Express Lane Software (Pricing)</td>
</tr>
<tr>
<td>EPO</td>
<td>Emergency Power Off</td>
</tr>
<tr>
<td>ERP</td>
<td>Environmental Resource Permit</td>
</tr>
<tr>
<td>ESAL</td>
<td>Equivalent Single Axle Load</td>
</tr>
<tr>
<td>ESBA</td>
<td>Endangered Species Biological Assessment</td>
</tr>
<tr>
<td>ETC</td>
<td>Electronic Toll Collection</td>
</tr>
<tr>
<td>FCEN</td>
<td>Florida Central Railroad</td>
</tr>
<tr>
<td>FDP</td>
<td>Fiber Distribution Panel</td>
</tr>
<tr>
<td>FON</td>
<td>Fiber Optic Network</td>
</tr>
<tr>
<td>FRC</td>
<td>Foundation Review Consultant</td>
</tr>
</tbody>
</table>
2. Definitions

Annual Handback Evaluation Report means the annual report developed by Concessionaire and submitted to FDOT during the 48 months prior to the end of the Operating Period that identifies the Work completed by Concessionaire and provides the necessary and scheduled Work needed towards meeting the requirements set forth in Volume II, Section 5.

AR Plan has the meaning set forth in Section 5.9 of Section 3, Attachment 4 of the Technical Requirements.

Bridge Load Rating means the process defined in FDOT Plans Preparation Manual Section 26.17.

Bridge Maintenance and Bridge Inspection Plan means the plan prepared by Concessionaire describing the approach, staffing and schedule to inspect and maintain bridge structures within the O&M Limits as further described in Section 4 of the Technical Requirements.


City of Orlando Downtown CRA means the area within the boundaries of the City of Orlando’s Downtown Orlando Community Redevelopment Area.

Component Plans means the plans described at Volume II, Section 2.H.1(e).

Computer Security Access Request means the request for use of FDOT Data Center Facilities and access to FDOT’s computer systems. The procedures for requesting access are found at http://www.dot.state.fl.us/computersecurity/Consultants/AccessRequestInstructions.shtm.

Community Traffic Safety Team means locally based groups of highway safety advocates committed to solving traffic safety problems. Members include local city, county, state, and occasionally federal agencies, as well as private industry representatives and local citizens. Community boundaries are determined by the
individuals comprising the team, and can be a city, an entire county, a portion of a county, multiple counties, or any other jurisdictional arrangement.

**Concessionaire Testing Expert** has the meaning set forth in Section 3, Attachment 2, subsection 11.C.4 of the Technical Requirements.

**Configuration Management** means the arrangements for establishing and maintaining the integrity and control of software/hardware products and documents during the life cycle of the ITS.

**Construction Criteria** means standards, measures and expectations used in evaluating and verifying construction performance for the Project, as set forth in the Technical Requirements.

**Construction Oversight Services (COS) Consultant** means the consulting firm under contract to FDOT to provide validation and oversight of the Construction Work to ensure compliance with the Contract Documents.

**Contamination Assessment/Remediation Contractor** means a contractor qualified to perform contamination assessment and remediation work in designated contamination areas.

**Controlling Software** means the software that ITS must be integrated into and controlled from. For ELMS the software is Express Lanes Software, its descendant, or its replacement. For FMS the software is SunGuide® Software. For Service Patrol AVL function the software is SunGuide® Software, its successor, or its replacement.

**Corridor Electronic Equipment** has the meaning set forth in Section 4.2.5.1 of the Technical Requirements.

**Critical Temporary Retaining Wall** means a retaining wall that is necessary to maintain the safety of the traveling public, or structural integrity of nearby structures or utilities as defined in FDOT Plans Preparation Manual Section 30.3.4.

**Culverts** mean any closed conduit that conveys stormwater. Culverts include but are not limited to cross drains, side drains, storm sewers, gutter drains, box culverts and bridge culverts. Culverts do not include drainage wells or Bridges.

**Customer Relations Unit** means a function of Concessionaire’s O&M Work that serves as the means for the general public to inquire about any issues related to the Project and also serves as the means to distribute information about the Project to the public, all as further defined in Section 4 of the Technical Requirements.

**D&C Monthly Report** means a monthly report submitted by Concessionaire during D&C Work which provides a written description of design and construction activities and tracks the status of all Project commitments.

**Dark Mode** means the lack of all signalized indications at a signalized location.
Design Criteria means standards, measures and expectations used in evaluating and verifying design performance for the Project, as set forth in the Technical Requirements.

Design Manager has the meaning set forth in Section 3, Attachment 4, of the Technical Requirements.

Designer of Record means the Architect of Record or the EOR.

District Construction Engineer means the authority for the entire construction activity in the District.

Drilled Shaft Installation Plan means the detailed plan providing information about Concessionaire's equipment, means and methods suitable and acceptable for the intended purpose, and proposed qualified staff to perform and monitor the operation, and finally certify the drilled shaft foundation.

Dynamic Message Sign (DMS) means a permanently installed electronic sign used to give travelers information consistent with Standard Specification 700.

EDMS is an FDOT electronic data management systems accessed through a virtual private network (VPN) used a central repository data base of all construction project documents and correspondence accumulated throughout the construction phase of the project.

Element means an individual component, system or subsystem of the Project.

ELMS Closed Circuit Television Cameras (ELMS CCTV) means the CCTV cameras that will be used to monitor the toll being displayed on each of the ELMS Dynamic Message Signs for each segment and each time period.

ELMS Dynamic Message Signs (ELMS DMS) means the DMS that will be used to display the prevailing toll for each segment of the Express Lanes for a given time period.

ELMS Microwave Vehicle Detection Stations (ELMS MVDS) means the traffic sensors to be spaced at regular intervals along the Express Lanes for the purposes of collecting traffic data as input for tolling or pricing calculations.

End to End Testing means testing of the ITS, Toll Collection System and the Toll Pricing System in accordance with the requirements set forth in Section 3, Attachment 2, subsection 11.C.1, of the Technical Requirements.

Express Lane Management System (ELMS) means the system that provides the means to manage congestion along the Project by imposing and collecting variable tolls for each segment of the Express Lanes using of the following roadside devices: ELMS Microwave Vehicle Detection Stations (ELMS MVDS), ELMS Closed Circuit Television Cameras (ELMS CCTV) and ELMS Dynamic Message Signs (ELMS DMS).
**Express Lane Software (Pricing) (ELS)** means the Express Lanes software that will determine the toll to be charged on each segment of the Express Lanes for a given time period. Data from the ELMS MVDS will be used as input to the system and the calculated toll will be communicated to the ELMS Back Office via the FON. The prevailing toll will also be communicated to users via the ELMS DMS.

**FDOT Project Office** has the meaning set forth in Section 2.N of the Technical Requirements.

**FDOT’s Tolls Data Centers** means FDOT’s Tolls Data Center facilities located near the Turnpike Mainline Mileposts 75 in Boca Raton and 263 in Orlando.

**FDOT Utility Accommodation Manual** means FDOT Utility Accommodation Manual issued by FDOT, which is incorporated by reference into Florida Administrative Code Section 14-46.001, as the same may be amended, supplemented or replaced from time to time.

**FDOT Testing Expert** means a testing expert retained by FDOT for the purposes of participating in the development, execution and acceptance of the End to End Testing.

**Fiber Optic Network (FON)** means the fiber optic cable that will contain fiber optic strands utilized to connect to field devices. This includes the MFON and UFON.

**Final Plans** has the meaning set forth in the PPM.

**Florida I Beam (FIB)** means a load carrying member as defined by the Design Standards Index 20010 and Index 20036 through 20096.

**Florida U Beam (FUB)** means a load carrying member as defined by the Design Standards Index 20210 and Index 20248 through 20272.

**Florida’s Turnpike SunPass Customer Service Operation** means the Florida’s Turnpike Customer Service Call Center whose phone number is 1-888-TOLL-FLA (1-888-865-5352). The objective of the SunPass Customer Service Center is to help serve the approximately two million SunPass customers throughout the State.

**FMS Closed Circuit Television Cameras** means the CCTV cameras will be used to monitor traffic conditions along I-4 as part of the operation of the FMS.

**FMS Dynamic Message Signs (FMS DMS)** means the DMS will be used to display traveler information messages to drivers along I-4 as part of the operation of the FMS.

**FMS Microwave Vehicle Detection System (FMS MVDS)** means the traffic sensors that will be spaced at regular intervals along I-4 for the purposes of collecting traffic data for input to the FMS.
**Foundation Certification Package** means signed and sealed documents prepared by the GFDEOR indicating that foundation unit has meet the Design Criteria and Construction Criteria established for this foundation which includes axial capacity, lateral stability, integrity and foundation settlement. Foundation inspection logs of driven piles, drilled shafts or augercast piles prepared by ‘Foundation Inspectors’ during foundation construction working under the supervision of the GFDEOR, and other related documents should be included as part of the package.

**Foundation Review Consultant (FRC)** means a firm which is retained by and reports directly to Quality Assurance Firm (QAF) which is responsible for reviewing foundation certification packages and ensuring foundations have been constructed, inspected and tested in accordance with the Contract Documents.

**Freeway Management System (FMS)** means the system that provides the means to monitor and manage traffic from the Regional Traffic Management Center (RTMC) using the Fiber Optic Network (FON) and the following devices: FMS Microwave Vehicle Detection Stations (FMS MVDS), FMS Closed Circuit Television Cameras (FMS CCTV); FMS Dynamic Message Signs (FMS DMS) and Ramp Signaling Subsystem (RSS).

**FTE’s Central Repair Depot** means FTE’s Central Repair Depot facility located at Turnpike Mainline Milepost 99.

**Geotechnical Foundation Design EOR (GFDEOR)** has the meaning set forth in Section 2.D of the Technical Requirements.

**Handback Evaluation Criteria** means the guidelines, tests, standards and other information to be used in the Handback Evaluation Plan.

**Highway, Street, or Road** is a general term denoting a public way for purposes of vehicular travel, including the entire area within the Project Right of Way.

**I-4 Aesthetic Agreements** means the Aesthetic Agreements included in Volume III – Additional Mandatory Standards.

**I-4 Aesthetic Requirements** means the aesthetic requirements included in Volume III – Additional Mandatory Standards including all local agency I-4 Aesthetic Agreements, City of Orlando Streetscape requirements, SR 408 Aesthetic Guidelines and Criteria, and a Corridor Supplement for I-4 Aesthetics.

**I-4 Project Web Site** means FDOT’s website http://www.moving-4-ward.com.

**IA Program** means FDOT’s independent assurance program described in FDOT’s Materials Manual.

**Inspector** means an authorized representative of FDOT, assigned to make official inspections of the materials furnished and of the Work.

**Laboratory** means the official testing laboratory used by FDOT.
**Landscape and Irrigation Maintenance Agreement** means an agreement between FDOT and a third party that stipulate maintenance responsibility for landscape and/or irrigation installed outside the O&M Limits.

**Layer 3 Switch** has the meaning set forth in Section 3 Attachment 1 Section D.4 of the Technical Requirements.

**Limited Access Facility** means, as defined in Section 334.03, Florida Statutes, a street or highway especially designed for through traffic, and over, from, or to which owners or occupants of abutting land or other persons have no right or easement of access, light, air, or view by reason of the fact that their property abuts upon such limited access facility or for any other reason. Such highways or streets may be facilities from which trucks, buses, and other commercial vehicles are excluded; or they may be facilities open to use by all customary forms of street and highway traffic.

**Limited Access Right of Way** means a FDOT right of way line which prohibits access to a highway designed for through traffic.

**Maintenance Management System (MMS)** means an automated system used to assist in planning, organizing, budgeting and controlling the overall maintenance operations for FDOT.

**Major Repairs** means the restoration of a structure, including all its appurtenances, to its original condition per the requirements listed in Section 4.2.3 of the Technical Requirements.

**Managed Fiber Optic Network (MFON)** means the fiber optic strands in the cable utilized by Concessionaire to connect to field devices.

**Managed Field Gigabit Ethernet Switch** has the meaning set forth in Section 3 Attachment 1 Section D.2 of the Technical Requirements.

**Median** means the portion of a divided highway or street separating the traveled ways for traffic moving in opposite directions.

**Minimum Landscaping Budget** has the meaning set forth in Section 3.P.2 of the Technical Requirements.

**MRP Standards** means the standards, measurements, and desired maintenance conditions all as detailed in FDOT Maintenance Rating Handbook (MRP) which is produced and made available by the State Maintenance Office. The MRP provides the detailed information required for uniform and accurate data collection and shall be used as the basis to comply with the Work during the Operating Period and as set forth in the Handback Criteria in Table 5.1 located in Volume II, Section 5.

**Network Address Translation (NAT)** means private Internet Provider (IP) networks which connect to the Internet replacing a private IP address with a public IP address and translating the private addresses in the internal private network into legal, routable addresses that can be used on the public Internet.
**Noise Study Report** means the Draft Noise Study Report Addendum dated July 2013, a copy of which is included in Volume III – Additional Mandatory Standards.

**Notice of Correction** means a written notice by the QAM to FDOT that a noted non-conformance issue has been corrected. The notice shall provide the non-conforming issue description, location, date of correction, method of correction and any follow up action required.

**O&M Monthly Report** means a monthly report submitted by Concessionaire during O&M Work which provides a written description of O&M activities.

**O&M Quality Management System (O&M-QMS)** means the method prepared by Concessionaire to establish the self-monitoring process and monitoring of the O&M Work performance in accordance with Section 4.1.3.4 of the Technical Requirements.

**O&M Quality Management System (O&M-QMS) Reports** means reports prepared by Concessionaire that identify the results of the procedures and processes implemented by Concessionaire via the O&M Quality Management System.

**Off-System** means that portion of the Project which does not lie within the Project Limited Access Right of Way.

**Off-system Construction and Maintenance Agreements** means the Off-system Construction and Maintenance Agreements included in Volume III – Additional Mandatory Standards.

**Operating Traffic Management Plan** means Concessionaire’s plan for traffic management in performing the O&M Work.

**OT Program** means the Project’s owner’s testing program described in Volume II, Section 3, Attachment 4, Appendix 1.

**Pile Installation Plan** means the detailed plan providing information about Concessionaire’s equipment, means and methods suitable and acceptable for the intended purpose, and proposed qualified staff to perform and monitor the operation, and finally certify the pile foundation.

**Portable Traffic Monitoring Site** has the meaning set forth in the “Definitions” section of the FDOT Traffic Monitoring Handbook.

**Positive Drainage** means overland, open channel and/or closed conduit flow by gravity towards or through a stormwater conveyance system from a higher elevation to a lower elevation.

**Preliminary Aesthetics Master Plan** has the meaning set forth in Appendix 2.E of the Agreement.
PTZ Camera means closed circuit television camera with pan-tilt-zoom capabilities.

Quality Assurance Firm (QAF) means a firm hired by Concessionaire to assure engineering activities that are implemented in a quality system meet the requirements of the Agreement via utilization of systematic measurements, comparison with a standard, monitoring of processes and an associated feedback loop that confers error prevention.

Radioactive Materials License means a license issued by the State of Florida Department of Health Bureau of Radiation Control for the use of portable surface moisture density gauges that use radioactive materials in the form of a sealed source.

Ramp Signaling Subsystem (RSS) means the signals and supporting system that will be used to meter ramp traffic entering the I-4 General Use Lane Segments.

Regional Traffic Management Center means FDOT’s District 5 regional hub for the Central Florida ITS, currently co-located with the Florida Highway Patrol Troop D Headquarters and FDOT District 5 Orlando Urban Office at 133 South Semoran Boulevard, Orlando, Florida. This system includes the operation of hundreds of closed-circuit television cameras, dynamic message signs, and vehicle detector sensors on I-4, I-95 and other arterial state roads via the extensive fiber optic network. Other RTMC operations include information dissemination to 511, [www.fl511.com](http://www.fl511.com) web site, and Road Ranger service patrol dispatch. The RTMC operates 24-hours/7-days a week.

Rehabilitation means the improvement or betterment of a structure, including all its appurtenances, to a condition meeting or exceeding current design standards.

Reference Design means the preliminary design represented by the design plans prepared for FDOT under Financial Project ID 242592-3-32-01; 242592-2-32-01; 242484-3-32-01; 242484-4-3-32-01; 242484-5-3-32-01; and 242484-6-3-32-01.

Requests for Additional Information means a written request for additional technical information.

Resident Compliance Specialist has the meaning set forth in Volume II Section 3, Attachment 4, Subsection 4.16 of the Technical Requirements.

Right of Way Certification means, with respect to a Project Right of Way parcel, that FDOT owns and/or controls all rights of way needed for construction and has completed all requirements of FDOT Right of Way Manual Section 12.1.1.

Roadbed means the portion of the roadway occupied by the subgrade and shoulders.

Roadway means the portion of a highway within the limits of construction.
**ROW Acquisition Schedule** means the schedule for acquisition of Project Right of Way defined in the Project Right of Way Maps, as set forth in Section 2.D of the Technical Requirements.

**RTMC Operator** means a member of FDOT staff with appropriate qualifications and security clearance to be present in and support an operational role in the RTMC.

**Service Patrol** has the meaning set forth in Section 4.3.5 of the Technical Requirements.

**Service Patrol Limits** means the areas in which Concessionaire is responsible for providing Service Patrol services, as shown in the maps identified as Service Patrol Limits in Volume III – Additional Mandatory Standards.

**Service Patrol Program** means the service patrol program described in Section 4.3.5 of the Technical Requirements.

**Service Patrol Project Manager** has the meaning set forth in Section 4-3.5.1.1 of the Technical Requirements.

**Service Patrol SOG** has the meaning set forth in Section 4-3.5 of the Technical Requirements.

**Settlement and Vibration Monitoring Plan** means the plan required under Section 3.C.5 of the Technical Requirements for monitoring and recording vibration levels produced by equipment used on the Project.

**Shoulder** means the paved or unpaved portion of the roadbed outside the edges of the traveled way or back of curb, and extending to the top of front slopes.

**Site Manager** is a FDOT electronic data management systems accessed through a virtual private network (VPN) to record contract and user data for daily work reports, change orders, contractor payments, contract adjustments and Buy America tracking.

**Sound Barrier Walls** or **Sound Barriers** or **Noise Walls** means the walls to be designed, constructed and maintained by Concessionaire for noise abatement measures in accordance with the requirements of the Technical Volumes.

**Special Emphasis Crosswalk** means a pedestrian crosswalk delineated with pavement markings per the requirements of FDOT Design Standards Index 17346.

**Specifications Package** has the meaning set forth in Section 3.K of the Technical Requirements.

**State of Florida Notice of Acceptance** means a document prepared by the Product Control Division of the Florida Building Commission, accepting the applicant’s request to certify compliance with the Florida Building Code.
**State Roads** means state roads, as defined in Section 334.03(26), Florida Statutes.

**Subgrade** means the portion of the roadbed immediately below the base course or pavement, including below the curb and gutter, valley gutter, shoulder and driveway pavement. The subgrade limits ordinarily include those portions of the roadbed shown in the plans to be constructed to a design bearing value or to be otherwise specially treated. Where no limits are shown in the plans, the subgrade section extends to a depth of 12 inches below the bottom of the base or pavement and outward to 6 inches beyond the base, pavement, or curb and gutter.

**Substructure** means all of that part of a bridge structure below the bridge seats, including the parapets, backwalls, and wingwalls of abutments.

**Sunshine One Call** means Sunshine 811. [http://www.callsunshine.com/](http://www.callsunshine.com/)

**Superstructure** means the entire bridge structure above the substructure, including anchorage and anchor bolts, but excluding the parapets, backwalls, and wingwalls of abutments.

**Supplemental Specifications** has the meaning set forth in definitions section of the Standard Specifications.

**Surface Moisture Density Gauges** means a tool used to measure the density and inner structure of a material.

**Technical Special Provisions** has the meaning set forth in the definitions section of the Standard Specifications.

**Temporary Mitigation Performance Measures** means the temporary mitigation performance measures described in Section 4.6.2 of the Technical Requirements.


**Tolling Pavement Area** means the 100-foot long pavement section bisected by the centerline of the toll equipment structure with a width extending from back of barrier wall to back of barrier wall.

**Tolls Back Office** means SunPass back office operated by FTE that will support account management and other service functions related to Tolls operation.

**Tolls Equipment Building** means the building located adjacent to the Tolls Gantry to house elements of the tolls roadside infrastructure and Fiber Optic Network (FON).

**Tolls Gantries** means specially designed overhead gantry structures that will support overhead mounted tolls roadside infrastructure equipment such as transponder readers, antennae and enforcement devices.
Traffic Incident Management (TIM) has the meaning set forth in Section 4.3.4 of the Technical Requirements.


Traveled Way means the portion of the roadway providing for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

Transition and Training Plan means the plan that will be developed by Concessionaire and provides the necessary details for a comprehensive plan on how Concessionaire will work with FDOT to ensure a seamless transfer of O&M Work responsibilities at the end of the Operating Period.

Type B Fence means fence as defined by FDOT Design Standards Index 802.

Unmanaged Fiber Optic Network (UFON) means the fiber optic stands in the cable unutilized by Concessionaire to connect to field devices. This includes FDOT utilized fibers, local agency utilized fibers, and dark fibers.

Utility Coordination Manager means Concessionaire’s single dedicated person responsible for managing all Utility coordination.

Utility Work Schedule means FDOT form developed as the method for a Utility Owner to transmit to FDOT, FDOT’s Contractor, and other right-of-way users, the location, relocation, adjustment, installation, and/or protection of their facilities.

Utility Adjustment Plans means the plans, specifications, and cost estimates furnished for a particular Utility Adjustment.

Volume I means Volume I (Agreement and Appendices thereto) of the Contract Documents, as amended, supplemented or replaced from time to time in accordance with the Agreement.

Volume II means the Technical Requirements.

B. Governing Regulations, APL/QPL and Additional Mandatory Standards

(1) Governing Regulations

The Work shall be in compliance with all applicable Governing Regulations including FDOT, FHWA, AASHTO, and additional requirements specified in the Contract Documents. Except to the extent expressly provided otherwise in the Contract Documents, the current edition, including updates, of the following Governing Regulations shall be used in the performance the Work. With respect to the D&C Work, current edition is defined as the edition in place and adopted by FDOT as of 30 days prior to the Proposal Due Date, except with respect to MUTCD, Concessionaire shall use the 2009 MUTCD with Revision Numbers 1 and 2 incorporated, dated May 2012. Florida Department of Transportation Design Bulletins and Update Memos applicable to this Project are provided in Volume III – Additional Mandatory Standards.
Concessionaire shall acquire and utilize the necessary manuals and guidelines that apply to the Work. The services shall include preparation of all documents necessary to complete the Work.

1. 2009 MUTCD with Revision Numbers 1 and 2 incorporated, dated May 2012
   [Link](http://mutcd.fhwa.dot.gov/)

2. AASHTO AWS D1.1/ANSI Structural Welding Code – Steel
   [Link](http://pubs.aws.org/)

3. AASHTO D1.5/AWS D1.5 Bridge Welding Code
   [Link](https://bookstore.transportation.org/item_details.aspx?ID=1756)

4. AASHTO Guide for the Development of Bicycle Facilities

   [Link](https://bookstore.transportation.org/item_details.aspx?ID=1333)

   [Link](http://www.highwaysafetymanual.org/Pages/default.aspx)

7. AASHTO – LRFD Bridge Design Specifications

8. AASHTO – A Policy on Geometric Design of Highways and Streets

9. AASHTO – Roadside Design Guide

10. AASHTO Roadway Lighting Design Guide
    [Link](https://bookstore.transportation.org/collection_detail.aspx?ID=42)

11. AASHTO Standard Specifications for Highway Bridges

    [Link](http://www.aashtojournal.org/Pages/052413Publication.aspx)

13. 2010 ADA (Americans with Disabilities Act) Standards for Accessible Design
    [Link](http://www.ada.gov/2010ADAstandards_index.htm)

    [Link](http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/625020015.pdf?15.pdf)
15. AISC Manual of Steel Construction, referred to as "AISC Specifications"
 http://www.aisc.org/content.aspx?id=2884

 http://safety.fhwa.dot.gov/roadway_dept/night_visib/roadwayresources.cfm

17. American National Standards Institute (ANSI)
 http://webstore.ansi.org/FindStandards.aspx?SearchString=ansi&SearchOption= 1&PageNum=0&source=google&adgroup=ansi&keyword=ansi%20webstore&qclid=CJrTh5_Mw7gCFTFo7AodKGAAcw

18. Federal Highway Administration Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications

 http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17&id=37

 http://www.fhwa.dot.gov/design/interstate/pubs/access/access.pdf


22. Federal Highway Administration Toolbox Volumes III, IV, and V
 http://ops.fhwa.dot.gov/trafficanalysistools/

23. Florida Accessibility Code


25. Florida Building Code

26. Florida Department of Agriculture and Consumer Services, Grades and Standards for Nursery Plants
 http://www.freshfromflorida.com/pi/plantinsp/plant.html

27. Florida Department of Transportation American with Disabilities Act (ADA) Compliance – Facilities Access for Persons with Disabilities Procedure
 http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/625020015.pdf
28. Florida Department of Transportation Bold Vision for Florida’s Highway Beautification Program

29. Florida Department of Transportation Bridge Load Rating Manual
   http://www.dot.state.fl.us/statemaintenanceoffice/LRManual82012.pdf

30. Florida Department of Transportation Bridge, Overhead Sign Structures and High Mast Light Poles Damage Assessment Review Guidelines

31. Florida Department of Transportation CCTV Agreement Procedure No. 750-040-005
   http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/750040005.pdf

32. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Production Criteria Handbook

33. Florida Department of Transportation Construction Contract Compliance Workbook Chapter 5
   http://www.dot.state.fl.us/equalopportunityoffice/ContractComplianceWorkbook.shtm

34. Florida Department of Transportation Construction Project Administration Manual (CPAM)

35. Florida Department of Transportation Construction Training & Qualification Manual
   http://www.ctqpflorida.com/requirements_for_each_qualification.asp

36. Florida Department of Transportation Consultant CEI Office Automation Standards

37. Florida Department of Transportation Design Standards
   http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm

38. Florida Department of Transportation Drainage Handbook – Temporary Drainage Design
   http://www.dot.state.fl.us/rddesign/Hydraulics/files/TemporaryDrainageHB.pdf

39. Florida Department of Transportation Drainage Manual
40. Florida Department of Transportation Driveway Information Guide

41. Florida Department of Transportation EFB User Handbook (Electronic Field Book)
   http://www.dot.state.fl.us/surveyingandmapping/doc_pubs.shtm

42. Florida Department of Transportation Facilities Design Manual
   http://www.dot.state.fl.us/projectmanagementoffice/Architectural/FDOT_Facilities
   DesignManual_2010.pdf

43. Florida Department of Transportation Flexible Pavement Condition Survey Handbook
   http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/pub
   lications/researchreports/pavement/flexiblehandbook.pdf

44. Florida Department of Transportation Flexible Pavement Coring and Evaluation Procedure
   http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/pub
   lications/materialsmanual/documents/v1-section32-clean.pdf

45. Florida Department of Transportation Flexible Pavement Design Manual

46. Florida Department of Transportation Florida Sampling and Testing Methods
   http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/pub
   lications/fstm/disclaimer.shtm

47. Florida Department of Transportation Highway Beautification Policy

48. Florida Department of Transportation Instructions for Design Standards

49. Florida Department of Transportation Intelligent Transportation System Guide Book

50. Florida Department of Transportation Interchange Handbook
    http://www.dot.state.fl.us/planning/systems/sm/intjus/#handbook

51. Florida Department of Transportation Intersection Design Guide
    http://www.dot.state.fl.us/rddesign/FIDG-Manual/FIDG.shtm

52. Florida Department of Transportation IT Policies and Statutes
    http://www.dot.state.fl.us/computersecurity/ITPolicies.shtm
53. Florida Department of Transportation maintenance procedures, manuals guides and handbooks as listed at http://www.dot.state.fl.us/statemaintenanceoffice/AMContractDocuments.shtm or its successor


58. Florida Department of Transportation Project Development and Environment Manual, Parts 1 and 2 http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm


60. Florida Department of Transportation Right of Way Manual http://www.dot.state.fl.us/rightofway/Documents.shtm


65. Florida Department of Transportation Road Ranger Operations Procedures http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/750030015.pdf
66. Florida Department of Transportation Roadway Plans Preparation Manuals (PPM)  
   http://www.dot.state.fl.us/rrdesign/PPMManual/PPM.shtm

67. Florida Department of Transportation Safe Mobility For Life Program Policy Statement  
   http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/000750001.pdf

68. Florida Department of Transportation Soils and Foundations Handbook  
   http://www.dot.state.fl.us/structures/Manuals/SFH.pdf

69. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications  
   http://www.dot.state.fl.us/specificationsoffice/Default.shtm

70. Florida Department of Transportation Structures Detailing Manual  

71. Florida Department of Transportation Structures Manual  
   http://www.dot.state.fl.us/structures/DocsandPubs.shtm

72. Florida Department of Transportation Surveying Procedure  
   http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/550030101.pdf

73. Florida Department of Transportation Traffic Detector Handbook  

74. Florida Department of Transportation Traffic Engineering and Operations Safe Mobility for Life Program  
   http://www.dot.state.fl.us/trafficoperations/Operations/SafetyisGolden.shtm

75. Florida Department of Transportation Traffic Engineering Manual  

76. Florida Department of Transportation Traffic Monitoring Guide  
   http://www.fhwa.dot.gov/pavement/pub_details.cfm?id=266

77. Florida Department of Transportation Traffic Monitoring Handbook  

78. Florida Department of Transportation Transportation Statistics RCI Field Handbook  

79. Florida Department of Transportation Utility Accommodation Manual  
   http://www.dot.state.fl.us/specificationsoffice/utilities/UAM.shtm

80. FDOT Minimum Specifications for Traffic Control Signals and Devices  
   http://www.dot.state.fl.us/trafficoperations/Traf_Sys/Product-Specifications.shtm
81. Florida Energy Efficiency Code for Building Construction
   http://www.energycodes.gov/adoption/states/florida

82. Florida Fire Prevention Code

83. Florida Uniform Traffic Code

84. Transportation Research Board - Highway Capacity Manual 2010

85. Institute of Electrical and Electronic Engineers (IEEE) Standards
   http://standards.ieee.org/

86. LYNX Customer Amenities Manual

87. National Bridge Inspection Standards
   http://www.fhwa.dot.gov/bridge/nbis.cfm

88. National Electrical Code
   http://www.nfpa.org/catalog/category.asp?category_name=National%20Electrical%20Code%20%20(NEC)&cookie%5Ftest=1

89. National Electrical Safety Code ANSI C2 (NESC)
   http://pdfsb.com/readonline/5a56524166767763458584231436e316a56454d3d3444969

90. NFPA 14: Standard for the Installation of Standpipes and Hose Systems

91. NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances

92. NFPA 780: Standard for the Installation of Lightning Protection Systems

93. RP-8-00 Recommended Practice for Roadway Lighting
   http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2flESNA+RP-8-00

94. State of Florida “Open Roads Policy”
   http://www.dot.state.fl.us/trafficoperations/Traf_Incident/pdf/Open_Roads_Policy_FDOT_FHP.pdf
95. Turnpike Plans Preparation and Practice Handbook (TPPPH)
http://design.floridasturnpike.com/prod_design/tppph/2012/tppph2012vol2.html
(Applies only to portions of the Project maintained by Florida Turnpike Authority)

96. Other Governing Regulations referenced within the various Technical Volumes.

(2) APL/QPL

Concessionaire shall use items listed on the APL and QPL in effect at the time of use of the applicable equipment, products and materials. The provisions of Section 1.8 of the Agreement shall apply with respect to any changes made to the APL and QPL.

(3) Additional Mandatory Standards

Except as otherwise expressly provided in Volume I or Volume II, Concessionaire shall comply with and observe the Additional Mandatory Standards.

C. Services Provided by FDOT

FDOT shall be responsible for the following:

- Oversight.
- Approval of, and revisions to, Project Right of Way Maps.
- Release of plans and Shop Drawings for construction.
- Construction Oversight Services (COS).
- Any noise study reevaluation.
- Update of the Cultural Resource Assessment Survey (CRAS).
- FDOT will manage all SunPass customer services and violation enforcement.
- NEPA reevaluation review for the Preliminary Design and submittal to FHWA.
- Review and coordination with FHWA of Concessionaire-developed NEPA reevaluations.
- Oversight, review, and approval authority of the permitting process in accordance with 23 CFR 636.109.
- Coordination of, and payment of the relocation costs for, the Excluded Utility Adjustments.
- Permitting of Utilities installed within the Project Limits during the Term, except for Utility permits under a Governmental Entity’s permitting jurisdiction.
- Public outreach via FDOT’s Public Information Consultant.
- Coordinate and pay the cost for relocation of the specific utility facilities listed in Volume II Section 3.E.2.

D. Project Right of Way Acquisition

1. Project Right of Way

As of the Effective Date, FDOT has made available to Concessionaire the Project Right of Way, with the exception of the following parcels noted in Table 2.D.1 below, which are anticipated to be made available to Concessionaire by the Project ROW Certification Deadline:
Table 2.D.1

<table>
<thead>
<tr>
<th>PROJECT SECTION/ ZONE</th>
<th>PARCEL NUMBER</th>
<th>GENERAL LOCATION/TYE OF ACQUISITION (FEE/EASEMENT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>242484-3/1</td>
<td>480</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>812</td>
<td>GRAND NATIONAL ROADWAY/EASEMENT</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>481</td>
<td>GRAND NATIONAL ROADWAY, WRA/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>482</td>
<td>GRAND NATIONAL ROADWAY, WRA/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>483</td>
<td>GRAND NATIONAL ROADWAY, DRAINAGE/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>824</td>
<td>GRAND NATIONAL ROADWAY/PERPETUAL HARMONIZING EASEMENT</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>485</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>523</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>827</td>
<td>GRAND NATIONAL ROADWAY/PERPETUAL RIGHT OF WAY EASEMENT</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>524</td>
<td>GRAND NATIONAL / ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>586</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>825</td>
<td>GRAND NATIONAL ROADWAY/PERPETUAL HARMONIZING EASEMENT</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>587</td>
<td>GRAND NATIONAL/ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>828</td>
<td>GRAND NATIONAL ROADWAY/PERPETUAL RIGHT OF WAY EASEMENT</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>583</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>484</td>
<td>GRAND NATIONAL ROADWAY WRA/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>584</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>585</td>
<td>GRAND NATIONAL ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>529</td>
<td>MAINLINE ROADWAY/FEE</td>
</tr>
<tr>
<td>242484-3/1</td>
<td>808</td>
<td>MAINLINE ROADWAY/PERPETUAL DRAINAGE EASEMENT</td>
</tr>
<tr>
<td>242484-3/1 &amp; 2</td>
<td>820, 821 822, 823 814, 532, 533, 700</td>
<td>MAINLINE DRAINAGE/PERPETUAL DRAINAGE AND STORM SEWER/MAINTENANCE ROAD EASEMENT FOR M-1 POND</td>
</tr>
<tr>
<td>242484-5/3</td>
<td>821 and 819</td>
<td>FLORIDA HOSPITAL POND</td>
</tr>
<tr>
<td>242484-5/3</td>
<td>179</td>
<td>LEE ROAD ACCESS ROAD AND POND</td>
</tr>
<tr>
<td>242484-6</td>
<td>588</td>
<td>SR-414 MAITLAND BLVD, ROADWAY FEE</td>
</tr>
<tr>
<td>242592-2/5</td>
<td>164</td>
<td>MAINLINE ROADWAY/FEE</td>
</tr>
<tr>
<td>242592-2/5</td>
<td>168/817</td>
<td>MAINLINE ROADWAY/FEE</td>
</tr>
<tr>
<td>242592-2/5</td>
<td>169/816</td>
<td>MAINLINE ROADWAY/FEE</td>
</tr>
<tr>
<td>242592-2/5</td>
<td>180</td>
<td>WESTMONTE DRIVE/FEE</td>
</tr>
<tr>
<td>242592-3/6</td>
<td>102</td>
<td>MAINLINE ROADWAY/FEE RELOCATE CELL TOWER</td>
</tr>
</tbody>
</table>

Concessionaire shall not occupy or conduct the Work in any given parcel identified above until FDOT has issued a Right of Way Certification for such parcel.

FDOT has, in some cases, acquired property outside of the Project Right of Way. Concessionaire may utilize such acquired areas for permanent or temporary construction uses as designated on the annotated Project Right of Way Maps.
Should Concessionaire’s design require modification of the Limited Access Right of Way or Project Right of Way as shown in the Project Right of Way Maps, Concessionaire shall submit such changes to FDOT for its review and approval. For Limited Access Right of Way or Project Right of Way changes approved by FDOT, Concessionaire shall forward CADD files for the pertinent changes to FDOT, who will revise the Project Right of Way Maps accordingly.

FDOT has made certain commitments to third parties with respect to Project Right of Way parcels acquired prior to the Effective Date, as set forth in Volume III – Additional Mandatory Standards (the “Project ROW Commitments”). A working summary (not intended to be all-inclusive) of such commitments is also included in the Reference Documents. The Project ROW Commitments include requirements for advance property owner notifications prior to certain actions being taken by Concessionaire. Concessionaire shall carefully review all Project Right of Way acquisition documents and be familiar with the notifications required. Concessionaire shall make notifications via certified mail with a copy of all such notifications sent to FDOT.

Concessionaire shall remove any existing overhead or underground Utilities still present within the Project Right of Way but no longer in use, including backflow preventers, water, sewer, gas line, transformers, and Utility poles.

Most of the Project Right of Way has been cleared of structures and/or improvements. FDOT has and/or will provide, by the date of Right of Way Certification, all necessary asbestos abatement of buildings and/or structures that remain. Concessionaire shall remove all remaining structures, encroachments, and/or improvements within the Project Right of Way, except as otherwise provided in the Project ROW Commitments. This summary may not be all inclusive, and does not relieve Concessionaire of its obligation to review and comply with all Project ROW Commitments.

Physical separation with a minimum height of six (6) feet shall be provided at all times between the Limited Access Right of Way and the surrounding area using one of the following options:

a) FDOT Type B Fence,
b) For areas where noise barriers or retaining walls are six (6) feet or greater in height, fencing may be terminated at the retaining or noise wall as shown in the Design Standards,
c) For areas with outside shoulder concrete barrier, fence may be attached to or located immediately behind the shoulder barrier to provide an installed height of at least six (6) feet,
d) For the SR 408 portion of the Project, fencing shall be attached to the top of the closest retaining wall to the L/A R/W as per the standards, criteria, and documentation contained OOCEA Design Criteria. In areas with no retaining wall, fence shall be placed on the Limited Access Right of Way Line.

FDOT shall have final approval authority for the location and type of all installed physical separation. All final fencing used in the Project must be black vinyl coated Type B fence unless otherwise required by a Project Commitment.
Concessionaire shall prepare and submit requests for opening(s) in the Project Right of Way fence for FDOT and FHWA and/or partnering Governmental Entity approval. Requests shall include sketches for staging areas that Concessionaire wishes to access from outside the existing Project Right of Way fence. Openings shall be controlled by Concessionaire and used only for construction activities. Requested fence openings shall be gated and locked when not actively being used. Concessionaire shall locate all gates outside the roadway clear zone. Concessionaire shall restore any disturbed area to its preconstruction condition.

2. Additional Right of Way Needs

If Concessionaire identifies additional Project Right of Way that is needed beyond that identified in the Right of Way Maps, Concessionaire shall submit a request to FDOT. Such request to FDOT shall include a description of the need for the parcel, sketches of survey, legal descriptions, and title searches, along with any other legal documents available for each parcel. Concessionaire shall make its request for additional Project Right of Way to FDOT in sufficient time for adequate review and approval. FDOT retains sole discretion to approve or deny the acquisition of additional Project Right of Way. See Section 4.4 of the Agreement.

While FDOT will endeavor to acquire any additional Project Right of Way within eighteen (18) months after receipt of a complete and acceptable documentation package, FDOT does not guarantee the acquisition of such right of way within such time period.

If additional Project Right of Way is requested by Concessionaire, Concessionaire shall not commence any construction activities within such area unless and until FDOT has issued a Right of Way Clear Letter with respect to the additional Project Right of Way. The Right of Way Clear Letter will not be issued until such time as the additional Project Right of Way necessary to support the construction activities is acquired, all relocation is complete, asbestos survey has been completed and if necessary asbestos abatement is complete, and demolition of structures and improvements is completed (with the exception of those structures, improvements or encroachments to be cleared by Concessionaire as agreed to in the approval process for the additional Project Right of Way).

E. Geotechnical Services

FDOT has completed preliminary geotechnical investigations which have been provided to Concessionaire. Concessionaire shall employ the services of a Geotechnical Foundation Design EOR (GFDEOR) meeting the qualifications of SP105-8.13.2. The GFDEOR shall be responsible for reviewing existing geotechnical data and for conducting supplementary subsurface investigations as required, performing geotechnical analysis and providing all geotechnical recommendations. For components of the Work that require ground improvement methods, the GFDEOR must have verifiable experience performing design, instrumentation and data interpretation of the type of ground improvement to be used on at least two completed projects.
Concessionaire shall cause the QAF to engage the services of a Foundation Review Consultant (FRC) to perform an independent review of the foundation certification packages prior to submitting them to FDOT. The FRC shall meet the qualifications required for the GFDEOR and report to QAF.

F. Railroad Coordination

Concessionaire shall coordinate the Work with Florida Central Railroad Company, Inc. (FCEN) and FDOT’s Central Florida Rail Corridor (CFRC). Concessionaire shall be responsible for the cost of railroad coordination activities, obtaining railroad permits and railroad protective services.

Railroad contact information, protective services (railroad flagger) requirements, track encroachment restrictions, permitting, and any other requirements for FCEN are provided in Volume III - Additional Mandatory Standards. The design of the I-4 bridges over Robinson Street and FCEN right of way must accommodate plans for the addition of a future switch and track spur for a proposed FCEN track extension north along Garland Avenue. The alignment geometry for this future track addition is shown in the Preliminary Design. Concessionaire shall be responsible for the replacement of the existing rubber crossing surfaces at FCEN at-grade rail crossings on Garland Avenue and Hughey Avenue.

Operations in FDOT’s CFRC include freight service, commuter rail service (SunRail) and intercity passenger rail service (AMTRAK). Operations are governed by various agreements including an agreement between FDOT and CSX Transportation, Inc. titled Central Florida Operating and Management Agreement (CFOMA) dated November 30, 2007. Railroad contact information, protective services (railroad flagger) requirements, track encroachment restrictions, permitting, and any other requirements for CFRC may be accessed via Sunrail’s website at http://business.sunrail.com/welcome/page/useofthecorridor.

Installation of new rail crossing improvements will be required at the existing at-grade CFRC rail crossing on SR 50. FDOT will be responsible for the design and construction of the required crossing improvements, which may include crossing signals, crossing gates, tracks and crossing surface to 2 feet to the field side of the rails, and signal and switch communication improvements. Concessionaire shall provide SR 50 roadway design files to FDOT for design of the crossing improvements. Procurement and delivery of the crossing materials is anticipated to require a minimum of nine (9) months from receipt of Concessionaire SR 50 design files. Concessionaire shall coordinate its work with the crossing improvements and shall accommodate FDOT’s design, material procurement, and construction of the crossing improvements into the Project Schedule.

G. Survey

Concessionaire shall perform all surveying services necessary to complete the Work. Surveying services shall be in accordance with the requirements of Volume II, Section 3.B.
H. Submittals

1. Plans and Calculations

   a) General

   All plans must meet the minimum contents of a particular phase submittal as defined by the Contract Documents. FDOT may elect to review incomplete submittals. If FDOT reviews an incomplete submittal, such review does not alleviate Concessionaire of its obligation to submit the required documentation. Concessionaire may be required to resubmit an incomplete package, regardless of whether FDOT reviews the submittal. All plans shall be 100% electronically generated using CADD software that is consistent with the requirements of FDOT’s CADD Production Criteria Handbook. The standard FDOT directory structure and file naming conventions, as defined in FDOT’s CADD Production Criteria Handbook, shall be complied with. Concessionaire shall provide to FDOT with each submittal design calculations and other supporting documentation developed during the preparation of the plans. Such documentation shall be clearly identified and organized with each design submittal and the format of each item shall be indicated on the transmittal. The submittal shall adequately address the complete design of all elements. The calculations shall be neatly and logically presented on 8 ½” x 11” sheets (where possible), and all sheets shall be numbered. Text files and spreadsheets shall be in Microsoft Word and Excel formats, respectively.

   Unless otherwise stipulated herein, Concessionaire shall submit to FDOT two (2) hard copies and five (5) electronic copies of all submittal materials in PDF format on a Windows compatible CD or DVD. For roll plot submittals, Concessionaire shall submit to FDOT five (5) hard copies and five (5) electronic copies in PDF format on a Windows compatible CD or DVD. The electronic copies shall be secured using the Professional Electronic Data Delivery System (PEDDS), and the signed hardcopy of the delivery manifest must accompany each delivery. Each set of Component Plans (e.g., roadway plans and structure plans) shall be submitted as a separate PDF file. Electronic copies of submittal materials, including design files, calculations, reports, and documentation, shall be submitted in their original file formats and in PDF format. CADD files shall be submitted in their original file formats.

   Concessionaire shall submit a QA/QC certification statement and backup documentation with all submittals.

   It shall be Concessionaire’s responsibility to coordinate any required comment resolution issues with FDOT, to implement the necessary plans changes, and to resolve any comments and provide satisfactory comment responses to FDOT. Concessionaire’s next plan submittal is conditioned on FDOT concurrence with Concessionaire’s previous comment responses.
Throughout the Construction Period, an interactive workshop approach between FDOT and Concessionaire shall be utilized to assist Concessionaire in the efficient and progressive development of the construction plans and subsequent construction activities. Concessionaire shall be responsible for developing and submitting to FDOT for approval the following plans and calculations submittals:

b) Project Management Plan

Within 60 days following NTP 1, Concessionaire shall submit a Project Management Plan for review and approval by FDOT and FHWA. The Project Management Plan shall include the following:

- The design organization, indicating the responsibilities and structure of the design staff, down to and including discipline leads and the staff positions proposed in each discipline;
- The construction organization, indicating the responsibilities and structure of the construction staff, down to and including field superintendents and the staff positions proposed under each field superintendent for all shifts;
- The QAF organization, indicating the responsibilities and structure of the quality assurance staff, down to and including field inspection, and QA testing for all shifts;
- The O&M organization, indicating the responsibilities and structure of the O&M staff, down to and including the roadway, bridge and ITS discipline leads for the O&M Work;
- Design management process, including a description of how design personnel will interface with the construction, QAF and O&M organizations in accordance with the Preliminary Quality Plan;
- Construction management process, including the interface with the QAF and roles and responsibilities for approvals, Concessionaires coordination plan, the construction team’s management approach, the construction management structure, identification of Advanced Construction Activities, detailed delineation of Work Zones with identification of design and construction packages, and summary of major Project phases;
- Operations and maintenance process, including a description of how design personnel will interface with the construction, QAF and O&M organizations in accordance with the Preliminary Quality Plan, process for inspections and notifications of issues of non-compliance to FDOT, and process for providing applicable cures for non-compliance;
- Detailed description of the interface between the Design Work and Construction Work and the allocation of design and construction staff to implement the Project;
- Detailed description of the interface between the construction and O&M organization in the commissioning of the Project;
- Process for addressing constructability, durability, maintainability and environmental compliance in the Design Work, Construction Work and O&M Work;
- Process for construction closeout including the final estimates package, and management of the punch list;
- Concessionaire’s safety plan, for both employees of Concessionaire and the public, including the designation of a full-time safety officer, training procedures, description of the subcontractor health and safety plan, accident investigation procedures and exposure assessment;
- Concessionaire’s communications plan including the interface with FDOT District 5, CFX, FTE, Orange County, Seminole County, cities, regulatory agencies, utility agency owners, other stakeholders and the public during the Construction Period, at a minimum the following activities: plans and permits review; progress, workshops, partnering and utility coordination meetings; construction engineering and inspection; and public involvement and community input;
- Concessionaire’s process for managing the Project’s DBE, SBE, OJT, and Buy America requirements; and
- Concessionaire’s approach to cost and schedule management including schedule maintenance and submittals, change management procedures, internal cost management procedures.
- Concessionaire’s approach to Non-compliance reporting and resolution with each of its Contractors and Consultants and methodology on how this information will be reported to the FDOT.

c) Corridor Master Plan

The purpose of the Corridor Master Plan (CMP) is to ensure Concessionaire’s understanding and compliance with the Technical Requirements of the Contract Documents prior to submitting any 90% Component Plan submittal.

Concessionaire shall refine the preliminary CMP submitted as part of its Proposal and shall submit to FDOT for FDOT’s approval the CMP, which shall include the documents listed below. All plan view and profile documents are to be submitted in roll plot format (1”=100’ scale in 6 foot sections), and all typical sections, cross-sections, reports, and documentation are to be to scale (as appropriate) and submitted on sheets no larger than 11”x 17”. The CMP shall consist of the following:

- Project Layout Plan, which shall illustrate:
  - How the Project is to be sequenced or phased, including any segmentation of the Project (defined by mainline stationing and or other roadway stationing when applicable)
  - How the Project phasing and/or segments are to be further divided into submittal components
  - How the Project phasing and/or segments tie together as a composite project for logic and archival purposes
- Line & Grade Master Plan
  - Plan and profile
  - Light Rail Transit (LRT) envelope preservation (where applicable)
  - Project Right of Way limits
- Critical cross-sections and/or cross-sections at 500’ max. intervals, including begin/end bridge locations
- Geometrics/vertical & horizontal clearances/sight distance calculations
- Superelevation and superelevation transitions
- Ramp terminal details
- Mechanically stabilized earth, noise barrier and bulkhead walls
- Bridge substructure layout for bridges within the Orlando Bridge District
- Typical section package (requires FDOT and FHWA approval)
- Pavement design package (including pavement layout plan which indicates the pavement design locations/limits along the Project for General Use Lanes and Express Lanes and Ramps within the limits of the project) (requires FDOT and FHWA approval)
- Design variations package (requires FDOT approval)
- Design exceptions package (requires FDOT and FHWA approvals)

- Master Traffic Control Plan
  - Typical sections
  - Major phases of Work and durations/schedule
  - Sequence of construction and narrative
  - Critical cross-sections
  - Major road closures and durations
  - Lane closure analysis
  - Ramp closure analysis
  - Temporary retaining / barrier walls
  - Temporary pavement design
  - Temporary drainage
  - Temporary lighting plan (Scale 1”=50’ or 1”=100’)
  - Temporary lighting analysis
  - Location and typical signing of all construction access to work zones
  - Narrative describing Concessionaire’s coordination of changes to the sequencing of Work and/or TTC plans as Work progresses outside the planned progression in an effort to minimize project delays, conflicts between different segments and impacts to traffic.

- Master Drainage Plan
- Master Signing & Pavement Marking Plan
- Master Lighting Plan
- Master Utility Relocation Plan
- Aesthetics Master Plan
- Environmental compliance documentation
  - Status of Project commitments
  - Identification/coordination of environmental impacts
  - NEPA compliance/reevaluation needs
- Environmental Compliance Plan
- Contamination Management Plan
- Documentation related to Concessionaire’s interaction through workshops and reviews, community input and public involvement
• QA/QC certification and documentation of QA/QC process in accordance with the Design QA/QC Plan

Concessionaire shall submit as part of the Corridor Master Plan a Master ITS/System Integration Plan describing the approach to be used for integrating Project systems. The Master ITS/System Integration Plan shall follow the guidance set forth in the SEMP and support the concepts described in the ConOps and shall include, at a minimum:

• A description of the arrangements for adhering to the guidance set forth in the SEMP and ConOps documents;
• Preliminary layout roll plots of FON, ELMS, and FMS including subsystems;
• Final topology of Concessionaire maintained section of the network, including interface locations with FDOT owned and operated resources;
• A description of how Concessionaire plans to maintain communication throughout construction, including protocols to be used, minimum redundant paths maintained, general approach to physically migrating links as transitioning new hubs, utilized fibers;
• Steps for the replacement/addition of devices in the Controlling Software;
• Steps for reIPing, if needed;
• Additional software to be deployed; required hardware resources; steps to deployment/implementation; coordination steps to be followed;
• Specifics on how Concessionaire plans to integrate the power backup, Ramp Signaling Subsystem (RSS);
• Physical and logical security approach;
• Methodology for monitoring equipment status physically and logically.

Concessionaire shall submit as part of the Corridor Master Plan a Master ITS/System Integration Plan describing the approach to be used for maintaining the existing ITS infrastructure and phasing in the ITS infrastructure improvements. The Maintenance of Communications Plan shall follow the guidance set forth in the SEMP and support the concepts described in the ConOps and shall include, at a minimum:

• A description of how Concessionaire plans to maintain communication throughout construction; including protocols to be used, minimum redundant paths maintained, general approach to physically migrating links as transitioning new hubs, utilized fibers;
• Preliminary layout roll plots showing the FON, ELMS, FMS including subsystems in all phases of construction, and all guide signs including DMS’;
• Steps for the replacement/addition of devices in the Controlling Software;
• Methodology for monitoring equipment status physically and logically.
Concessionaire shall submit as part of the Corridor Master Plan a Master Tolling Plan which includes details that show the locations of gantries, equipment buildings and surrounding infrastructure, equipment layouts, driveway layouts, loop layouts and conduit lengths.

Concessionaire shall not submit any 90% Component Plans until FDOT has approved the CMP.

d) Bridge Concept Reports

Concessionaire shall submit a Bridge Concept Report (BCR) for all bridges for FDOT’s review and approval prior to any 90% design submittal. Concessionaire shall provide structure plans for all bridges in accordance with Plans Preparation Manual, Volume 1, Section 26.14.3 and per the "Technical Proposal" column of Exhibit 26-DD. Concessionaire shall also include preliminary aesthetic wall and bridge details for all structures.

e) Component Plans Submittals

If applicable, Concessionaire shall submit Component Plans to FDOT in accordance with the Project Layout Plan described in Volume II, Section 2.H.1.c. Component Plans shall be complete submittals along with all supporting information necessary for FDOT to review and ultimately “Release for Construction”. A bridge may be divided into foundation, substructure and superstructure components, but each component must be for the entire bridge and not an individual element of the bridge. A Temporary Traffic Control Plan (TTCP) shall be submitted with each Component Plan.

As a condition to being “Released for Construction,” each Component Plan shall include a document that states all assumptions, verifies consistency with components already constructed or to be constructed, and notes any deviations. The document shall be listed on the calculation cover sheet.

The Construction Oversight Services (COS) Consultant will send a copy of the plans to the appropriate office for review.

f) 90% and Final Component Plans

The 90% and final Component Plans submittals shall be submitted in accordance with Plans Preparation Manual, Volume 2, Chapter 2 and Volume 1, Chapter 26.

The 90% Component Plans submittal shall consist of the following for FDOT’s review and approval:

- 11” x 17” roadway, structures, and each component set plans
Roll plots (1"=100' scale in 6 foot sections) of plan & profile, traffic control plan, signing & pavement marking plan, and ITS/system integration plan
CADD files (in accordance with Volume II, Sect 2.H.1.a.)
Approved typical section package
Approved design exception/variation package
Approved pavement design package
Final drainage design report (previously concurred by FDOT)
Temporary lighting analysis
Final geotechnical reports
Final bridge hydraulic report
Documentation – roadway, drainage and structures design calculations and reports
Technical Special Provisions
Bridge Load Rating
Permit packages
Erosion and sediment control plans
Noise Monitoring Plan
Settlement and Vibration Monitoring Plan
Listing of any missing elements of the submittal
Documentation related to Concessionaire’s interaction through workshops and reviews, community input and public involvement
QA/QC certification and documentation of QA/QC process in accordance with the Design QA/QC Plan

An updated as-designed Bridge Load Rating shall be submitted to FDOT with the 90% superstructure submittal for review and approval. A corrected and signed and sealed as-designed Bridge Load Rating shall be submitted with the Final Plans superstructure submittal.

The final Component Plans submittal shall consist of the following:

11" X 17" roadway, structures, and each set of signed and sealed Component Plans (Component Plans may be electronically signed and sealed in accordance with the requirements of the Florida Board of Professional Engineers)
CADD files (in accordance with Volume II, Section 2.H.1.a)
Final Design Documents signed and sealed by the EOR
Signed and sealed Specifications Package
Permit packages / environmental approvals
QA/QC certification statement and backup documentation
Documentation related to Concessionaire’s interaction through workshops and reviews, community input and public involvement
QA/QC certification and documentation of QA/QC process in accordance with the Design QA/QC Plan

Concessionaire shall affix a stamp to all signed and sealed final Component Plans that denotes “Released for Construction” and includes
signature and date blocks for the I-4 Ultimate Construction Program Manager and the COS.

Only plans stamped, signed and sealed by the EOR, signed by the I-4 Ultimate Construction Program Manager or the COS, and stamped “Released for Construction” are valid. Concessionaire shall not perform construction on any component in advance of FDOT’s release of plans for that component except with the prior written approval of FDOT, in its sole discretion.

g) As-Built Record Plans

As a condition precedent to Final Acceptance, Concessionaire shall submit complete sets of as-built plans and drawings for the Project, signed and sealed in accordance with FDOT’s CPAM and this Section 2.H.1.g (collectively, the “As-Built Record Plans”).

(i) As-Built Record Plans – General

Concessionaire shall furnish to FDOT five (5) electronic copies (in PDF format on Windows compatible CD or DVD) of the following:

- 11"x17" roadway, structures, and each component set signed and sealed as-built drawings (plans may be electronically signed and sealed in accordance with the requirements of the Florida Board of Professional Engineers)
- Signed and sealed as-built bridge submittal package in digital format, to include the following documents in PDF format: (1) as-built bridge plans, with accompanying shop drawings, (2) an as-built Bridge Load Rating, within 60 days after the bridge is substantially completed (carrying its design traffic in its final configuration), and an accompanying bridge documents package, (3) a foundation report, including appropriate boring logs, pile driving logs, PDA data, and shaft tip elevations, and (4) for structures traversing waterways, a bridge hydraulic report; each PDF document shall be legibly sealed, organized by bookmark, scanned at 300 dpi or better, keyword searchable, and pages right-side-up
- Final CADD files (in accordance with Volume II, Section 2.H.1.a)
- Notice of completion for permits (with all structural elevations signed and sealed)
- QA/QC certification statement

For portions of the Project being turned over to a local agency for maintenance, any other as-built records as required by the applicable local agency agreement

(ii) Water Management District Environmental Resource Permit (ERP) As-Built Record Plans

Concessionaire shall submit to FDOT, as a separable subpart of the As-Built Record Plans, ten (10) certified 11"x17" copies of As-Built Record Plans.
Plans verifying the as-built conditions for all installed and constructed surface water management systems. Such certified As-Built Record Plans shall satisfy all the requirements and special conditions listed in the applicable ERP and any applicable local permits. Such certified As-Built Record Plans shall be signed and sealed in accordance with FDOT’s CPAM.

Without limiting the foregoing, such As-Built Record Plans shall include the following information:

- Discharge structures – structure identification number, type, locations, dimensions and elevations of all weirs, bleeders, orifices, gates, pumps, pipes, and oil and grease skimmers;
- Side bank and underdrain filters, or exfiltration trenches – locations, dimensions, and elevations, including clean-outs, pipes, connections to control structures and points of discharge to receiving waters;
- Storage areas for treatment and attenuation – storage area identification number, dimensions, elevations, contours or cross-sections of all, sufficient to determine stage-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems;
- System grading – dimensions, elevations, contours, final grades or cross-sections to determine contributing drainage areas, flow directions and conveyance of runoff to the system discharge point(s);
- Conveyance – dimensions, elevations, contours, final grades or cross-sections of systems utilized to divert off-site runoff around or through the new system;
- Water levels – existing water elevation(s) and the date determined;
- Benchmark(s) – location and description (minimum of one per major water control structure);
- Wetland mitigation or restoration areas (if any) – Show the plan view of all areas, depicting a spatial distribution of plantings conducted by zone (if plantings are required by permit), with a list showing all species planted in each zone, numbers of each species, sizes, date(s) planted and identification of source of material; also provide the dimensions, elevations, contours and representative cross-sections depicting the construction; and
- Any specific requirements listed in the ERP documents.

(iii) U.S. Army Corps of Engineers Permit(s) As-Built Record Plans

Concessionaire shall submit to FDOT, as a separable subpart of the As-Built Record Plans, three (3) copies of certified As-Built Record Plans verifying the as-built conditions meet all requirements of the U.S. Army Corps of Engineers permit(s) for the Project. The certified As-Built Record Plans must be signed and sealed in accordance with FDOT procedures and certified by the QAM that they meet all applicable permit requirements.

(iv) As-Built Record Plans Outside Operating Period O&M Limits
Concessionaire shall submit to FDOT, as a separable subpart of the As-Built Record Plans, ten (10) copies of certified As-Built Record Plans for areas outside of the Operating Period O&M Limits but within the Project Right of Way, verifying the as-built conditions meet all requirements of the Contract Documents. The certified As-Built Record Plans must be signed and sealed in accordance with FDOT’s CPAM.

2. O&M Plans

Concessionaire shall submit to FDOT the following submittals for FDOT’s review and approval, in its good faith discretion, as follows:

**Construction Period**

Concessionaire shall submit to FDOT:

- A preliminary Construction Period O&M Plan as a condition precedent to NTP 2 and not later than 90 days prior to NTP 2.
- A final Construction Period O&M Plan as a condition precedent to NTP 2 and not later than 30 days prior to NTP 2.
- During the Construction Period: (a) annual updates to the Construction Period O&M Plan; and (b) any additional updates thereto to address any revisions/additions to the O&M requirements, within 30 days of such revision or addition.

**Operating Period**

Concessionaire shall submit to FDOT:

- A preliminary Operating Period O&M Plan as a condition precedent to Substantial Completion, and not later than 90 days prior to Substantial Completion.
- A final Operating Period O&M Plan as a condition precedent to Substantial Completion, and not later than 30 days prior to Substantial Completion.
- During the Operating Period: (a) annual updates to the Operating Period O&M Plan; and (b) any additional updates thereto to address any revisions/additions to the O&M requirements, within 30 days of such revision or addition.

3. Shop Drawings

FDOT requires Shop Drawings for items of Work not fully detailed in the Plans which require additional drawings and coordination prior to constructing the item, including:

- Bridge components not fully detailed in the Plans, i.e. segments, steel girder details, post-tensioning details, and handrails;
- Retaining wall systems;
- Precast box culverts;
- Non-standard lighting, signalization and signing structures and components;
- Building structures;
- Drainage structures, attenuators, and other nonstructural items;
- Design and structural details furnished by Concessionaire in compliance with the Contract Documents; and
- Temporary Works affecting public safety;

**Style, Numbering and Material of Submittals**

- Concessionaire shall submit to FDOT one (1) hard copy and three (3) electronic copies in PDF format on a Windows compatible CD or DVD, of all Shop Drawings that are necessary to complete the structure in compliance with the design shown on the Plans. Concessionaire shall prepare all Shop Drawings in English units. Concessionaire shall use sheets no larger than 11”x17”. Concessionaire shall consecutively number each sheet in the submittal series, and indicate the total number in the series (i.e., 1 of 12, 2 of 12, .., 12 of 12). Concessionaire shall include on each sheet the following items as a minimum requirement: the complete Financial Project Identification Number, Bridge Number(s), drawing title and number, a title block showing the names of the fabricator or producer and Concessionaire for which the Work is being done, the initials of the person(s) responsible for the drawing, the date on which the drawing was prepared, the location of the item(s) within the Project, the signature and embossed seal of the Specialty Engineer or Concessionaire’s Engineer/Architect of Record (when applicable), Concessionaire’s or Lead Contractor’s approval stamp with date and initials, the QAM’s approval stamp with date and initials and space for FDOT’s review stamp with date and initials. A re-submittal will be requested when any of the required information is not included.

- Concessionaire shall submit one (1) hard copy and three (3) electronic copies in PDF format on a Windows compatible CD or DVD of documents other than drawings, such as trade literature, catalogue information, calculations, and manuals. Concessionaire shall provide sheets no larger than 11 by 17 inches. Concessionaire shall clearly label and number each sheet in the submittal to indicate the total number of sheets in the series (i.e., 1 of 12, 2 of 12, . . . 12 of 12).

- Concessionaire shall prepare all documents using the same units of measure as those used in the Plans. Concessionaire shall bind and submit all documents with a table of contents cover sheet. Concessionaire shall list on the cover sheet the total number of pages and appendices, and include the complete Financial Project Identification Number, a title referencing the submittal item(s), the name of the firm and person(s) responsible for the preparation of the document, the signature and embossed seal of the Specialty Engineer or Concessionaire’s EOR (when applicable), Concessionaire’s or Lead Contractor’s approval stamp with date and initials, the QAM’s approval stamp with date and initials and the EOR’s approval stamp with date and initials.

- Concessionaire shall submit appropriately prepared and checked calculations and manuals that clearly outline the design criteria. Concessionaire shall include on the internal sheets the complete
Financial Project Identification Number and the initials of the person(s) responsible for preparing and checking the document.

- Concessionaire shall clearly label trade literature and catalogue information on the front cover with the title, Financial Project Identification Number, date and name of the firm and person(s) responsible for that document.

**Submittal Paths and Copies**

Concessionaire shall submit Shop Drawings to FDOT’s Project Office. Shop Drawings shall be in conformance with FDOT’s Plans Preparation Manual. Shop Drawings shall bear the stamp and signature of Concessionaire, QAM, EOR, and signature and seal of the Specialty Engineer, as appropriate. All Shop Drawings for toll building structures shall bear the stamp and signature of Concessionaire, QAM and the Architect of Record and Specialty Engineer, as appropriate. Concessionaire shall only forward Shop Drawings stamped “Approved” or “Approved as Noted” to FDOT. Shop Drawings submitted without the stamps of Concessionaire, QAM and the EOR will be returned for re-submittal. In the case where the EOR generates the Shop Drawings for the Project, another engineer with the EOR’s firm, not involved in the production of the Shop Drawing, shall review and stamp the drawings per the requirements stated herein. Shop Drawings shall not be submitted, processed, reviewed, or approved until the component plan set for the particular item has been “Released for Construction.” For work requiring other information (e.g., catalog data, procedure manuals, fabrication/welding procedures, and maintenance and operating procedures), Concessionaire shall submit the required number of copies to FDOT. Concessionaire shall provide copies of material certifications and material tests to FDOT. Shop Drawings are not required for items on the APL/QPL.

For Construction Affecting Public Safety, the EOR shall review all Shop Drawings and the applicable calculations for the design of items such as special erection equipment, bracing, falsework, and scaffolding. Concessionaire shall ensure that each sheet of the Shop Drawings and the cover sheet of the applicable calculations is signed and sealed by the Specialty Engineer. Concessionaire shall not proceed with construction of the Work until receiving the EOR’s approval. Concessionaire shall send a copy of the approval letter to FDOT.

When vertical displacement limits are provided in the Plans for falsework founded on shallow foundations such as spread footings and mats, the EOR shall review all Shop Drawings and applicable calculations of the falsework system including subsurface conditions and settlement estimates. Concessionaire shall ensure that each sheet of the Shop Drawings and the cover sheet of the applicable calculations is signed and sealed by the Specialty Engineer.

Concessionaire shall be solely responsible for the safe installation and use of all formwork and scaffolding. FDOT does not require any formwork or scaffolding submittals unless such work would be classified as Construction Affecting Public Safety. For formwork, scaffolding, or other Temporary Works affecting public safety, Concessionaire shall develop the required designs in accordance with the AASHTO Guide Design Specifications for Bridge Temporary Works, the AASHTO Construction Handbook for Bridge Temporary Works, and Chapter 11...
of the Structures Design Guidelines (SDG) using wind loads specified in the SDG.

Concessionaire shall be solely responsible for ensuring the stability of beams and girders during all handling, storage, shipping and erection. Concessionaire shall adequately brace beams and girders to resist wind, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the products, considering actual beam geometry and support conditions during all stages of erection and deck construction. At a minimum, Concessionaire shall provide temporary bracing at each end of each beam or girder. Concessionaire shall develop the required bracing designs in accordance with the AASHTO LRFD Bridge Design Specifications (LRFD) and Chapter 11 of the SDG using wind loads specified in the SDG. For information not included in the SDG or LRFD, refer to the AASHTO Guide Design Specifications for Bridge Temporary Works and the AASHTO Construction Handbook for Bridge Temporary Works.

For Construction Affecting Public Safety, when temporary bracing requirements are shown in the Plans, Concessionaire shall submit plans and calculations signed and sealed by a Specialty Engineer for the design of temporary bracing members and connections based on the forces shown in the Plans. In addition, Concessionaire shall submit a written certification that construction loads do not exceed the assumed loads shown in the Plans.

For Construction Affecting Public Safety, when temporary bracing requirements are not shown in the Plans or an alternate temporary bracing system is proposed, Concessionaire shall submit plans and calculations signed and sealed by a Specialty Engineer including the stability analysis and design of temporary bracing members and connections.

Concessionaire shall submit, for FDOT’s review, an erection plan that meets the specific requirements of Sections 450, 452 and 460 of the Standard Specifications and this section. Concessionaire shall refer to Design Standards Index 600 for construction activities not permitted over traffic.

The EOR shall review all Shop Drawings and the applicable calculations for miscellaneous design and structural details as required by the Contract Documents. Concessionaire shall ensure that each sheet of the Shop Drawings and the cover sheet of the applicable calculations is signed and sealed by the Specialty Engineer.

**Processing of Shop Drawings**

Concessionaire shall:

(a) Coordinate, schedule, and control all submittals, with a regard for the required priority, including requiring Contractors to provide for an orderly and balanced distribution of the Work.

(b) Coordinate, review, date, stamp, approve and sign all Shop Drawings prepared by the Contractor performing the applicable Work prior to submitting them to FDOT for review. Submittal of the drawings confirms verification of the Work requirements, units of measurement, field
measurements, construction criteria, sequence of assembly and erection, access and clearances, catalog numbers, and other similar data. Concessionaire shall indicate on each series of drawings the specification section and page or drawing number of the plans to which the submission applies. Concessionaire shall indicate on the Shop Drawings all deviations from the drawings and itemize all deviations in the letter of transmittal. Likewise, whenever a submittal does not deviate from the Plans, Concessionaire shall clearly state so in the transmittal letter.

(c) Schedule the submission of Shop Drawings to allow an FDOT review period as specified in the Contract Documents. The review period commences upon FDOT’s receipt of the valid submittal or re-submittal and terminates upon the transmittal of the submittal back to Concessionaire.

(d) Submit Shop Drawings to facilitate expeditious review. Concessionaire is discouraged from transmitting voluminous submittals of Shop Drawings at one time. For submittals transmitted in this manner, Concessionaire shall allow for the additional review time that may result.

Only Shop Drawings with the FDOT’s initialed “release for construction” or “release for construction as noted” are valid. Concessionaire shall not begin work on any component in advance of FDOT’s ‘release for construction’ or ‘release for construction as noted’ of Shop Drawings for that component except with the prior written approval of FDOT, in its sole discretion.

The QAM’s and EOR’s review of the Shop Drawings are to ensure conformity to the requirements of the Contract Documents. The QAM’s and EOR’s review of Shop Drawings which include means, methods, techniques, sequences, and construction procedures are limited to the effects on the Work. The QAM’s and EOR’s review of submittals which include means, methods, techniques, sequences, and construction procedures does not include an in-depth check for the ability to perform the Work in a safe or efficient manner.

FDOT shall review the Shop Drawing(s) to evaluate compliance with Project requirements and provide any findings to Concessionaire. FDOT’s procedural review of Shop Drawings is to assure that Concessionaire, the QAM and EOR have all accepted and signed the drawing, the drawing has been independently reviewed and is in general conformance with the Plans. FDOT’s review is not meant to be a complete and detailed review. Upon review of the shop drawing FDOT will stamp the drawing “Released for Construction” or “Released for Construction as Noted” and the drawing will be initialed and dated by the reviewer. For Shop Drawings returned for correction, the reason for returning will be provided in the transmittal to Concessionaire.

Other Requirements for Shop Drawings for Bridges

Concessionaire shall furnish Shop Drawings for structural steel and miscellaneous metals. Shop Drawings shall consist of working, shop, and erection drawings, welding procedures, and other working plans, showing details, dimensions, size of material, and other information necessary for the complete fabrication and erection of the metal work.
Concessionaire shall furnish Shop Drawings for concrete components that are not cast-in-place and are not otherwise exempted from submittal requirements. Also, Concessionaire shall furnish Shop Drawings for all details that are required for the effective prosecution of the concrete work and are not included in the Contract Documents, such as special erection equipment, masonry layout diagrams, and diagrams for bending reinforcing steel, in addition to any details required for concrete components for the Work.

For the Major and Unusual Structures, Concessionaire shall submit, thirty (30) days prior to the date for submission of the first Shop Drawings, as shown on Concessionaire’s Project Schedule for the Design Work and Advance Construction Activities (if any), information to FDOT outlining the integration of the Major and Unusual Structure into the overall approach to the Project. This is in addition to the requirements stated previously and shall include:

(a) The overall construction program for the duration of the Agreement. Concessionaire shall clearly show the milestone dates. (For example, the need to open a structure by a certain time for traffic operations.)

(b) The overall construction sequence. Concessionaire shall specify the order in which individual structures are to be built, the sequence in which individual spans of girders or cantilevers are erected, and the sequence in which spans are to be made continuous.

(c) The general location of any physical obstacles to construction that might impose restraints or otherwise affect the construction, and an outline of how to deal with such obstacles while building the structure(s). (For example, obstacles might include road, rail and waterway clearances, temporary diversions, transmission lines, utilities, property, and Concessionaire’s own Temporary Works, such as haul roads, cofferdams, plant clearances and the like.)

(d) The approximate location of any special lifting equipment in relation to the structure, including clearances required for the operation of the equipment (for example, crane positions, operating radii and the like).

(e) The approximate location of any temporary falsework, and the conceptual outline of any special erection equipment. Concessionaire shall provide the precise locations and details of items such as attachments, fixing devices, and loads in later detailed submittals.

(f) An outline of the handling, transportation, and storage of fabricated components, such as girders or concrete segments. Concessionaire shall provide the precise details in later detailed submittals.

Concessionaire shall clearly and concisely present the above information on as few drawings as possible in order to provide an overall, integrated summary of the intended approach to the Project. FDOT will use these drawings for information and review planning and to assess Concessionaire’s approach in relation to the original design. Delivery by Concessionaire to, and receipt by, FDOT of such drawings and information does not constitute any FDOT
acceptance or approval of the proposals shown thereon. Concessionaire shall include the details of such proposals on subsequent detailed Shop Drawing submittals. Concessionaire shall submit timely revisions and re-submittals for all variations from these overall scheme proposals.

I. Project Schedule

Concessionaire shall be responsible for establishing and maintaining the Project Schedule. The Project Schedule shall include a separate narrative report which describes, in general fashion, Concessionaire proposed methods of operation for designing and construction of the major portions of the Work. The schedule narrative shall describe the general sequence of design and construction, the critical path of the Project, and all Project Schedule milestones.

The Project Schedule shall include, at a minimum, the following:

- NTP 1
- Corridor Master Plan Submittal(s)
- 90% and Final Component Plans Submittals
- Design survey
- Design reviews by FDOT and FHWA
- Materials quality tracking
- Geotechnical investigation (preliminary and final)
- Level II contamination testing (if required)
- Permits acquisition (including building permits) (allow 14 days for FDOT processing)
- NEPA Reevaluation Submittals (allow 120 days for activity, including FDOT processing time)
- Project Right of Way acquisition (if required by Concessionaire’s design)
- Shop Drawing Submittals
- Advance Construction Activities
- NTP 2
- Clearing and grubbing
- Construction mobilization
- Utility coordination
- Utility Adjustments
- Design and installation of CFRC Railroad Crossing on SR 50
- Fire suppression systems
- Embankment/excavation
- Foundation design
- Foundation construction
- Substructure design
- Substructure construction
- Superstructure design
- Superstructure construction
- Walls design
- Walls construction
- Sound barrier design
- Sound barrier construction
Concessionaire shall submit for acceptance a Project Schedule with a detailed design schedule and preliminary construction schedule for the Project within 30 days after the Effective Date. The design schedule shall show all activities with detailed durations not to exceed 30 days, and not less than 1 day. Concessionaire shall follow up with the detailed Project Schedule no less than 30 days prior to the date scheduled for NTP 2, as shown on the preliminary construction schedule described above. Approval of the Project Schedule shall be a condition precedent to NTP 2.

The Project Schedule shall be consistent with the Temporary Traffic Control Plan, showing activities for each discrete activity to be accomplished within each Temporary Traffic Control phase. Concessionaire shall include activities for deliverables and reviews in the Project Schedule. Sufficient liaison shall be conducted and information provided to indicate coordination with Utility owners having facilities within the Project Limits. The schedule shall reflect anticipated Utility adjustment schedules.

The detailed Project Schedule, with the exception of activities relating to environmental approvals by Governmental Entities and reviews by FDOT, shall include each activity within 6 months of the date of the Project Schedule depicting Concessionaire's
construction operations shall have durations of not more than 30 days, and not less than 1 day. Each activity beyond 6 months of the date of the Project Schedule shall have a duration of not more than 90 days, and not less than 1 day. Every monthly update after NTP 2 shall show an additional 3 months of construction activities with durations not to exceed 30 days, and not less than 1 day. Concessionaire shall submit no later than 18 months from NTP 2 the Project Schedule. The Project Schedule shall not have activity durations of more than 30 days and not less than 1 day, and shall show all activities through Final Acceptance. All activities shown in the schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor activity.

Concessionaire shall allocate the Design and Construction Costs throughout the D&C Work in the Project Schedule. Such allocation shall accurately reflect Concessionaire’s cost for each Project activity and shall not artificially inflate, imbalance, or front-load line items.

Concessionaire shall submit monthly updates of the schedule reflecting progress through the month within 7 days after the month end.

Schedule Submissions: Concessionaire shall develop the schedule in Precedence Diagram Method format. All schedule submittals shall have a copy of the schedule files on a Windows compatible CD or DVD attached. The files shall be in a Primavera format using “Backup” menu selection and the option “Remove access list during backup” checked.

Each schedule submission and monthly update shall include at a minimum the following four items:

1) A Critical Path Method (CPM) Network Diagram in time-scale logic diagram, by week starting on Monday, grouped (banded) by phase and location, and sorted by early start days. Concessionaire shall prominently identify the critical path activities, defined as the longest continuous path of work activities. Concessionaire shall submit the Network Diagram, printed in color on D size, 22 by 34 inch or E size, 34 by 44 inch paper. The network diagram shall contain, at a minimum, the following information for each schedule activity: identification; activity description; total duration; remaining duration; early start date; late finish date; and total float.

2) A report with the following schedule activity information for each construction activity: identification; description; original duration; remaining duration; early start; early finish; total float; percent complete; and budgeted cost. The bar chart diagram shall not be included in this report. Concessionaire shall submit on 8.5 by 11 inch paper.

3) A schedule narrative report describing current Project Schedule status and identifying potential delays. This report shall include a description of the progress made since the previous schedule submission and objectives for the upcoming 30 days. Concessionaire shall submit on 8.5 by 11 inch paper. This report shall at a minimum include the following information:

   a) Concessionaire shall indicate if the Project is ahead of schedule or behind schedule, the report shall include the specific number of days. If the Project is behind schedule, the report shall include a detailed recovery plan that will put the
Project back on schedule or include a properly supported request for time extension.

b) Concessionaire shall describe the current critical path of the Project and indicate if this has changed in the last 30 days. The report shall discuss current successes or problems that have affected either the critical path’s length or have caused a shift in the critical path within the last 30 days. The report shall identify specific activities, progress, or events that may reasonably be anticipated to impact the critical path within the next 30 days, either to affect its length or to shift it to an alternate path.

c) Concessionaire shall list all schedule logic or duration changes that have been made to the schedule since the previous submission. For each change, the report shall describe the basis for the change and specifically identify the affected activities by identification number.

d) Concessionaire shall identify any and all activities, either in progress or scheduled to occur within the following 30 days that require FDOT participation, review, and approval.

4) A copy of the schedule files on a Windows compatible CD or DVD in Primavera.

FDOT will have 30 days to accept the initial Project Schedule or to schedule a meeting, if needed within that time, with Concessionaire to resolve any problems that prevent acceptance of the schedule.

Schedule Content: Concessionaire schedule submissions shall comply with the following content guidelines as appropriate to the specific submission:

1) Show the sequence, order, and interdependence of major construction milestones and activities. Include ordering and procurement of major materials and equipment, long-lead time items, and key milestones identified by the Contract. The schedule submission shall identify planned work schedule(s) and include all non-workdays. The schedule submission shall provide a description of each major construction activity or key milestone.

2) Activity number, description, early dates, float, and all relationships (i.e. logic ties), resources and costs. The schedule submission shall show the sequence, order, and interdependence of activities in which the Work is to be accomplished. The schedule submission shall include allowance for FDOT oversight, acceptance and return of submittals, samples and Shop Drawings where FDOT acceptance is specifically required. In addition to construction activities, activities shall include the submittals, procurement, and FDOT or Utility activities impacting progress:

   a) Submittal activities shall include oversight and acceptance of submittals. If FDOT's action on any submittal is “Not Accepted” or “Revise and Resubmit”, a new series of submittal preparation activities shall be inserted into the schedule. Predecessor for the new submittal preparation activity shall be the original acceptance activity and the successor of the new acceptance activity shall be the fabrication/delivery activity for the equipment or material.
b) Show activities of FDOT or utilities that affect progress and contract-required dates for completion of all or parts of the Work.

3) Detailed schedule data shall include the following:

a) All activities shall be assigned to a specific calendar within the software. Specific calendars shall be defined within the software to include planned work days and working hours. These calendars shall include defined Holidays, Special Events and suspension days as non-workdays.

b) Each schedule activity shall be cost loaded. Activity cost loading shall be consistent with the Schedule of Values breakdown. The sum total of the activity cost loading shall be equal to the current Design and Construction Costs.

c) At a minimum, each schedule activity shall contain codes by:

1. Responsibility: including FDOT, Utility, Concessionaire, supplier/vendor.
2. Phasing: identify the appropriate Temporary Traffic Control phase or sub-phase.

d) Detailed description of each activity. In each activity, give quantity and unit of measure so that the amount of work the activity involves is clearly communicated.

e) Only two (2) open-ended activities (the first and the last) are allowed.

f) Constraints shall only be used for “Project Start,” and “Project Completion.” Constraints cannot override logic. The use of any other imposed constraints is not allowed without specific approval by FDOT, in its sole discretion. Any other desired constraints must be submitted to FDOT with the rationale for the use of each desired additional constraint. If approved by FDOT, the rationale should be recorded in the activity's log field. Mandatory constraints (start and finish) violate network logic and shall not be used.

g) Out of sequence progress, if applicable, shall be handled through retained logic. Use of the progress override option is not allowed for the Project.

h) Progress shall be calculated based on percent complete.

i) All changes to activities shall be recorded with a note in the activity log field. The log shall include, as a minimum, the date and reason for the change, as well as reference to a document wherein FDOT acknowledges and accepts the change.

j) The use of resource leveling, either manual or automatic, is prohibited.

Weekly Meetings: Concessionaire shall attend weekly meetings scheduled by the COS to discuss progress, near term scheduled activities, including Utility relocations, and problems and their proposed solutions. Concessionaire shall submit a two-week “Look Ahead” planning schedule at each weekly meeting, showing the items of Work planned...
for the next two weeks. Concessionaire shall develop the schedule in bar chart format, identifying current and planned activities and related schedule work activities, including subcontractor work and designate all activities that are controlling work items as determined by the currently accepted schedule. Concessionaire shall submit a report at each weekly meeting identifying schedule activity progress including actual start or finish dates achieved for any activities.

**Float:** Is also known as slack time or slide time; it is defined as the amount of time the finish of an activity can be delayed without impacting the Scheduled Substantial Completion Date.

Float is not for the exclusive use or benefit of either FDOT or Concessionaire. Concessionaire shall not use float suppression techniques, such as preferential sequencing (arranging critical path through activities more susceptible to FDOT caused delay), special lead/lag logic restraints, zero total or free float constraints, extended activity times, or imposing constraint dates other than as required by the Contract Documents, and such use shall be cause for rejection of the Project Schedule or its updates by FDOT. The use of resource leveling (or similar software features) for the purpose of artificially adjusting activity durations to consume float and influence the critical path is expressly prohibited.

**J. Meetings and Progress Reporting**

Concessionaire shall participate in periodic meetings with FDOT personnel and other agencies as required for resolution of design, construction, and/or operations & maintenance issues. These meetings may include:

- Partnering meetings
- FDOT technical issue resolution
- Design workshops
- Disputes Review Board meetings
- Permit / resource agency coordination
- Local government agency coordination
- Scoping meetings
- Progress meetings
- Utility meetings
- Drainage meetings
- TTC meetings
- Incident management meetings
- Systems integration meetings

During the Design Work, Concessionaire shall meet with FDOT on a weekly basis and provide a one month look ahead of the activities to be completed during the upcoming month.

During the Construction Period, Concessionaire shall meet with FDOT on a weekly basis and provide a two-week look ahead for activities to be performed during the coming week. Should portions of the Construction Period, the Design Work and/or the Operating Period be concurrent, a single coordination meeting shall be held weekly and include representatives from each phase.
Concessionaire shall meet with FDOT at least thirty (30) days before beginning system integration activities. The purpose of these meetings shall be to verify Concessionaire’s ITS and signalization integration plans by reviewing site survey information, splicing diagrams, IP addressing schemes, troubleshooting issues, and other design issues. In addition, at these meetings Concessionaire shall identify any concerns regarding the integration and provide detailed information on how such concerns shall be addressed and/or minimized. Concessionaire shall provide all documentation required to support system integration meetings, including detailed functional narrative text, system and subsystem drawings and schematics. Also included shall be the documentation to demonstrate all elements of the design which includes, but is not limited to: technical, functional, and operational requirements; ITS/communications; equipment; termination/patch panels; performance criteria; and details relating to interfaces to other ITS subsystems. System integration meetings shall be held on mutually agreeable dates. All action items resulting from the system integration meeting shall be satisfactorily addressed by Concessionaire and reviewed and approved by FDOT.

During the Operating Period, Concessionaire shall meet with FDOT at a minimum on a quarterly basis or as needed and provide planned maintenance activities and lane closure requirements for the upcoming quarter.

During the period commencing on NTP 1 and ending on the Final Acceptance Date, Concessionaire shall, on a monthly basis, provide a written design and construction progress report (each, a “D&C Monthly Report”) to FDOT that describe the items of concern and the D&C Work performed on each task. Concessionaire shall develop a tracking report for reporting on the status of all Project Commitments and include that report with each monthly progress report submittal.

K. Public Involvement

1. General

Public involvement has been, and shall continue to be, an important aspect of the Project. Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the Project. FDOT’s Public Involvement Consultant (PIC) will be charged with continuing the public information program currently underway and will be the point of contact during the design and construction phases of the Project. Concessionaire shall provide support for the public involvement effort as described below.

2. Community Awareness Plan (CAP)

Concessionaire shall review and comment on the Project Community Awareness Plan (CAP) provided by FDOT in order to assist the PIC with key details of the Project. The CAP is a living document that will undergo continual updates. Concessionaire shall be responsible for providing FDOT the information necessary to periodically update the CAP relating to Project issues, impacts, schedule and activities.
3. **Initial Public Information Meeting**

FDOT will conduct a minimum of three public kick-off meetings/workshops, updating the community on the status of the Project. FDOT will be responsible for the following:

- Provide meeting location
- Prepare and place legal advertisement
- Finalize handouts
- Arrange internal meetings required for preparation of meeting
- Answer community concerns

Concessionaire shall be responsible for the following:

- Prepare and provide all display boards, information needed for all printed material (including at a minimum flyers, letters to officials, and handouts), and static video graphics
- Supply appropriate number of personnel for the meeting
- Respond to requests for information as needed
- Attend planning meetings as necessary

This effort will be coordinated with FDOT for its review and concurrence.

4. **Other Public Meetings**

With similar roles and responsibilities as listed above, Concessionaire shall provide all support necessary, including the preparation of material and the availability of staff, for the PIC to hold various public meetings, which may include:

- Metropolitan Planning Organization (MPO) Commission and Committee meetings
- Public information meetings (beyond initial meeting)
- Elected and appointed officials briefings
- Special interest or stakeholder group meetings (private groups, homeowners associations, environmental groups, minority groups, business groups, media outlets, and individuals)
- Project-wide public kickoff meetings/workshops
- Local Agency information meetings

For any of the above meetings, Concessionaire shall provide all technical assistance, data and information as required by the PIC, including display boards, printed material, static video graphics, computerized graphics, and information necessary for the day-to-day exchange of information with the public, all agencies and elected officials in order to keep them informed as to the progress and impacts that the Project will create.

Concessionaire shall, on an as-needed basis, attend the meetings with an appropriate number of personnel to assist the PIC. Concessionaire shall forward
all requests for group meetings to the PIC, and shall inform the PIC of any meetings with individuals or groups that occur without prior notice.

5. **Public Involvement Data**

Concessionaire shall be responsible for the following:

- Coordinating with the PIC
- Providing information to the PIC for Community Awareness Plan (CAP) updates
- Providing required expertise (staff members) to assist the PIC on an as-needed basis
- Preparing color graphic renderings and/or computer generated graphics for coordination with FDOT, local governments, and other agencies.

The collection of public input occurs throughout the life of the Project and requires maintaining files, newspaper clippings, letters, and records of direct contacts before, during and after any of the public meetings. The PIC will maintain the public involvement binder for the Project.

In addition to collecting public input data, Concessionaire may be asked by the PIC to prepare responses to any public inquiries as a result of the public involvement process. FDOT shall review and approve all responses prior to mailing.

6. **Project Newsletter/Brochures**

The Project newsletter will be prepared by the PIC, posted on the Project website, and mailed as requested to provide the public with updated Project information. Brochures will also be developed to explain design and construction work, the Project Schedule, and I-4 public information/construction office contact information. Concessionaire shall be responsible for providing and reviewing the technical information needed for these documents. This shall include attending meetings, providing graphics, and working with FDOT to clarify the message to the community on the latest activities.

7. **Public Information during Construction**

The PIC will be responsible for the day-to-day notifications to the public. The PIC will be responsible for updating the CAP as more construction details are known, and working to advise the local press and community of the Project activities. The PIC will serve as the Project spokesperson and “face” of the Project to the community during the construction phase of the Project. FDOT’s District 5 Public Information Office will provide oversight of all public involvement activities. Concessionaire shall be responsible for providing a liaison to work with the COS and PIC, providing all necessary information, graphic materials and meeting support.
8. **Public Information during Operations and Maintenance**

Concessionaire’s customer relations staff shall field and respond to public requests and complaints. Concessionaire shall refer questions relating to day-to-day tolling customer requests and concerns for the I-4 portion of the Project to Florida’s Turnpike SunPass Customer Service operation. For the SR 408 portion of the project, CFX will handle all day to day tolling customer services requests and concerns. Concessionaire shall refer questions from local press and community regarding operations and maintenance issues during the Operating Period to FDOT’s District Public Information Office. Concessionaire shall serve as a resource to FDOT as necessary to answer questions and/or provide information as relates to FDOT, FTE and CFX facilities. Concessionaire shall keep FDOT informed of safety related issues on a daily basis, as well as through documentation in the Monthly O&M Report. The responsibilities of the customer relations staff are further defined in Volume II, Section 4.

9. **Project Website/Hotline**

FDOT will be responsible for maintaining the current I-4 Project web site, http://www.moving-4-ward.com. Concessionaire shall provide information related to the following, as requested by FDOT:

- General Project and contact information (assigned technical personnel)
- Newsletters and announcements for current and upcoming public meetings and events (provide technical information)
- Frequently asked questions (FAQ’s) about the Project
- Project schedules and status updates
- Graphics, renderings, plans and technical documents to incorporate into the website or for public records requests
- Public requests for information and feedback on information disseminated by FDOT (assist with responses in a timely fashion)

A Project hotline will be maintained by the PIC. It will be further used by FDOT to accept calls from the public and to provide updates, announcements, and traffic information to the public. Concessionaire shall assist in responding to public concerns or to make them aware of issues brought up by the public, as requested by FDOT.

10. **Media Relations and Access**

Media relations and access strategies will be developed by FDOT to establish the protocol and schedule in providing information to the media, as well as receiving and responding to media inquiries. To ensure the accuracy and consistency of all information to be provided, all correspondence and communication with the media will be coordinated through FDOT’s District 5 Public Information Office, and reviewed by FDOT as necessary prior to release. Concessionaire shall serve as a resource to FDOT in providing information and/or responding to media inquiries.
L. QA/QC Plan

1. Design

Concessionaire shall be responsible for developing and maintaining a Design QA/QC Plan in accordance with the Quality Assurance and Quality Control requirements, Volume II, Section 3, Attachment 4.

2. Construction

Concessionaire shall be responsible for developing and maintaining a Construction QA/QC Plan in accordance with the Quality Assurance and Quality Control requirements, Volume II, Section 3, Attachment 4.

3. Operations & Maintenance

Concessionaire shall be responsible for developing and maintaining a comprehensive O&M Quality Management System (O&M-QMS) and a detailed O&M quality assurance system in accordance with Volume II, Section 4-1.3.4.

M. FHWA Project Management Plan / Financial Plan

Concessionaire shall be responsible for providing FDOT support documentation and updates to their internal management plan documents as required to assist FDOT in updating the FHWA Project Management Plan and the Annual Financial Plan for the Project. The FHWA Project Management Plan defines the roles, responsibilities and procedures for Project implementation. The Annual Financial Plan documents Project scope, cost and/or funding changes on an annual basis. Refer to the FHWA Major Project website for further information regarding Major Project Project Management Plan and Financial Plan requirements: http://www.fhwa.dot.gov/ipd/project_delivery/tools_programs/project_management_plan_s/guidance.htm.

The FHWA Project Management Plan is included in the Reference Documents. The FHWA Project Management Plan will be updated by FDOT, with the support of Concessionaire, prior to initiating construction activities, when changes in the Project require additional updates, and on an annual basis.

N. Project Office

As a condition precedent to NTP 1 and until 90 days following Final Acceptance, Concessionaire shall provide a Project office (“Project Office”) within one (1) mile of the Project Limits with sufficient room and furnishings to accommodate Concessionaire’s staff, QAF staff and FDOT’s Construction Oversight Services (COS) Consultant, FDOT’s Public Information Consultant (PIC) and assigned FDOT personnel. The FDOT Project Office (“FDOT Project Office”) will accommodate FDOT’s COS Consultant, FDOT’s PIC and assigned FDOT personnel and shall be co-located with Concessionaire’s offices, but must be separated by hard walls and have a separate lockable entrance. The Project Office location is subject to approval by the I-4 Ultimate Construction Program Manager. Concessionaire shall secure and maintain a data/telephone connection to the FDOT Project Office site.
The FDOT Project Office shall be carpeted, climate controlled, have potable water, restrooms and sufficient lighting to perform general office duties. Overall space requirements for the FDOT Project Office are anticipated to be approximately 10,000 square feet to include:

- 1 reception area having minimum dimensions of 15ft x 15ft
- 3 hard wall offices having minimum dimensions of 10ft x 15ft with doors
- 18 hard wall offices having minimum dimensions of 10ft x 10ft with doors
- 30 partitioned work spaces with dimensions of 10ft x 10ft
- 1 large conference room with minimum dimension of 20ft x 30ft with doors
- 1 smaller conference room with minimum dimension of 15ft x 20ft with doors
- 2 lockable storage rooms of 100sf minimum
- 1 break room having minimum dimensions of 10ft x 15ft
- 1 copy room having minimum dimensions of 10ft x 15ft

Each office or work space shall contain at least two electrical outlets, wiring for both telephone and data communications with receptacles for each, a desk with lockable drawers and an office chair. In addition, the three large hard wall offices shall each contain a small table and two visitor chairs.

Each conference room shall contain at least four electrical outlets, wiring for both telephone and data communications with receptacles for each, a conference room table and an office chair. The seating and table sizing requirements in the conference rooms shall be a minimum of 20 for the large conference room 10 for the small conference room.

The reception area shall contain at least two electrical outlets, wiring for both telephone and data communications with receptacles for each, a reception desk with lockable drawers, an office chair and four visitor chairs.

The break room shall include countertop and cabinets, a sink, and contain at least three electrical outlets.

The copy room shall include countertop and cabinets and contain at least three electrical outlets. In addition, the copy room shall contain a minimum of four data receptacles and one communications receptacle and wiring for each.

Routine consumable expenses for operation of the FDOT Project Office, such as stamps, postage costs, office supplies, telephone service, etc., shall be the responsibility of COS. Concessionaire shall be responsible for all operational expenses of the FDOT Project Office, such as office lease, parking fees, maintenance fees, custodial fees, utilities, and internet service.

Concessionaire shall be responsible for providing a minimum of 75 parking spaces specifically for FDOT, PIC, COS staff and visitors. The parking spaces shall be within 500 feet of the Project Office entrance with cost of parking fees included in the Concessionaire’s operational expenses.
O. On-the-Job Training

On-the-job training requirements shall apply to the Construction Work. As part of Concessionaire’s Equal Employment Opportunity affirmative action program, training shall be provided in accordance with Section 8.9 of the Agreement.

P. Partnering Meeting

As early as possible after the Effective Date and prior to the preconstruction conference, Concessionaire shall schedule an initial partnering/team building workshop. Attendees should include the I-4 Ultimate Construction Program Manager, FDOT District Construction Engineer, and other key FDOT Project personnel, Project Executive, program superintendent for the Lead Contractor, project manager for the Lead Contractor, design manager for the Lead Engineering Firm, and the Quality Assurance Manager, as well as other Project or field level personnel. Partnering workshops may be held periodically, as often as once a year, throughout the duration of the Construction Period if the Parties mutually agree that it would be beneficial. Concessionaire shall be responsible for the partnering location and retaining the services of the partnering facilitator, should it be mutually decided to use one.

Q. Construction Oversight Services

FDOT will provide COS for the Project. Concessionaire is subject to FDOT’s independent assurance (OT/IA) procedures and FDOT independent materials testing. Concessionaire Quality Assurance Manager (QAM) requirements are provided in Volume II, Section 3, Attachment 3.

R. Materials Testing

FDOT or its representative will perform owner’s testing and independent assurance. FDOT or its representative will perform owner’s testing, sampling, and inspection on site as well as at off-site materials producer locations at its sole discretion.

Concessionaire shall be responsible for quality control and quality assurance through verification sampling, testing and inspection on site as well as at off-site locations such as pre-stress plants, batch plants, structural steel fabrication plants, asphalt plants, and material producers and suppliers as required by the Contract Documents. QA/QC materials testing shall be conducted by independent and qualified laboratories not receiving compensation, either directly or indirectly, from FDOT in connection with the Project. The Project testing shall be subject to the Standard Specifications, including the Materials Manual and the Construction Project Administration Manual and Volume II, Section 3, Attachment 4.

S. Adjacent Projects

Concessionaire shall be responsible for identifying and coordinating design and construction activities with other projects that are impacted by, or impact this Project. This includes projects under the jurisdiction of local governments, FDOT, or other local, regional and state agencies, including:

- CFX  407/690-5000
A list of known projects is provided in the Reference Documents. This list is not intended to be all inclusive, and it shall be Concessionaire’s responsibility to determine the complete inventory of projects (present and planned) and the required coordination.

T. Other General Requirements

1. Variations from Finish Plan Grades

For base and surface courses, FDOT will allow the finished grade to vary as much as 0.1 foot from the grade shown in the Plans, provided that the Construction Work meets all templates and straightedge requirements and contains suitable transitions.

2. Maintenance and Final Cleanup

Upon completion of the D&C Work, Concessionaire shall remove from the Project Right of Way all falsework, equipment, surplus and discarded materials, rubbish and temporary structures and leave the waterways unobstructed and the roadway in a neat and presentable condition throughout the Project Limits. Concessionaire shall not dispose of materials of any character, rubbish or equipment, on abutting property.

3. Preservation of Property

Concessionaire shall preserve from damage all property, affected by the Work, the removal or destruction of which is not specified in the Contract Documents. This applies to all public and private property, including public and private Utilities, trees, shrubs, crops, signs, signals, lighting, monuments, fences, guardrail, pipe and underground structures, and public highways (except natural wear and tear of highway resulting from legitimate use thereof by Concessionaire).

Concessionaire shall direct special attention to the protection of all geodetic monuments, horizontal or vertical, located within the Project Limits.

4. Equipment

Concessionaire equipment on the Project Right of Way shall clearly and legibly identify the Contractor.
Concessionaire shall not operate on any road or street any hauling unit or equipment loaded in excess of (1) the maximum weights specified in the Florida Uniform Traffic Control Law, or (2) lower weights established for any section of road or bridge by FDOT or local authorities. The governmental unit having jurisdiction over a particular road or bridge may provide exceptions by special permit. This restriction applies to all roads and bridges inside and outside the Project Right of Way as long as these roads and bridges are open for public use. Where it is necessary for overloaded or oversized equipment to cross an existing road or street, including specifically the existing traveled lanes of a divided highway within the Project Right of Way, Concessionaire shall obtain all required permits. Concessionaire shall cross existing roads or streets only at plan-designated points. FDOT may require Concessionaire to protect the pavement or roadway at the crossing by using lumber, planks, or fill. Concessionaire shall provide flagging and watchman service, or approved signal devices, for the protection of traffic at all such crossings, in accordance with an approved written plan for that activity.

Concessionaire shall take positive measures to ensure that tractor-type equipment does not damage a road.

The Specialty Engineer shall analyze the effect of imposed loads on bridge structures, excluding any pipe culvert(s) or box culvert(s) qualifying as a bridge, resulting from the following operations:

- Overloaded equipment operating on or crossing over completed bridge structures.
- Overloaded equipment operating on or crossing over partially completed bridge structures.
- Equipment within legal load limits operating on or crossing over partially completed bridge structures.
- Construction cranes operating on completed or partially completed bridge structures.

A completed bridge structure is a bridge structure in which all elemental components comprising the load carrying assembly have been completed, assembled, and connected in their final position. The components to be considered shall also include any related members transferring load to any bridge structure.

The Specialty Engineer shall determine the effect that equipment loads have on such bridge structures and develop the procedures for using the loaded equipment without exceeding the structure’s design load capacity.

Concessionaire shall submit to FDOT for approval design calculations, layout drawings, and erection drawings showing how the equipment is to be used so that the bridge structure will not be overstressed. The Specialty Engineer shall sign and seal one hard copy set of the drawings and the cover sheet of one hard copy of the calculations.
Concessionaire shall display the maximum legal gross weight, as specified in the Florida Uniform Traffic Code, in a permanent manner on each side of any dump truck or dump type tractor-trailer unit hauling embankment material, construction aggregates, road base material, or hot bituminous mixture to the Project over any public road or street. Concessionaire shall display the weight in a location clearly visible to a scale operator, in numbers that contrast in color with the background and that are readily visible and readable from a distance of 50 feet.

5. **Use of Explosives**

When using explosives for the prosecution of the Work, Concessionaire shall exercise the utmost care not to endanger life or property, including new Work. Concessionaire is strictly liable for all damage resulting from the use of explosives.

Concessionaire shall store all explosives in a secure manner in compliance with all laws and ordinances, and clearly mark all such storage places with the words: “DANGEROUS - EXPLOSIVES”. Concessionaire shall place such storage in the care of a competent watchman. Where no local laws or ordinances apply, provide storage satisfactory to FDOT and, in general, not closer than 1,000 feet from the road or from any building, camping area, or place of human occupancy.

Concessionaire shall notify each Utility company having structures in proximity to the site of the Work of the intention to use explosives. Concessionaire shall give such notice sufficiently in advance to enable the companies to take precautionary steps to protect their property from injury.

6. **Dust Control**

Concessionaire shall ensure that excessive dust is not transported beyond the Project Right of Way in populated areas. Concessionaire shall control dust for embankments or other cleared or unpaved areas by applying water or calcium chloride, as satisfactory to FDOT. Calcium chloride, if used, shall be used in accordance with the Standard Specifications. Concessionaire shall install mulch, seed, sod, or temporary paving as early as practical. Concessionaire shall control dust during the storage and handling of dusty materials by wetting, covering, or other means as approved by FDOT.

When working adjacent to or over travel lanes, Concessionaire shall ensure that dust, mud and other debris does not interfere with normal traffic operations or adjacent properties.

7. **Asphalt Material**

Concessionaire shall use only emulsified asphalt, unless otherwise stated in the Plans and as allowed by Chapter 17-2 of the Rules of the Department of Environmental Protection. Concessionaire shall store and handle asphalt materials and components so as to minimize unnecessary release of hydrocarbon vapors.
8. **Asphalt Plants**

Concessionaire shall operate and maintain asphalt plants in accordance with Chapter 17-2 of the Rules of the Department of Environmental Protection. Concessionaire shall provide the plant site with a valid permit as required under Chapter 17-2 prior to start of Work.

9. **Connections to Existing Pavement, Drives and Walks**

Concessionaire shall extend the construction in order to make suitable connections to existing pavement, driveways, and/or sidewalks, and shall be responsible for any additional costs associated with such connections, provided that any such connection extending outside of the Construction Period O&M Limits shall require the prior written approval of FDOT.

10. **Defective Materials**

Concessionaire may submit a scope of work to FDOT for an engineering or laboratory analysis to determine the disposition of defective material. A Specialty Engineer, who is an independent consultant or Concessionaire’s EOR as stated within each individual section, shall perform any such analysis. Upon FDOT’s approval in its sole discretion of the scope of work submitted by Concessionaire, the engineering analysis must be completed and the report must be submitted to FDOT within 45 days, or other time frame as approved by FDOT. The report must be signed and sealed by the Specialty Engineer.

11. **Work Performed by Equipment-Rental Agreement**

As provided in Section 24.1.3 of the Agreement, the limitations set forth in the Agreement concerning the amount of D&C Work that may be sublet shall not apply to D&C Work performed by equipment-rental agreement. However, for any D&C Work to be performed by equipment-rental agreement, Concessionaire shall notify FDOT in writing of such intention before using the rented equipment, and indicate whether the equipment will be rented on an operated or non-operated basis. Concessionaire shall include with the written notice a listing and description of the equipment and a description of the particular D&C Work to be performed with such equipment. As an exception to the above requirements, FDOT will not require written notice for equipment to be rented (without operators) from an equipment dealer or from a firm whose principal business is the renting or leasing of equipment.

The operators of all rented equipment, whether rented on an operated or a non-operated basis, are subject to all wage rate requirements applicable to the Project. When renting equipment without operators, Concessionaire shall carry the operators on his own payroll. For equipment that is rented on an operated basis, and when required by the Contract Documents or requested by FDOT, furnish payrolls from the lessor with the names of the operators shown thereon.

12. **Certifications**

Special Erection Equipment: Prior to its use, the Specialty Engineer shall personally inspect the special erection equipment and certify to the EOR in
writing that the equipment has been fabricated in accordance with the submitted drawings and calculations. In addition, after assembly, the Specialty Engineer shall observe the equipment in use and certify to the EOR in writing that it is being used as intended and in accordance with the submitted drawings and calculations. In each case, the Specialty Engineer shall sign and seal the letter of certification.

Falsework and Shoring Requiring Shop Drawings: After its erection or installation but prior to the application of any superimposed load, the Specialty Engineer shall inspect the falsework and certify to the EOR in writing that the falsework has been constructed in accordance with the materials and details shown on the submitted drawings and calculations. The Specialty Engineer shall sign and seal the letter of certification. Where so directed in the Shop Drawings, all welds shall be performed by welders qualified under AASHTO AWS D1.5 for the type of weld being performed.

Temporary Formwork: For construction involving Major and Unusual Structures, prior to the placement of any concrete, the Specialty Engineer shall conduct a pre-erection meeting to review the details of the plan with the Specialty Engineer that signed and sealed the plan, any Specialty Engineers or designees that may inspect the Work, and the EOR.

Erection: For construction involving Major and Unusual Structures, the Specialty Engineer shall submit a signed and sealed erection plan to the EOR prior to erection commencing in accordance with the submittal timeframes described in the Contract Documents. Include as part of this submittal signed and sealed calculations and details for any falsework, bracing or other connection(s) supporting the structural elements shown in the erection plan. Unless otherwise specified in the Plans, erection plans are not required for simple span precast prestressed concrete girder bridges with spans of 170 feet or less.

At least two weeks prior to beginning erection, Concessionaire shall conduct a pre-erection meeting to review the details of the plan with the Specialty Engineer that signed and sealed the plan, any Specialty Engineers or designees that may inspect the Work, and the EOR.

After erection of the elements, but prior to opening of the facility below the structure, the Specialty Engineer shall inspect the erected member. The Specialty Engineer shall certify to the EOR that the structure has been erected in accordance with the signed and sealed erection plan.

For structures without temporary supports but with temporary girder bracing systems, Concessionaire shall perform, as a minimum, weekly inspections of the bracing until all the diaphragms and cross frames are in place. For structures with temporary supports, Concessionaire shall perform daily inspections until the temporary supports are no longer needed as indicated in the erection plans. Provide written documentation of the inspections to the EOR within 24 hours of the inspection.
13. **Materials**

Concessionaire shall restore immediately any site from which material has been removed for sampling purposes to the pre-sampled condition with materials and construction methods used in the initial construction, at no additional cost to FDOT. Concessionaire shall ensure that when a material is delivered to the location as described in the Contract Documents, there is enough material delivered to take samples, at no expense to FDOT. Concessionaire shall:

- Submit certified manufacturer’s test results to FDOT for qualification and use on FDOT projects. Testing shall be as specified in the appendices. FDOT may require that manufacturers submit samples of materials for independent verification purposes.

- Test the material during production as specified in the appendices.

- Test the material at distribution facilities as specified in the appendices.

- Test the material immediately following placement as specified in the appendices. After delivery to the Project, FDOT may require the retesting of materials that have been tested and accepted at the source of supply, or may require the testing of materials that are to be accepted by Producer Certification. FDOT may reject all materials that, when retested, do not meet the requirements of the Contract Documents in areas outside the O&M Limits or on the Project where public safety is a concern.

Concessionaire shall store materials in such a manner as to preserve their quality and fitness for the Work, to facilitate prompt inspection, and to minimize noise impacts on sensitive receivers. More detailed specifications concerning the storage of specific materials are prescribed under the applicable Specifications. FDOT may reject improperly stored materials, in its good faith discretion.

Concessionaire shall accept responsibility for the protection of stored materials. FDOT is not liable for any loss of materials, by theft or otherwise, or for any damage to the stored materials.

Concessionaire shall provide facilities for storage of samples as described in the Contract Documents and as warranted by the test methods and Specifications.

Concessionaire shall not use materials that were produced after July 1, 1991 by convict labor for Federal-aid highway construction projects unless the prison facility has been producing convict-made materials for Federal-aid highway construction projects before July 1, 1987.

Concessionaire shall use materials that were produced prior to July 2, 1991 by convicts on Federal-aid highway construction projects free from the restrictions placed on the use of these materials by 23 U.S.C. 114. FDOT shall limit the use of materials produced by convict labor for use in Federal-aid highway construction projects to materials produced (a) by convicts on parole, supervised release, or probation from a prison, or (b) in a qualified prison facility.
The amount of such materials produced for Federal-aid highway construction during any 12-month period shall not exceed the amount produced in such facility for use in such construction during the 12-month period ending July 1, 1987.

Concessionaire shall only use steel and iron produced in the United States, in accordance with the Buy America provisions of 23 CFR 635.410, as amended. Concessionaire shall ensure that all manufacturing processes for this material occur in the United States. As used in this section, a manufacturing process is any process that modifies the chemical content, physical shape or size, or final finish of a product, beginning with the initial blending and mixing and continuing through the bending and coating stages. A manufactured steel or iron product is complete only when all grinding, drilling, welding, finishing and coating have been completed. If a domestic product is taken outside the United States for any process, it becomes foreign source material. When using steel and iron as a component of any manufactured product incorporated into the Project (e.g., concrete pipe, prestressed beams, corrugated steel pipe), these same provisions apply, except that the manufacturer may use minimal quantities of foreign steel and iron when the cost of such foreign materials does not exceed 0.1% of the total Design and Construction Costs or $2,500, whichever is greater. These requirements are applicable to all steel and iron materials incorporated into the finished Work, but are not applicable to steel and iron items that Concessionaire uses but does not incorporate into the finished Work. Concessionaire shall provide a certification from the producer of steel or iron, or any product containing steel or iron as a component, stating that all steel or iron furnished or incorporated into the furnished product was manufactured in the United States in accordance with the requirements of this specification and the Buy America provisions of 23 CFR 635.410, as amended. Such certification shall also include (1) a statement that the product was produced entirely within the United States, or (2) a statement that the product was produced within the United States except for minimal quantities of foreign steel and iron valued at $ (actual value). Concessionaire shall furnish each such certification to FDOT prior to incorporating the material into the Project. Concessionaire shall not use any material that, after approval and/or placement, has in any way become unfit for use. Concessionaire shall provide workplaces free from serious recognized hazards and shall comply with occupational safety and health standards, as determined by the U.S. Department of Labor Occupational Safety and Health Administration.

Aggregates used on the Project must be in accordance with Rule 14-103, FAC.

U. Management Review Board

FDOT and Concessionaire shall provide no more than three members of upper management to meet quarterly throughout the Construction Period as a Management Review Board (MRB). The intent of the meeting is to give upper management in both organizations the opportunity to meet and discuss overall progress on the Project, and address any pertinent issue that may need to be resolved at an elevated level. The MRB meetings may be held at the Project Office or another mutually agreed upon location.
Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

A. Forms ................................................................................................................................. 1

B. Survey .................................................................................................................................. 1

C. Environmental Approach: NEPA Requirements / Permitting / Mitigation .................. 1
   1. Project Commitments ........................................................................................................ 1
   2. Permits and Approval ...................................................................................................... 2
   3. Water Quality .................................................................................................................. 3
   4. Wetland Mitigation .......................................................................................................... 3
   5. Construction Noise & Vibration ..................................................................................... 4
   6. Threatened and Endangered Species ............................................................................ 6
   7. Contaminated Materials ................................................................................................. 7
   8. Lighting / Visual .............................................................................................................. 8
   9. Cultural Resources ......................................................................................................... 9
  10. Prohibited Plants .......................................................................................................... 9

D. Geotechnical .................................................................................................................... 9
   1. General Conditions ......................................................................................................... 9
   2. Geotechnical Services ................................................................................................... 10
   3. Sinkholes and Settlement Prone Locations .................................................................. 14

E. Utilities ............................................................................................................................ 14
   1. Concessionaire Roles & Responsibilities .................................................................... 14
   2. Excluded Utility Adjustments ...................................................................................... 16

F. Transit ............................................................................................................................... 17
   1. Lynx Coordination ........................................................................................................ 17
   2. Central Florida Light Rail Transit System Project ....................................................... 17

G. Pedestrian and Bicycle Facilities .................................................................................... 18

H. Roadway .......................................................................................................................... 19
   1. Preliminary Design ......................................................................................................... 19
   2. Design Analysis ............................................................................................................ 19
   3. Drainage ....................................................................................................................... 28
   4. Stormwater Pollution Prevention Plans (SWPPP) ....................................................... 36
   5. Temporary Traffic Control (TTC) ................................................................................ 36
   6. Pre and Post Construction Video Documentation ...................................................... 46
   7. WB I-4 Rest Area ........................................................................................................ 48
I. Structures .......................................................................................................................... 48
   1. General Structural Information .................................................................................. 48
   2. Structural Design Criteria ....................................................................................... 51
J. Noise Barriers .................................................................................................................. 58
K. Specifications .................................................................................................................. 58
L. Signing and Pavement Markings ................................................................................... 59
   1. Pavement Marking Criteria: ..................................................................................... 59
   2. Signing Criteria: ......................................................................................................... 60
   3. Guide Signing Criteria .............................................................................................. 63
   4. Specific Service Signs ............................................................................................. 66
   5. Plan Production Criteria ......................................................................................... 66
   6. Signing Criteria related to Temporary Traffic Control (TTC)................................. 67
M. Signalization ................................................................................................................... 67
N. Lighting ............................................................................................................................. 70
O. Traffic Monitoring ........................................................................................................ 72
P. Aesthetics & Landscape ................................................................................................ 75
   1. General ...................................................................................................................... 75
   2. Landscape ................................................................................................................ 76
   3. Hardscape ............................................................................................................... 82
Q. Toll System ..................................................................................................................... 92
Section 3  Design and Construction Criteria

A.  Forms

Concessionaire shall make use of all applicable standard FDOT forms for design and construction as set forth at the following website:

http://www.dot.state.fl.us/proceduraldocuments/forms.shtm.

This shall apply to all issues for which a standard FDOT form is available.

B.  Survey

Notwithstanding any design surveys provided by FDOT, Concessionaire shall perform all surveying services necessary to complete the Project. The information shall meet the following requirements:

Survey services must comply with all pertinent Florida Statutes and applicable rules in the Florida Administrative Code. All field survey data shall be furnished to FDOT in approved digital format, readily available for input and use in CADD design files. All surveying work must be accomplished in accordance with FDOT’s Surveying Procedure, Topic Nos. 550-030-101; Right-of-Way Mapping Procedure, Topic No. 550-030-015; and Aerial Surveying Standards for Transportation Projects Procedure, Topic No. 550-020-002. This work must comply with the Minimum Technical Standards for Professional Surveyors and Mappers, Chapter 5J-17, F.A.C., pursuant to Section 472.027, F.S. Survey work shall also comply with Chapter 177, F.S.

All survey work shall be made to conform to the Florida State System of Plane Coordinates, using the North American Datum of 1983 (1990 or most recent adjustment) for horizontal control, and the North American Vertical Datum of 1988 (NAVD 1988) for vertical control.

C.  Environmental Approach:  NEPA Requirements / Permitting / Mitigation

1.  Project Commitments

During the development of the Project through the planning phase, PD&E Study, right of way phase, and design phase, FDOT coordinated with numerous government officials, agencies, municipalities, the general public, and other organizations to ultimately establish the approved corridor design concept and Project commitments. Refer to Volume III – Additional Mandatory Standards and Design Change Reevaluations for these Project Commitments and their status. During the preparation of the Reference Design, additional commitments and agreements in the form of Memorandums of Understanding (MOUs), Joint Project Agreements (JPAs), Joint Use Pond Agreements, Off-system Construction and Maintenance Agreements, and Memorandum of Agreements (MOA) were executed with various local agencies. These additional Project Commitments are also included in Volume III – Additional Mandatory Standards. Concessionaire shall include submittal of monthly tracking and reporting on the status of the Project Commitments as part of required D&C Monthly Reports and
O&M Monthly Reports. Concessionaire shall be responsible for the coordination and scheduling to comply with Project Commitments.

Concessionaire shall submit, as part of the Corridor Master Plan, an environmental compliance plan (the “Environmental Compliance Plan”) which describes how Concessionaire will comply with applicable NEPA commitments, non-contamination-related environmental permitting and other regulatory requirements during performance of the Design Work, Construction Work and O&M Work. The Environmental Compliance Plan shall, at a minimum:

- Identify the key personnel responsible for all environmental permitting requirements, including at a minimum NEPA compliance, EPA/NPDES compliances, threatened or endangered species permit compliances, and gopher tortoise permitting compliances;
- Describe how requirements and commitments described in the various Technical Volumes (as well as any additional requirements and commitments that may arise during the Construction Period and Operating Period), will be identified and tracked, and how Concessionaire intends to verify that these requirements and commitments have been met; and
- Identify mitigation plans to be developed for environmentally sensitive aspects of the Work, addressing potential Work activities related to the natural environment, cultural and historic resources, and the physical environment.

2. Permits and Approval

Concessionaire shall be responsible for preparing and obtaining and paying for all permits and permit modifications required for the Project in accordance with Section 3.3 of the Agreement. As the permittee for environmental permits and permit modifications, FDOT is responsible for reviewing, approving, and signing the permit application package, including any permit modifications or renewals. Concessionaire shall provide FDOT with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit extensions, for review and approval by FDOT prior to submittal to the agencies. Once FDOT has approved the permit application, Concessionaire is responsible for submitting the permit application on behalf of FDOT to the applicable environmental permitting agency. A copy of all correspondence (in pdf format) with environmental permitting agencies shall be sent to the District Environmental Permits Office with a copy to the I-4 Ultimate Construction Program Manager. If any agency does not accept the submittal or denies the permit application, it is Concessionaire’s responsibility to make whatever changes necessary to ensure the permit application is approved.

Copies of permits for the Reference Design obtained to date from the U.S. Army Corps of Engineers (USACE), South Florida Water Management District (SFWMD) and St. Johns River Water Management District (SJRWMD) are provided in the Reference Documents. No existing drainage wells shall be impacted without approval from FDOT, except those existing drainage wells identified elsewhere in the Contract Documents. All other existing water wells impacted by construction shall be properly abandoned and plugged in accordance with Chapter 62-532, F.A.C., and Chapters 40E-3 and 40C-3 F.A.C.
as applicable. Concessionaire shall obtain all permits and approvals necessary for such work.

If maintenance responsibility is being transferred to a local agency, Concessionaire shall transfer the permit to the local agency as the operational maintenance entity and, if necessary, modify all permits for those portions of the Project that are located outside of the O&M Limits.

3. Water Quality

The “State of Florida Department of Environmental Protection (FDEP) Generic Permit for Stormwater Discharge from Large and Small Construction Activities” applies to this Project. The URL for obtaining a copy of the permit is [http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/DEPPermanent.pdf](http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/DEPPermanent.pdf). In accordance with the requirements of the DEP generic permit, Concessionaire shall be responsible for, at a minimum, the following:

1. Preparation, execution and submission of DEP Generic Permit Notice of Intent (NOI) and payment of associated fee(s);
2. Preparation and submission of Erosion Control Plan as outlined in Section 104 of the Standard Specifications;
3. Any Concessionaire-initiated SWPPP modifications;
4. Performing inspections using a qualified inspector;
5. Completion of SWPPP construction inspection reports;
6. Executing associated certification forms provided by FDOT; and
7. Preparation, execution and submission of Notice of Termination (NOT) of the DEP Generic Permit coverage.

Concessionaire shall submit a Notice of Intent for a construction National Pollutant Discharge Elimination System (NPDES) permit, prior to the initiation of the Construction Work, which shall identify erosion and sedimentation control devices, locations and scheduled inspection and maintenance of the selected devices. Concessionaire shall comply with the requirements of Rule 62-520.400 F.A.C. (Minimum Criteria for Groundwater) and Rule 62-520.430, F.A.C. (Standards for Class G-III Groundwater), during any dewatering to groundwater wells associated with this Project, and any other applicable Laws.

4. Wetland Mitigation

Concessionaire shall be responsible for identifying, coordinating, and mitigating wetland impacts within and adjacent to the Project for the duration of the Term.

As provided in and governed by the Agreement, Concessionaire is responsible for any additional mitigation on the Project to offset environmental impacts if such impacts are due to Concessionaire making changes to the Preliminary Design or the Work.
5. Construction Noise & Vibration

FDOT has identified potential noise and vibration sensitive sites along the Project corridor, and that information is included in Volume III – Additional Mandatory Standards. Concessionaire shall be responsible for the identification of and coordination with noise and vibration sensitive sites impacted by the Work for the duration of the Construction Period.

a. Construction Noise

Construction Work noise shall be restricted in areas of the project adjacent to residential areas during the nighttime period between the hours of 10:00 PM and 7:00 AM. For purposes of this section, residential areas shall be defined as property used for residences, including, at a minimum, single-family residences, multi-family residences, condominiums, apartments, hotels, motels, and assisted living facilities. Nighttime Construction Work noise levels in residential areas may not exceed the background noise level plus 5 dB for a cumulative period of 2 minutes in any twenty minute period.

Concessionaire shall monitor Construction Work noise per the following requirements:

1. Noise level measurements shall be taken at each noise-sensitive location and at each residential area adjacent to Construction Work during ongoing construction activities at least once each week during the nighttime period. The time period for each noise measurement shall be 20 minutes.

2. Construction noise measurements shall coincide with nighttime periods of maximum noise-generating construction activity, and shall be performed during the construction phase or activity that has the greatest potential to exceed noise level limitations as specified in this section. Compliance noise measurements shall be performed at a point on a given lot-line which is the closest to the construction activity.

3. If, in the estimation of the person performing the measurements, outside sources contribute significantly to the measured noise level, the measurements shall be repeated with the same outside source contributions when construction is inactive to determine the ambient noise level contribution.

4. All measurements shall be taken at the right of way line. In situations where the work site is within 50 feet of the right of way line, the measurement shall be taken from a point along the right of way line such that a 50 foot distance is maintained between the sound level meter and the construction activity being monitored.

5. Up to four 24-hour noise monitors shall be maintained at the lot-line of noise receptor locations and shifted among locations corresponding to construction activity as directed by the COS. These monitors shall be capable of recording the noise values in 20-minute intervals over 24-hour periods.

6. Noise from emergency signals, emergency equipment and vehicles, emergency warning devices, and law enforcement activities (including training) are exempt from the provisions of this section.
Background noise measurements shall be collected over two non-consecutive days Monday through Saturday and one Sunday at noise monitoring receptor locations prior to the start of Construction Work. Background noise measurements should be performed in the absence of any contributing construction noise or noise from emergency signals, emergency equipment and vehicles, emergency warning devices, and law enforcement activities (including training). Background noise levels shall be arithmetically averaged into a single level defining the background noise during the nighttime period.

Concessionaire shall use equipment with efficient noise-suppression devices and employ noise abatement measures such as enclosures and barriers necessary to control noise levels in noise sensitive locations and residential areas during the nighttime period. All equipment with backup alarms operated by Concessionaire, vendors, suppliers, and subcontractors on the Project shall be equipped with either audible self-adjusting ambient-sensitive backup alarms or manually-adjustable alarms. The ambient-sensitive alarms shall automatically adjust to a maximum of 5 dBA over the surrounding background noise levels. The manually-adjustable alarms shall be set at the lowest setting required to be audible above the surrounding noise.

Concessionaire shall submit to FDOT a Noise Monitoring Plan (NMP) for review and acceptance as part of the 90% plans submittal. The NMP shall be updated every six months for the duration of construction activities. The NMP shall identify and describe the following in detail:

1. The receptor locations where noise monitoring shall be performed, including sketches of all locations.
2. The type of noise level measurement device that shall be used.
3. The noise monitoring methods and procedures that shall be used.
4. The data reporting method that shall be used.
5. The response procedure and actions to be taken for any noise level that exceeds the noise limits specified in this section.
6. The complaint response and resolution procedures.

b. Vibration and Settlement Monitoring

Concessionaire is responsible for evaluating the need for, design of, and the provision of any necessary precautionary features to protect existing structures from damage, including, at a minimum, selecting construction methods and procedures that will prevent damage. In addition to the requirements in Specification 455-1.1 included in Volume III – Additional Mandatory Standards, Concessionaire shall submit to FDOT a Settlement and Vibration Monitoring Plan (SVMP) as part of the 90% plans submittal and update the SVMP throughout the Construction Period. Concessionaire is responsible for establishing maximum settlement and vibration thresholds equivalent to or lower than the requirements of Specification 455-1.1 included in Volume III – Additional Mandatory Standards.
The SVMP shall include the following as a minimum:

- Identify any existing structures in addition to those identified in Volume III - Additional Mandatory Standards or required by Specification 455-1.1 included in Volume III – Additional Mandatory Standards that will be monitored for vibrations during the Construction Period.
- Establish maximum vibration levels. The maximum vibration levels stated in Volume III – Additional Mandatory Standards for specific existing structures or Specification 455-1.1 included in Volume III – Additional Mandatory Standards for other existing structures shall not be exceeded.
- Identify any existing structures in addition to those identified in Volume III - Additional Mandatory Standards that will be monitored for settlement during the Construction Period.
- Establish maximum settlement levels. The maximum settlement level stated in Specification 455-1.1 included in Volume III – Additional Mandatory Standards shall not be exceeded.
- Identify any existing structures in addition to those identified in Volume III - Additional Mandatory Standards or Specification 455-1.1 included in Volume III – Additional Mandatory Standards that require pre-construction and post-construction surveys.

6. Threatened and Endangered Species

An Endangered Species Biological Assessment (ESBA) was conducted in 1999 as part of the PD&E Study. A biological field assessment and an ESBA Update Technical Memorandum were completed in late 2013.

FDOT will assess the Project to determine potential impacts to threatened or endangered species and coordinate with the United States Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission (FWC) as needed prior to construction. Concessionaire shall be responsible for coordinating protected species impacts within and adjacent to the Project for the duration of the Term. Concessionaire shall comply with all applicable Laws regarding protected species, and adhere to all protected species permitting and relocation requirements should they be necessary.

FDOT has conducted an investigation of the Project site and determined that potential gopher tortoise habitats could be impacted by the Project. FDOT shall have a FWC Authorized Gopher Tortoise Agent conduct a gopher tortoise survey in accordance with Florida Statutes for all areas that may be impacted by the Project, including any areas to be used for construction staging. All areas impacted by the Project shall be systematically surveyed by FDOT according to the current Gopher Tortoise Permitting guidelines published by the FWC. FDOT must verify the completeness and accuracy of the assessment prior to commencement of any permitting or construction activities. Any areas where Concessionaire proposes to protect burrows to remain on-site with “exclusionary fencing” shall be reviewed and approved by FDOT. Concessionaire shall submit an “exclusionary fencing” plan to FDOT for review prior to any “exclusionary fencing” installation. If there are unavoidable impacts to gopher tortoise burrows, Concessionaire shall obtain a FWC gopher tortoise permit for the relocation of gopher tortoises and commensals from burrows which cannot be avoided.
Preparation of complete gopher tortoise permit packages will be the responsibility of Concessionaire. As the “permittee”, FDOT is responsible for reviewing and approving the permit application package including all permit modifications, or subsequent permit applications. Once FDOT has approved the gopher tortoise permit application, Concessionaire is responsible for submitting the permit application to FWC. FDOT will allow Concessionaire to use FDOT’s login credentials for access to the FWC website for submitting, tracking, maintaining and monitoring gopher tortoise permit applications. A copy of the gopher tortoise permit and any subsequent reports to FWC must be provided to FDOT. If FWC rejects or denies the gopher tortoise permit application, it is Concessionaire’s responsibility to make whatever changes necessary to ensure the permit application is approved. Once the gopher tortoise permit is obtained, Concessionaire shall notify FDOT at least one week prior to the relocation of gopher tortoises. If gopher tortoise relocations are phased throughout the construction, Concessionaire shall notify FDOT at least one week prior to each relocation phase. FDOT will provide oversight of the relocations and ensure permit compliance. Concessionaire shall be responsible for any necessary gopher tortoise permit extensions or re-permitting in order to keep the relocation permit valid throughout the Construction Period. Concessionaire shall provide FDOT with draft copies of requests to modify the gopher tortoise permits and/or requests for permit extensions, for review and approval by FDOT prior to submittal to FWC. Concessionaire shall provide the appropriate reports as required by the gopher tortoise permit conditions, including closing out the permit. Concessionaire shall note that permits for gopher tortoise relocation for areas outside of FDOT owned right of way (i.e. utility easements; license agreements) cannot be obtained with FDOT as the “permittee”, per FWC requirements. Should gopher tortoise permits in areas outside of the right of way be required, FDOT will still perform the oversight of the process as described above. Concessionaire shall pay all gopher tortoise permit fees including any and all fees associated with the relocation of gopher tortoises. Any fines levied by permitting agencies shall be the responsibility of Concessionaire.

7. Contaminated Materials

In addition to the requirements stipulated in Section 4.10 of the Agreement, Concessionaire shall utilize a Contamination Assessment/Remediation (CAR) Contractor for any materials assessment, remediation, or handling of any Known Contaminated Materials or Unknown Contaminated Materials. The CAR Contractor shall meet the following requirements:

- Maintains all applicable certifications and professional licenses required by law
- Possesses valid business certificate of authorization to practice either professional geology (Chapter 492 F.S.) or professional engineering (Chapter 471, F.S.) in the State of Florida, which can be confirmed through My Florida Marketplace.
- Complies with all applicable Occupational Safety and Health Administration regulations.

If pursuant to Section 4.10 of the Agreement, Concessionaire disposes of, transports for disposal or treatment, or arranges with a transporter for transport
for disposal or treatment of Known Contaminated Materials and Unknown Contaminated Materials existing prior to the Effective Date, FDOT shall have the right to approve, in its sole discretion, the transporter, the method of transport, or the method of disposal. Concessionaire shall immediately contact the District Contamination Impact Coordinator (DCIC) if any monitoring wells are encountered within the Project Right of Way which have not been grouted. Concessionaire shall submit a Contamination Management Plan as part of the Corridor Master Plan that describes how the Concessionaire will address all Contaminated Materials-related issues during performance of the Design Work, Construction Work and O&M Work. The Contamination Management Plan shall include the following, at a minimum:

- Identify the key personnel to be responsible for addressing all Contaminated Materials-related issues, including signing and sealing of contamination/site assessment reports and remedial action plans, and the handling of Contaminated Materials;
- Describe in detail how contamination-related requirements described in the various Technical Volumes, including responses to Contaminated Materials discharges (as well as any additional requirements and commitments that may arise during the Construction Period and Operating Period) will be identified, tracked, and complied with in accordance with the Contract Documents, NEPA commitments, environmental permitting and other regulatory requirements; and how Concessionaire intends to verify that these contamination-related requirements and commitments have been met;
- Identify contamination assessment and remediation plans to be developed for areas of known and unforeseen Contaminated Materials contamination, including the preparation and submittal to applicable regulatory agencies of Contamination/Site Assessment Reports and Remedial Action Plans, as well as the handling, transportation and disposal of undesirable, Contaminated Materials encountered throughout the Term;
- Identify strategies for minimizing involvement with known and unforeseen Contaminated Materials contamination, including the exacerbation of existing Contaminated Materials plumes, minimizing construction delays associated with Contaminated Materials issues, and minimizing potential liability to FDOT; and
- Provide achievable timeframes for the completion of all Contaminated Materials-related tasks, including responses to Contaminated Materials discharges.

8. Lighting / Visual

Lighting, if required for nighttime Construction Work, may have an impact on nearby residences. Concessionaire shall coordinate, design, schedule and implement plans to avoid or control these lighting impacts to the maximum extent feasible and comply with the requirements of Volume II, Section 3.N for temporary lighting during construction.

Concessionaire shall use point source luminaires which provide a full-cutoff distribution for construction site lighting and temporary roadway lighting to ensure that dark sky criteria is met and light trespass to surrounding areas is minimized.
Construction Zone floodlights shall be aimed and shielded to keep light within the confines of the immediate Construction Zone.

9. **Cultural Resources**

In 1999, a Cultural Resource Assessment Survey (CRAS) was conducted for the final Environmental Impact Statement as part of the PD&E Study. Additional cultural resource surveys were prepared as addenda to the 1999 CRAS during subsequent design changes. In 2010 and 2013, additional CRAS Reevaluations were prepared for the Project.

Concessionaire must comply with all applicable local, State and Federal regulations and Project Commitments regarding construction methodologies and precautionary guidelines for archeological resources that may be present. Concessionaire shall comply with the requirements with respect to the discovery of human remains during construction. In the event that human remains are found during construction activities, the provisions of Chapter 872.05, F.S. shall apply.

10. **Prohibited Plants**

Concessionaire shall not introduce or release prohibited aquatic plants, plant pests, or noxious weeds into the Project ROW as a result of clearing and grubbing, earthwork, grassing and mulching, sodding, landscaping, or other such activities. Concessionaire shall immediately notify FDOT upon discovery of all prohibited aquatic plants, plant pests, or noxious weeds within the Project ROW. Concessionaire shall not move prohibited aquatic plants, plant pests, or noxious weeds within the Project ROW or to locations outside of the Project ROW without FDOT’s permission. Concessionaire shall maintain all borrow material brought onto the Site free of prohibited aquatic plants, plant pests, noxious weeds, and their reproductive parts. Refer to Rule 6C-52 and Rule 5B-57, of the Florida Administrative Code for the definition of prohibited aquatic plants, plant pests, and noxious weeds.

D. **Geotechnical**

1. **General Conditions**

Concessionaire shall be responsible for identifying those circumstances under which geotechnical investigation, analysis and design of foundations, foundation construction, foundation load and integrity testing, and inspection are required by the Contract Documents. Concessionaire shall be responsible for performing any such geotechnical investigation, analysis and design of foundations, foundation construction, foundation load and integrity testing, and inspection in accordance with the Contract Documents. Geotechnical foundations related to tolling facilities shall meet the requirements of Section 3 Attachment 2. Concessionaire shall be solely responsible for all geotechnical aspects of the Project.

Concessionaire shall complete all geotechnical investigations and reporting before the completion of the final design and prior to excavation and/or
construction for any given element of the Project. Concessionaire’s GFDEOR shall perform geotechnical investigations and provide geotechnical reports for all subsurface data collected in accordance with FDOT guidelines. Geotechnical reports shall be prepared, signed and sealed and submitted to the I-4 Ultimate Construction Program Manager. Separate reports shall be submitted for:

- Each bridge structure
- Wall structures
- Roadways and ponds
- Miscellaneous structures

2. Geotechnical Services

a) Driven Pile Foundations for Bridges and Major Structures

Concessionaire shall determine whether the resistance factors used for pile design shall be based on static/statnamic load testing. Before the resistance factors for static/statnamic load testing may be used for pile foundations in any of the following areas of the Project, a minimum number of successful load tests must be performed in representative locations of that area as indicated in the table provided in Volume III – Additional Mandatory Standards:

Concessionaire shall be responsible for the following:

1. Selection of pile type and size.
2. Selection of test pile lengths, locations and quantity of test piles.
3. Selection of pile testing methods.
4. Determining the frequency of such testing unless otherwise stated herein.
5. Performance of the selected test pile program, including dynamic load test personnel and equipment. FDOT may observe the installation of test piles and all pile testing.
6. Selection of production pile lengths.
7. Development of the installation criteria.
8. Driving piles to the required capacity and minimum penetration depth.
9. Inspecting and recording the pile driving information.
10. Submitting foundation certification packages for review by the COS. Concessionaire shall submit with the certification package a signed and sealed letter prepared by the Foundation Review Consultant (FRC) stating he has reviewed the foundation certification package and concurs with it.
11. Performing verification testing in accordance with Section 455 of the Standard Specifications, with the exception that Concessionaire shall provide the dynamic load test equipment and dynamic testing personnel in addition to the driving equipment, pile driving crew(s) and support as needed to prepare the piles for testing.
12. Providing safe access to facilitate verification operations of the piles, both during construction and after submittal of the certification package.
13. Performing cycles of deficiency correction and additional verification testing in accordance with Section 455 of the Standard Specifications. Any recertification package must be accompanied by a signed and sealed letter prepared by the FRC stating he has reviewed the recertification package and concurs with it.

b) Drilled Shaft Foundations for Bridges and Miscellaneous Structures

Concessionaire shall determine whether the resistance factors used for drilled shaft design shall be based on static/statnamic load testing. Before the resistance factors for static/statnamic load testing may be used for drilled shafts in any of the following areas of the Project, a minimum number of successful load tests must be performed in representative locations of that area as indicated in the table provided in Volume III – Additional Mandatory Standards.

Concessionaire shall be responsible for the following:

1. Evaluating geotechnical conditions to determine the drilled shaft diameter and length and construction methods to be used.
2. Performing the subsurface investigation and drilling pilot holes prior to establishing the drilled shaft tip elevations and socket requirements. For redundant drilled shaft bridge foundations, perform at least one test boring in accordance with FDOT Soils and Foundations Handbook at each bent/pier.
3. Determining the locations of the load test shafts and the types of tests that will be performed.
4. Performing pilot borings for test holes (also known as test shafts or method shafts) and load test shafts and providing the results to FDOT at least one (1) working day before beginning construction of these shafts.
5. Constructing the test holes (method shaft) and load test shafts successfully and conducting integrity tests on these shafts using both cross hole sonic logging and thermal integrity profiling test methods.
6. Providing all personnel and equipment to perform a load test program on the load test shafts.
7. Determining the production shaft lengths.
8. Documenting and providing a report to FDOT that includes all load test shaft data, analysis, and recommended production shaft lengths.
9. Constructing all drilled shafts to the required tip elevation and socket requirement in accordance with the Standard Specifications.
10. Inspecting and documenting the construction of all drilled shafts in accordance with the Contract Documents.
11. Performing Cross-Hole Sonic Logging (CSL) tests on all non-redundant drilled shafts supporting bridges. For redundant drilled shaft bridge foundations and drilled shafts for miscellaneous structures, perform CSL on any shaft suspected of containing defects.
12. Repairing all detected defects and conducting post repair integrity testing using 3-D tomographic imaging and gamma-gamma density logging.
13. Submitting foundation certification packages for review by the COS. Concessionaire shall submit with the certification package a signed and sealed letter prepared by the FRC stating he (she) has reviewed the foundation certification package and concurs with it.

14. Performing verification testing on shafts in accordance with Section 455-22 of the Standard Specifications, except Concessionaire shall provide the CSL equipment and testing personnel and perform the testing. Provide the results to the COS within five (5) working days of testing.

15. Correcting shaft deficiencies, retesting and recertifying in accordance with Section 455-22 of the Standard Specifications. Any recertification package must be accompanied by a signed and sealed letter of concurrence by the FRC.

16. Providing safe access, and cooperating with FDOT in verification of the drilled shafts, both during construction and after submittal of the certification package.

For toll gantry foundations, refer to Volume II, Section 3, Attachment 2, Section 3 - Toll Equipment Structure (Gantry) Geotechnical.

c) Spread Footing Foundations

Concessionaire shall be responsible for the following:

1. Evaluating geotechnical conditions to verify the suitability of shallow foundations and designing the spread footing.
2. Constructing the spread footing to the required footing elevation, at the required soil or rock material, and at the required compaction levels, in accordance with the Contract Documents.
3. Inspecting and documenting the spread footing construction.
4. Submitting foundation certification packages for review by the COS. Concessionaire shall submit with the certification package a signed and sealed letter prepared by the FRC stating he (she) has reviewed the foundation certification package and concurs with it.
5. Providing safe access, and cooperating with FDOT in verification of the spread footing, both during construction and after submittal of the certification package.

d) Auger Cast Piles for Noise Barrier Walls

Concessionaire shall be responsible for the following:

1. Evaluating geotechnical conditions and designing the foundations, including diameter and lengths.
2. Constructing all auger cast piles to the required tip elevation and socket requirements in accordance with the Standard Specifications.
3. Inspecting and documenting the construction of all auger cast piles in accordance with the Contract Documents.
4. Submitting foundation certification packages in accordance with the Standard Specifications. Concessionaire shall submit with the certification package a signed and sealed letter prepared by the FRC
stating he has reviewed the foundation certification package and concurs with it.

5. Providing safe access, and cooperating with FDOT in verification of the auger cast piles, both during construction and after submittal of the foundation certification package. Concessionaire shall submit with the foundation certification package a signed and sealed letter of concurrence by the FRC.

e) GFDEOR

Drilled Shafts

The GFDEOR shall provide geotechnical inspection services and engineering services in accordance with Volume II, Section 3.D.2.b – Drilled Shaft Foundations for Bridges and Miscellaneous Structures, FDOT Standard Specifications, Section 455 and Volume II, Section 3, Attachment 4.

Piles

The GFDEOR shall provide geotechnical inspection services and engineering services in accordance with Volume II, Section 3.D.2.a – Driven Pile Foundations for Bridges and Major Structures, FDOT Standard Specifications, Section 455 and Volume II, Section 3, Attachment 4.

Spread Footings

The GFDEOR shall provide geotechnical inspection services and engineering services in accordance with Volume II, Section 3.D.2.c – Spread Footing Foundations, FDOT Standard Specifications, Section 455 and Volume II, Section 3, Attachment 4.

Auger Cast Piles

The GFDEOR shall provide geotechnical inspection services and engineering services in accordance with Volume II, Section 3.D.2.d – Auger Cast Piles for Noise Barrier Walls, FDOT Standard Specifications, Section 455 and Volume II, Section 3, Attachment 4.

f) Foundation Review Consultant

Concessionaire shall engage the services of a Foundation Review Consultant (FRC) to perform an independent review of the foundation certification packages prior to submitting them to FDOT. The FRC shall be employed by a firm that is retained by the QAF.

The FRC shall report to the QAF, and is responsible for reviewing the foundation certification packages and ensuring the foundations have been constructed, inspected and tested properly in accordance with the Contract Documents. The FRC shall perform foundation verification.
testing as specified in the QA/QC Plan and approved by FDOT. Verification testing shall assure foundations meet the integrity and load capacity requirements specified in the Contract Documents, specifications and confirm production values. This individual shall have the authority to reject and issue comments on the certification packages that must be addressed to the FRC’s satisfaction before being submitted to FDOT. A signed and sealed letter by the FRC stating the package has been reviewed and concurrence is given shall be attached to any foundation certification and recertification package submitted to FDOT.

3. **Sinkholes and Settlement Prone Locations**

The Project Right of Way is in an area that is prone to sinkholes; it contains relic sinkholes and other areas prone to settlement.

- Concessionaire shall evaluate the impact of potential sinkhole activity on the Work.
- Concessionaire shall design and construct all foundations for new bridges on the Project to resist the largest lateral loads due to soil movements expected to occur if the ground surface on any one side of the foundation subsides to 20 feet below the design ground elevation. (See Structural Design Criteria). Pile/shaft bridge foundations shall penetrate through all strata exhibiting raveling or sinkhole formation.
- Concessionaire shall establish soil improvement methods and establish construction sequences for roadways, walls and bridges impacted by relic sinkholes or located within the limits of settlement prone locations. At a minimum, Concessionaire shall include the following in the design criteria:
  - Provide a monitoring plan for embankment and surcharges over settlement prone locations via installation of vertical and horizontal deformation and pore pressure monitoring instrumentation every 150 feet (or more frequently).
  - Provide soil improvements and construction sequences to densify and strengthen weak or settlement prone subsoil sufficiently to provide a suitable platform for the roadway or structure.

E. **Utilities**

1. **Concessionaire Roles & Responsibilities**

Concessionaire shall be responsible for coordinating with Utility Agency Owner’s (UAO’s) that have utilities within the Project Right of Way in accordance with Section 4.5 of the Agreement. Concessionaire shall comply with the Contract Documents including Rule 14-46.001 (Utility Accommodation Manual) in performing the Utility Adjustment Work.

All Utility Adjustment Work will require cooperation between Concessionaire and the UAO’s. Concessionaire shall:

- Provide to the UAO’s, as soon as practical, an estimated schedule for their respective utility work and notify the UAO’s of any significant changes to the schedule as soon as practical;
• Keep UAO’s fully informed of Project Schedule and changes that affect or may affect their facilities;
• Consider UAO’s needs for the allocation of resources for design, materials procurement, and outage requirements needed to perform their utility adjustment work;
• To the maximum extent possible, keep uninterrupted service to UAO’s customers and coordinate unavoidable interruptions with the UAO; and
• Minimize multiple relocations of the same Utility.

Preparation and submission of the following documents are the sole responsibility of Concessionaire:

• Meeting agendas and minutes
• Utility Adjustment plan
• Utility tracking report
• Updated Utility conflict matrices

As part of the Corridor Master Plan, Concessionaire shall submit a Master Utility Relocation Plan which includes the following:

• A detailed description of Concessionaire’s plan to identify and locate Utilities during the Project;
• A detailed description of Concessionaire’s plan to coordinate activities with each UAO during the Project;
• A description of Concessionaire’s plan to coordinate activities with the UAO’s on unknown or newly discovered Utilities during the Project; and
• A description of Concessionaire’s plan to meet with the UAO’s to keep them informed of Concessionaire’s schedule related to Utility Adjustment Work.

Concessionaire shall maintain a Utility tracking report to track coordination and the disposition of impacted Utilities. The Utility tracking report shall contain the following information for each UAO:

• The name of the UAO with contact information;
• A brief description of the impacted Utility by size and type;
• The location/limits of the Utility, by station and offset;
• The disposition of the Utility and the date such disposition was approved by the UAO;
• The party responsible for performance of such Utility Adjustment Work;
• The scheduled start and completion dates for construction of the Utility Adjustment Work;
• The actual start and completion dates for construction of the Utility Adjustment Work;
• The status of construction for the Utility Adjustment Work, including percentage complete;
• Such other information as FDOT may reasonably request;

Concessionaire shall submit the Utility tracking report and updates on a monthly basis to FDOT and the affected UAO’s.
Concessionaire shall appoint a Utility Coordination Manager responsible for managing all Utility coordination and Utility design activities.

The Utility Coordination Manager shall be responsible for Concessionaire's compliance with the Utility-related provisions of the Contract Documents, including the following:

- Ensuring Utility coordination and design is conducted in accordance with the Contract Documents;
- Assisting the Engineer of Record in identifying/coordinating all existing Utilities, anticipated relocations, and new installations;
- Scheduling utility meetings, keeping and distribution of minutes of all Utility meetings, and ensuring expedient follow-up on all unresolved issues;
- Distributing all plans, conflict matrices and changes to affected UAOS; identifying and coordinating the completion of all Utility agreements required for reimbursement, or accommodation of the Utilities;
- Review of all Utility Work Schedules for accuracy and resolution of the Utility conflicts;
- Obtaining and maintaining Sunshine State One Call design and dig tickets;
- Quality assurance reviews of Design Documents prior to Construction Work for completeness; and
- Providing monthly updates of Utility Adjustment Work to FDOT.

2. Excluded Utility Adjustments

The Excluded Utility Adjustments are the following:

- Relocation/reconfiguration of Orlando Utilities Commission America Electric Substation #10 at America Street and Sylvia Lane; Design Section 242484-4 (completed)
- Relocation of Existing AT&T Wireless Cellular Tower; Right of Way Parcel #369; Design Section 242484-5 (completed)
- Relocation of the Existing FGT Facilities
- Relocation of the Existing Duke Facilities

The construction of Ramps B and C in the SR 408 interchange will require work over and adjacent to an existing OUC electric substation (referred to as OUC America Substation #10). Work over and adjacent to the substation must be in accordance with and abide by the restrictions contained in the following:

- Easement Agreement between the City of Orlando, FDOT, and the Orlando Utilities Commission, recorded 12/17/2007
- Access Easement for Parcel 593.1, recorded 12/17/2007

Copies of these documents are provided in Volume III – Additional Mandatory Standards.
F. Transit

1. Lynx Coordination

Concessionaire shall be responsible for:

- Coordinating LYNX’s removal and/or relocation of all LYNX facilities and equipment, including signs, through the LYNX Bus Stop Coordinator 30 days prior to commencement of any Work impacting any such facility.
- Construction of concrete bus loading pads and bus shelter pads to facilitate the reinstallation of LYNX’s facilities and equipment. Concessionaire’s work shall comply with the requirements of the LYNX Customer Amenities Manual;
- Providing vehicular and pedestrian access to all LYNX bus stops at all times throughout construction.
- Maintaining existing bus turning movements within the Project Limits throughout construction. The LYNX route system map is available online at www.golynx.com.
- Coordinating any Temporary Traffic Control (TTC) measures impacting LYNX bus routes, including roadway closures requiring detours, lane closures, intersection closures, turning movements, or traffic shifts, a minimum of seven (7) days prior to work. Written notification shall be sent to the LYNX Chief Supervisor, LYNX Assistant Chief Supervisor and LYNX Bus Stop Coordinator.
- Concessionaire shall clearly show and label all LYNX facilities in the design including LYNX bus stops, LYNX bus shelters, LYNX bus signage, and LYNX bus loading pads.
- Maintaining a minimum horizontal clearance of 23’ across the entire width of the viaduct from the existing southern edge of pavement at W. Central Boulevard to the face of the nearest proposed pier to accommodate LYNX construction of a BRT station (see LYNX Central & Garland BRT Station plans in the Reference Documents). It is anticipated that LYNX will have the infrastructure and amenities for this station constructed prior to the start of Project construction. Concessionaire shall be responsible for replacing in-kind any below grade BRT station infrastructure (including foundations, pull boxes, conduit, and concrete flatwork) impacted by the Work. LYNX will be responsible for the re-installation of all above grade station amenities. Concessionaire shall coordinate the final location of all BRT Station amenities with LYNX.
- Concessionaire shall be responsible for restoring in-kind any LYNX-related pavement striping and/or ground mounted signage impacted by the Work.

2. Central Florida Light Rail Transit System Project

As part of the Record of Decision of the Central Florida Light Rail Transit System Project, the Work is to accommodate a future envelope suitable for light rail transit.

Concessionaire shall provide an 8 foot minimum width envelope in the median, suitable for light rail transit column placement, extending along I-4 from 3400 feet
east of the existing centerline of Kirkman Road to 350 feet west of the existing centerline of John Young Parkway.

Additionally, Concessionaire shall provide a 44 foot minimum width envelope, suitable for light rail transit, extending along I-4 from 1350 feet east of the existing centerline of John Young Parkway to 800 feet west of the existing centerline of Rio Grande Avenue in the I-4 median.

Concessionaire shall transition from the 8 foot minimum width to the 44 foot minimum width from 350 feet west of the existing centerline of John Young Parkway to 1350 feet east of the existing centerline of John Young Parkway.

With the exception of barrier wall and guardrail, the transit envelopes shall be free of continuous elements including ITS fiber trunk lines, drainage trunk lines and light poles. Toll gantries and associated buildings may be placed within the transit envelope.

G. Pedestrian and Bicycle Facilities

Concessionaire shall construct and maintain all pedestrian and bicycle facilities in accordance with the Contract Documents. Existing pedestrian and bicycle access within the Project Limits must be maintained, at the minimum, on one side of the street during the Construction Period. Concessionaire shall be responsible for providing connectivity between constructed and existing pedestrian facilities. Wherever the Project Right of Way allows, Concessionaire shall place traffic signal mast arms, controller boxes, sign assemblies, light poles and other such obstructions outside the limits of sidewalks.

Within the boundaries of the City of Orlando Downtown CRA, constructed sidewalk widths shall conform to the width requirements shown in the Off-System Construction and Maintenance Agreement with the City of Orlando.

Concessionaire shall also meet the following specific requirements:

SR 414 Maitland Overpass

Concessionaire shall construct a pedestrian/bicycle multi-use shared overpass over I-4 south of Maitland Boulevard. The shared-use overpass shall meet the design and aesthetic requirements listed in Section 3.I.2.

Lake Lucerne Pedestrian Bridge

Concessionaire shall construct a replacement pedestrian bridge located south of Ramp A2, and over a portion of Lake Lucerne. The pedestrian bridge shall meet the design and aesthetic requirements listed in Section 3.I.2.

SR 436 Pedestrian Underpass

Concessionaire shall provide a pedestrian/bicycle multi-use shared underpass below SR 436 with grade differential access ramps. The underpass must be located between the intersection of SR 436 with Wymore Rd/Douglas Ave. and the SR 436/I-4 interchange.
The underpass should be generally perpendicular to SR 436 and open into the interchange Limited Access Right of Way to maximize the use of natural light. The underpass shall have a protected weatherproof skylight located within the grassed median of SR 436. The underpass must be at least 12 feet wide and 10 feet tall, inside dimensions. The two underpass ends must also include stairways that provide direct access to the SR 436 sidewalks. Any ancillary sidewalk that connects from SR 436 to the multi-use underpass ramps that is constructed within the Limited Access Right of Way must be fenced in accordance with the Design Standards. The underpass shall have interior lighting meeting the requirements of Section 3.N. The underpass construction shall include a surveillance system including a total of four surveillance cameras, with one camera each placed at the north and south entrance to the underpass and two cameras placed in the center of the underpass facing north and south towards the underpass ends. Cameras shall be controlled by a series of configurable motion sensors and timers and should be provided with a DVR capable of storing 30 days’ worth of video recording. The system shall include motion sensors which trigger a visible indicator light in the median of SR 436 which indicates to law enforcement and the public that the tunnel is occupied. The surveillance system shall transmit information utilizing the Seminole County DOT fiber optic network to the City of Altamonte Springs municipal complex located approximately two miles east of I-4.

Recreational Trail Overpass over SR 50

Concessionaire shall coordinate D&C Work on SR 50 with a proposed City of Orlando project which will construct a recreation trail overpass crossing SR 50 adjacent to the existing SR 50/FCEN at-grade rail crossing. Construction of the overpass will tentatively begin in 2016 and will reduce the width of the maintenance berm on the east side of Pond P-15 to fifteen feet (15') wide. A preliminary plan view and foundation layout for the proposed overpass construction and related work is included in the Reference Documents.

H. Roadway

1. Preliminary Design

Concessionaire shall design and construct the Project to meet all of the requirements of the Preliminary Design with the exception that the vertical and horizontal alignments must conform to the Basic Project Configuration. The Preliminary Design reflects the System Access Modification Report (SAMR).

2. Design Analysis

a) Design Speed

Concessionaire shall comply with the minimum design speed as shown on the Minimum Design Speed Requirements document provided in Volume III – Additional Mandatory Standards. Any refinements to the geometry of the facility by Concessionaire shall not result in a reduction of the design speed of any roadway as specified in the Minimum Design Speed Requirements document.
b) **Typical Section**

FDOT has developed and approved a typical section package for the Preliminary Design. To the extent Concessionaire elects to adopt the Preliminary Design, Concessionaire may use such typical section package at its risk. Concessionaire shall develop a typical section package for the Project, which shall include the following elements:

1. Each General Use Lane and Express Lane shall be twelve feet (12') wide.
2. The inside shoulder for the Express Lanes shall be four feet (4') wide at minimum, except per previously approved shoulder width variations on bridges.
3. The outside shoulder for the Express Lane shall be a minimum of ten feet (10') wide.
4. Both shoulders for the General Use Lanes shall be twelve feet (12') wide except as approved by an existing variance.
5. Concrete barrier shall provide separation between the Express Lanes and the General Use Lanes.
6. Median separation between opposing Express Lanes shall be accomplished using concrete safety shape barriers. Standard guardrail(s) can be used in lieu of concrete barrier(s) if the total median width is equal to or greater than 40 feet. If guardrail is used it shall be offset 12' from the edge of travel lanes.
7. Where concrete barrier is separating opposing directions of the Express Lanes, barrier shall incorporate a concrete opaque visual barrier per the Design Standards.
8. Where guardrail is used, Concessionaire shall comply with any guardrail standards contained in Volume III – Additional Mandatory Standards.

The minimum typical section requirements for local roadways which are not State Roads shall be as defined in the Off-system Construction and Maintenance Agreements.

Concessionaire shall provide, at a minimum, a 20' wide stabilized (LBR 40) access road to all stormwater ponds. The access point through the fence shall be 20' wide with a gate and shall meet all of the requirements of the Design Standards.

The minimum typical section requirements for State Roads within the Project Limits shall be as follows:

**SR 435 Kirkman Road**

The typical section of Kirkman Road shall provide a design that meets the requirements shown in the Preliminary Design and shall provide the movements and number of lanes depicted in the Preliminary Design. All travel lanes shall be twelve feet (12') wide and bicycle traffic shall be accommodated in both the NB and SB directions.

**SR 408 East-West Expressway**
The mainline of SR 408 shall have three (3) twelve feet (12') wide traffic lanes with shoulders in each direction as stated in accordance with the Contract Documents including Volume III – Additional Mandatory Standards, OOCEA Design Criteria.

SR 50 Colonial Drive

SR 50 shall have three (3) twelve feet (12’) wide traffic lanes. Concessionaire shall provide a minimum six feet (6’) wide sidewalk on the south side of the roadway and a minimum eight feet (8’) wide sidewalk on the north side of the road, with the exception of between Peachtree Road and Ramp 50D, which shall be a minimum of twelve feet (12’) wide sidewalk. Concessionaire shall provide a single twelve-feet (12’) wide EB right turn lane at Old Hughey Avenue. The bridge opening of I-4 over SR 50 shall accommodate for future 4’ wide bicycle lanes in each direction.

SR 526 Robinson Street

SR 526 (Robinson Street) shall have two (2) eleven feet (11’) wide traffic lanes and an eleven feet (11’) wide left turn lane. SR 526 (Robinson Street) shall also have, in each direction: (i) a bicycle lane; and (ii) a 12.5’ wide sidewalk.

SR 526 Washington Street

SR 526 (Washington Street) shall have three (3) eleven feet (11’) wide traffic lanes and two (2) eleven feet (11’) wide left turn lanes. SR 526 (Washington Street) shall also have, in each direction: (i) a bicycle lane; and (ii) a 12.5’ wide sidewalk.

SR 426 Fairbanks Avenue

SR 426 shall have two (2) twelve feet (12’) wide traffic lanes with sidewalk in each direction.

SR 423 Lee Road

SR 423 shall have two (2) twelve feet (12’) wide traffic lanes with sidewalk in each direction, two (2) twelve feet (12’) wide left turn lanes and one (1) twelve feet (12’) wide right turn lane in the westbound direction, and one (1) twelve feet (12’) wide left turn lane in the eastbound direction.

SR 414 Maitland Blvd.

SR 414 shall have three (3) twelve feet (12’) wide traffic lanes with twelve feet (12’) wide inside and outside shoulders in each direction.

SR 436

SR 436 shall have four (4) twelve feet (12’) wide traffic lanes with bicycle lanes in each direction and a twelve feet wide sidewalk on one side of the roadway. Provide a single twelve feet (12’) wide WB auxiliary lane between Douglas
Avenue and Ramp D2 and two twelve feet (12’) wide WB and two twelve feet (12’) wide EB left turn lanes at Westmonte Drive.

SR 434

SR 434 shall have three (3) eleven feet (11’) wide traffic lanes with bicycle lanes and six foot wide sidewalks in each direction.

c) Pavement Design

The Tolling Pavement Area requires a special pavement that accommodates the inductive traffic classification and detection tolling loops. See Section 3 Attachment 2 for specific requirements for pavement design in Tolling Pavement Areas.

The mainline I-4 typical section may utilize different pavement material types for the General Use Lanes and Express Lanes (i.e. one may be concrete and the other flexible pavement).

Flexible Pavement Requirements

- All recommended minimums defined in the Flexible Pavement Design Manual must be met or exceeded, with the following exceptions:
  - The minimum thickness of Superpave Structural Course for the mainline reconstruction/new construction of the General Use Lanes shall be 5”.
  - The minimum thickness of Superpave Structural Course for the reconstruction/new construction of the Express Lanes shall be 4”.
  - The minimum thickness of Superpave Structural Course for the reconstruction/new construction of the ramps shall be 4”.
  - Only 100% crushed granite shall be allowed as aggregate for friction course on pavement within the Operating Period O&M Limits, and all State-maintained roadways within the Project.

- For new construction and reconstruction areas, Concessionaire shall have the option to utilize the approved resilient moduli of 8750 psi for Orange County and 9750 psi for Seminole County or base the resilient modulus derived from limerock bearing ratio (LBR) tests to be performed by Concessionaire on material. The limerock bearing ratio testing results and recommendations shall be signed and sealed by the geotechnical engineer of record. If supported by LBR testing analyzing the results using the 90% method, a maximum resilient modulus value of 12,000 psi (LBR equivalent of 38) will be allowed for pavement design calculations.

- The minimum percent reliability for all new construction/reconstruction designs shall be 90%.

- The pavement design and thickness for the inside shoulders of the General Use Lanes shall match the design and thickness of the adjacent General Use Lanes.

- The limits of pavement improvements for crossroads and other local roads shall extend to the Construction Zone shown in the Preliminary Design or to the limits of work zone TTC, whichever extend further. The flexible pavement designs for these local roads and SR 408 have been approved by FDOT,
FHWA, CFX and the local municipalities. These pavement designs shall be adhered to and are provided in Volume III - Additional Mandatory Standards.
- The pavement design for the Lee Road Access Road shall meet or exceed the minimum recommended pavement design as indicated on Page 5.15.0 of the Flexible Pavement Design Manual for a roadway with less than 300,000 accumulated ESALs.

Rigid Pavement Requirements

Concessionaire shall construct a minimum of 550,000 square yards of mainline concrete pavement within the Operating Period O&M Limits. Mainline pavement for purposes of this section shall be defined as the General Use Lanes, Express Lanes and ramps. The following requirements shall apply:

- Rigid pavement construction shall be per the requirements of the Contract Documents and the Concrete Pavement Typical Details included in Volume III- Additional Mandatory Standards. Transverse joint spacing shall be fifteen (15) feet.
- Concessionaire shall have the option of constructing the outside shoulders of the General Use Lanes with concrete or asphalt.
- All outside slabs shall be a minimum of 13 feet wide.
- The pavement design and thickness for the inside shoulders of the General Use Lanes shall match the design and thickness of the adjacent General Use Lanes.
- The minimum slab thickness for jointed cement concrete pavement for the General Use Lanes shall be 13 inches, founded on 4 inches of Type B 12.5 Superpave Asphalt base and shall also include an edge drain system.
- The minimum slab thickness for jointed cement concrete pavement for the Express Lanes shall be 11 inches, founded on 4 inches of Type B 12.5 Superpave Asphalt base and shall also include an edge drain system.
- The minimum slab thickness for jointed cement concrete pavement for the ramps shall be 11 inches, founded on 4 inches of Type B 12.5 Superpave Asphalt base and shall also include an edge drain system.

d) Geometrics

Concessionaire shall be solely responsible for development of a roadway geometric design that meets the requirements of the Contract Documents.

The design elements shall include, at a minimum, the horizontal and vertical alignment, lane widths, shoulder widths, median widths, cross slopes, borders, horizontal and vertical sight distance, side slopes, front slopes and ditches. Roadway geometric design related to tolling facilities shall meet the requirements of Volume II, Section 3, Attachment 2.

Concessionaire shall, at a minimum, meet the following criteria:

- Cross slopes for the Express Lanes and the General Use Lanes shall be designed and constructed such that they remain constant along tangent
sections and shall not be rotated other than for necessary superelevation transitions and for cross slope transitions to and from bridges.

- For the purposes of maintaining or exceeding the minimum pavement base clearance requirements above Estimated Seasonal Highwater (ESHW), the Concessionaire shall not lower the elevation of the Preliminary Design pavement surface at any location where the Preliminary Design pavement surface is equal to or lower than the adjacent existing pavement surface. In addition, the Concessionaire shall not lower the elevation of the proposed pavement surface to below that depicted in the Preliminary Design and to below the existing pavement surface at any location except where the proposed profile is on a bridge approach embankment, bridge or high fill section where minimum base clearance requirements above ESHW are exceeded by the existing and proposed roadway.
- The Preliminary Design includes a layout for the Lee Road access road to several parcels. This access road becomes the southern leg of the Diplomat Circle and Lee Road intersection. Concessionaire shall include this access road in the Project.
- The following ramps shall be designed with parallel acceleration/deceleration auxiliary lanes:
  - Slip ramps between the General Use Lanes & Express Lane
  - Direct access Express Lane ramps
  - I-4 on-ramps and off-ramps

All local roadways to remain in service which are impacted by the Work shall be repaired per the requirements of Section 2.T.3, including mitigation of any impacts to drainage within the affected areas. Streets terminated as dead ends shall be appropriately signed per FDOT Index 17349. The termination may be with guardrail, curbing (or both) and/or ditching as needed to address street end drainage on a case by case basis.

e) Orlando Bridge District

General

The Orlando Bridge District (Bridge District) is described in an Air Space Agreement between FDOT and the City of Orlando. Providing improved pedestrian connectivity between the Church Street area and the Amway Center is a Project priority. Concessionaire shall provide for the permanent closure of Bob Snow Lane between Hughey Avenue and Garland Avenue. Concessionaire shall comply with City of Orlando Streetscape Requirements and City of Orlando Aesthetic Agreement.

Parking

Preservation of parking spaces within the Bridge District during construction operations is a Project priority. For purposes of this section, the Bridge District parking area is defined as the area bounded by Church Street on the south, Garland Avenue on the east, Robinson Street on the north, and Hughey Avenue on the west. Concessionaire shall comply with one of the following parking requirement alternatives during the Construction Period:
(1) Concessionaire shall stage its construction operations such that 25% of the number of pre-construction parking spaces in the Bridge District parking area are preserved and available for use at all times during the Construction Period,

**OR**

(2) If Concessionaire cannot comply with (1), any deficit in parking below the required 25% preconstruction minimum shall be made up by providing replacement parking, over and above any existing public parking, within the area bounded by South Street to the south, Orange Avenue to the east, Amelia Street to the north, and Hughey Avenue to the west.

Parking and replacement parking surfaces shall, at all times, consist of a paved surface with paint markings meeting the minimum parking space length and width requirements of the City of Orlando. Concessionaire shall provide 30 days’ prior written notice to the City of Orlando of Construction Work that will reduce parking and the impacted time period. The City will be responsible for the removal and reinstallation or relocation of parking meters impacted by Construction Work.

All existing off-street parking surfaces impacted by construction, including existing parking lots under the I-4 Segments, shall be replaced with new parking surfaces consisting of Optional Base Group 6 with 2 inches of Type SP-12.5 asphalt surface.

**Bridge Pier Spacing**

The Bridge District has several specific requirements regarding the placement of I-4 bridge piers in regards to function, aesthetics, and access for the parking underneath the I-4 bridges. From the south edge of pavement of existing Central Boulevard extending south, a minimum of 23 feet must remain clear and must be spanned. For the bridge carrying I-4 over Church Street, Pine Street, Central Boulevard, and Washington Street, the shall span a minimum sixty (60) foot wide plaza area at each end adjacent to the bridge endwall and shall otherwise provide aligned piers with a minimum span length of one hundred ten (110) foot to facilitate installation of two (2) fifty-five (55) foot wide sixty degree angle parking aisles beneath each span. The bridge beginning shall start at maximum Station 2156+69.00 BL WB I-4 and end at minimum Station 2172+35.00 WB I-4. Concessionaire shall submit a bridge substructure layout as part of the Corridor Master Plan that shows the proposed placement and spacing of all substructure units for Project bridges within the Orlando Bridge District.

**Existing Underground Infrastructure**

Concessionaire shall survey and document in plan format all existing underground City-owned improvements impacted by construction within the boundaries of the Bridge District. This shall include, at a minimum: electrical conduits; water service lines; conduits and cabling for specialty lighting, projectors, and cameras; pull boxes and junction boxes; concrete foundations; duct banks; and vaults. Unless otherwise approved by the City of Orlando, Concessionaire shall replace all such disturbed underground improvements in-
kind with equal or better new materials in approximately the same locations and reflect same in the As-Built Record Plans.

f) Design Traffic Modeling & Analysis

Concessionaire shall use the design traffic provided in Volume III – Additional Mandatory Standards.

All interchange modification proposals shall be developed in accordance with FDOT Policy No. 000-525-015-f: Approval of New or Modified Access to Limited Access Facilities, FDOT Procedure No. 525-030-160-g: Interchange Handbook and FDOT Traffic Forecasting Handbook (Procedure No. 525-030-120-g).

Concessionaire's design shall be evaluated with the same traffic operational performance measures of effectiveness (MOEs) as the Preliminary Design. Traffic analyses of any Concessionaire originated design changes shall be performed using the requirements and parameters outlined in the document titled "Traffic Operational Analyses" located in Volume III – Additional Mandatory Standards. The area of influence for the interchange modification proposals along the limited-access facility shall include, at a minimum, one interchange in either direction. The area of influence along the crossroad shall extend to include, at a minimum, one signalized intersection beyond the interchange limits in either direction.

MOEs include volume-to-capacity (v/c) ratio, delay, speed, queue lengths, and ability to sign.

g) Emergency Access Gates

Concessionaire shall provide manual sliding Emergency Access Gates (EAGs) to provide emergency responders with strategic accessibility to the Express Lanes from the General Use Lanes and to provide egress points for motorists stranded in the Express Lanes following major incidents. EAGs shall be installed so as to provide access between the Express Lanes and the General Use Lanes at intervals no greater than two (2) miles between permanent slip ramps between the General Use Lanes & Express Lanes. Each EAG shall provide a continual crashworthy longitudinal barrier between the Express Lanes and the General Use Lanes. Each EAG shall be retractable to provide a minimum 42 foot opening for controlled access. The gate shall be fully tested to meet the recommended structural adequacy, occupant risk, and vehicle trajectory criteria set forth in the National Cooperative Highway Research Program Report 350 for the Test Level 3 length of need and transition (TL-3 LON/T).

h) Fire Suppression Systems

Concessionaire shall keep all existing fire hydrants on or adjacent to the Project Limits accessible to fire apparatus at all times, and shall not place any material or obstruction within 15 feet of any fire hydrant.

Concessionaire shall provide a dry-line fire suppression system at the following locations:
- All third and fourth level bridges;
- Any location where an I-4 sound wall blocks access from the I-4 mainline to any existing fire hydrant within 200’ of the Limited Access Right of Way;
- Any location where a retaining wall greater than 4 feet in height blocks access from I-4 to any existing fire hydrant within 200’ of the Limited Access Right of Way.

Concessionaire shall design and construct the fire suppression system in accordance with FDOT’s Utility Accommodation Manual, the Florida Fire Prevention Code, and National Fire Protection Association (NFPA) 14 and 24. The system shall be designed, signed and sealed by a registered professional engineer with 3 years of responsible charge of fire protection engineering work.

During design, Concessionaire shall coordinate with the local fire protection agencies to ensure that proper fitting sizes and equipment are installed per the fire protection agencies criteria listed below. For reference, typical fire suppression details acceptable to local fire protection agencies can be found in the construction plans for SR 408, FDOT Financial Project ID No. 242484-2-52-01. Concessionaire shall coordinate with the local fire protection agencies to schedule dates for field acceptance testing, including pressure testing in accordance with AWWA standards.

Other System Requirements

- Standpipes shall be 8-inch galvanized steel;
- Inlet and outlet ends shall be fitted with 4-inch Storz quick connect fittings with chained caps coated with red enamel paint;
- Inlet end of the standpipe shall be located within 200 feet of the source hydrant;
- If the outlet end of an installation must be placed in a manhole, the outlet must terminate with a 45 degree fitting to prevent kinking of hoses. Fire manhole covers shall be painted with a red enamel paint for easy identification;
- Standpipe installations shall be signed with consecutively numbered sign panels, odd numbers northbound and even numbers southbound, with each inlet and outlet on the same standpipe having identical numbers. Signage shall be 12”x18”, 0.08” thick aluminum with 3M diamond grade reflective red and black vinyl sheeting, Clearview 5W Highway Series font with 2” letter height. Sample standpipe signage images are included in the Reference Documents;
- Visible fire suppression pipe, fittings and hardware mounted to retaining walls or bridges shall be the same color as the adjacent retaining wall or bridge element.

Fire Agency Contacts

**Orange County**

David Rathbun  
david.rathbun@ocfl.net  
(407) 836-9102

**City of Orlando**

George Seckinger  
george.seckinger@cityoforlando.net  
(407) 539-0774
i) Design Variations

Concessionaire may use any of the previously approved applicable design variations included in the Reference Documents in its design without additional approvals by FDOT.

Concessionaire shall include in the design variation package required to be included in the Corridor Master Plan submittal all design variations previously approved by FDOT and incorporated by Concessionaire into its design.

3. Drainage

A drainage design has been performed for the Reference Design in order to obtain the necessary permits from the applicable regulatory agencies.

a) Drainage Analysis

Concessionaire shall be responsible for designing the drainage and stormwater management systems. All design work shall be in compliance with the FDOT Drainage Manual, Federal Aid Policy Guide 23 CFR 650A, and the requirements of the applicable regulatory agencies. The current edition of the FDOT Drainage Manual is defined as the July 2013 edition. All drainage systems shall include the engineering analysis necessary to design, at a minimum, the following drainage features: cross drains, French drains, exfiltration systems, underground stormwater vaults, roadway ditches, outfall ditches, storm sewers, retention/detention facilities, interchange drainage, water management facilities and other drainage systems and elements of systems as required for a complete system. Full coordination with all permitting agencies, the District Environmental Management section and District Drainage Design section is required. Full documentation of all meetings and decisions shall be submitted to FDOT. These activities and submittals shall be coordinated through the I-4 Ultimate Construction Program Manager.

Concessionaire shall comply with the conditions of all joint pond agreements if utilizing the subject ponds. If Concessionaire increases pond depths to obtain more embankment material and/or makes any other modifications to ponds, modification of Project permits and/or joint pond agreements shall be the responsibility of Concessionaire.
The exact configuration of water management facilities (retention/detention areas, weirs, etc.) shall be Concessionaire’s responsibility. Wet linear detention systems shall not be permitted within the Limited Access Right of Way.

No new open ponds shall be placed within the limits of the neighborhood of College Park (Station 246+00 to Station 362+00). Open ponds are defined as any wet or dry detention or retention stormwater management facility not placed below ground. Underground stormwater management systems, such as exfiltration trenches, French drains and stormwater vaults are required as a PD&E commitment within the limits of the neighborhood of College Park, unless they are to replace a like system in-kind.

Underground stormwater management systems shall not be placed under the pavement within the Operating Period O&M Limits or under the pavement of State Roads within the Project Limits. Underground stormwater management systems shall not be placed in engineered fill. “Engineered fill” means embankment that is strengthened by methods in addition to compaction; for example, using geotextiles as soil reinforcement.

In addition, Concessionaire shall comply with the following requirements:

- **Positive Drainage** shall be maintained throughout the Project. Positive Drainage includes eliminating any adverse impacts to offsite properties resulting from increased stages or flow rates except where agreements are in place to accept increased flows. Positive Drainage also means providing conveyance where construction activities might divert or trap water and compromise safety and efficiency, including locations on offsite properties.

- The I-4 Ultimate Profile Grade Line (PGL) documented in the Preliminary Design shall not be lowered within the Cranes Roost and North Lake Drainage Basins (Station 583+00 to Station 638+00).

- The existing stormwater drainage well located within the Limited Access Right of Way at Lake Fair shall be plugged and abandoned in accordance with Chapter 62-528 of the Florida Administrative Code. Lake Fair is located adjacent to the westbound lanes of I-4, north of Euston Road and east of Lake Fair Lane. The existing Lake Fair drainage well is located on the southeast side of Lake Fair approximately 2,000 feet south of Lee Road and is identified as DW-032. Concessionaire shall remove the existing drainage structures, pipe and wellhead. Prior to plugging and abandoning the existing drainage well, Concessionaire shall cut-off and remove the existing well casing a minimum of 5 feet below the lowest elevation of all construction within 10 feet of the existing drainage well. Concessionaire shall notify the Orange County Public Works Department, Stormwater Management Division, 4200 South John Young Parkway, Orlando, FL 32839-9205, in writing a minimum of 60 days prior to beginning this work. Concessionaire is responsible for obtaining all permits and approvals necessary for this work.

- **Heavy equipment** shall not be operated close enough to pipe headwalls or other structures to cause their displacement.

- All offsite runoff shall be accommodated in accordance with FDOT’s criteria and all regulatory agency criteria as specified in the Contract Documents. All historical flow patterns for offsite flows shall be maintained.
Drainage design and stormwater management systems shall be accommodated within the Project Right of Way except as otherwise noted in the Project joint pond agreements, unless Concessionaire acquires additional Project Right of Way in accordance with the Contract Documents.

All existing cross drains within the Operating Period O&M Limits shall be replaced with appropriately sized new structures. All new cross drains shall have a cross sectional flow area equal to or greater than each corresponding existing cross drain. Flood flow requirements shall be determined in accordance with the Contract Documents. The functional classification for all existing cross drains under the I-4 Segments shall remain unchanged in the final constructed condition.

With the exception of all existing cross drains and any existing drainage structures or Culverts specifically noted in the Contract Documents, all existing drainage structures and Culverts under the pavement of the I-4 mainline and ramps shall be either removed or replaced with new drainage structures and appropriately sized new Culverts in accordance with the Contract Documents.

If Concessionaire prefers to abandon in place any existing drainage structures or Culverts, approval must first be obtained from FDOT. All abandoned drainage structures and Culverts shall be depicted on the As-Built Record Plans.

Stormwater collected by bridge scuppers shall not be permitted to free fall onto travel lanes, bicycle lanes, sidewalks, or waterways below, or other areas that may be susceptible to erosion.

All constructed inlets and manholes shall have an outlet storm drain pipe. The most downstream pipe of each storm drain system must be constructed with its outlet flow line at the toe of slope or bottom of any pond or ditch.

All pond and swale control structures shall be ditch bottom inlets with outlet pipes. Notwithstanding the Design Standards, trapezoidal weirs in pond or swale berms shall not be used except where conditions do not permit use of ditch bottom inlets with outlet pipe control structures, and then, use of each trapezoidal weir in a pond or swale berm must be approved by FDOT. If a trapezoidal weir in a pond or swale berm is approved by FDOT, Concessionaire shall submit for FDOT approval a structural design to support the loading of maintenance vehicles without failure for the life of the weir and a geotechnical design to prevent seepage through the pond or swale berm that may result in failure of the pond or swale berm. All trapezoidal weirs in pond or swale berms shall be designed and constructed to be traversable.

Trench drains shall not be allowed within the Operating Period O&M Limits for the final constructed condition. Trench drains shall only be allowed for temporary drainage unless specifically noted otherwise for a given location elsewhere in the Contract Documents.

The minimum low member elevation of Bridges over stormwater management ponds shall be five feet above the back edge of the top of maintenance berm or top of bank.

No component of a stormwater system shall be controlled by a pump or any other mechanical means at Project handback.

No storm sewer pipe exiting a drainage structure shall be constructed with a flow line higher than any storm sewer pipe entering the same structure.
The maximum allowable floodplain encroachment in Cranes Roost and North Lake by I-4 Ultimate is documented in SJRWMD conceptual permit 4-117-22143-5.

Design, permit, construct, operate and maintain the Project to accommodate the City of Altamonte Springs’ A-FIRST project and comply with the conditions contained in the A-FIRST project permits. Conditions relating to stormwater discharges from this Project to A-FIRST are included in SJRWMD permit number 4-117-22434-4 and subsequent modifications. The City’s tentative construction schedule for A-FIRST is to begin construction in April 2014 and complete construction in April 2015.

Design and construct the hydraulic connection from North Lake to Cranes Roost that is described in SJRWMD conceptual permit 4-117-22143-5. This hydraulic connection shall convey water from North Lake to Cranes Roost by gravity. Mechanical conveyance methods between the North Lake system and the Cranes Roost system shall not be allowed. The amount of water to be conveyed by the hydraulic connection, the hydraulic control elevations, and the design criteria are described in SJRWMD conceptual permit 4-117-22143-5 and the A-First Hydraulic Design Report (2013-11-25) that is included in the Reference Documents. The City of Altamonte Springs is developing a design and preparing a construction permit application for the hydraulic connection from North Lake to Cranes Roost that is described in SJRWMD conceptual permit 4-117-22143-5 and the A-FIRST Hydraulic Design Report (2013-11-25) that is included in the Reference Documents. The City of Altamonte Springs anticipates receiving the construction permit from SJRWMD prior to NTP 1. Concessionaire shall complete final design of the hydraulic connection, which may require Concessionaire to obtain additional permit(s).

Design and construct a reinforced concrete box culvert to carry I-4 over Cranes Roost, referred to herein as the “CBC at Cranes Roost”. The CBC at Cranes Roost shall replace the bridge that is shown in the Reference Design from Station 634+13.60 to Station 637+83.14. The hydraulic opening of the CBC at Cranes Roost shall be 12-feet high by 12-feet wide and the flow line elevation of the west end of the CBC at Cranes Roost shall be 47.00 feet, NAVD 88. The CBC at Cranes Roost shall accommodate connections from all storm sewer systems that discharge to Cranes Roost within the Project Right of Way. Concessionaire shall coordinate the final location, dimensions and elevation(s) of the CBC at Cranes Roost with the City of Altamonte Springs Department of Public Works and Utilities, 950 Calabria Drive, Altamonte Springs, Florida 32714 and obtain design approval from the FDOT prior to any submittals containing drainage components.

The outfalls of all storm sewer systems that discharge to Cranes Roost within the Project Right of Way shall connect to the CBC at Cranes Roost.

Storm sewer systems that discharge to Cranes Roost within the Project Right of Way shall be designed with tailwater elevations that equal the high water elevations of Cranes Roost for the same storm frequencies described in the A-FIRST Hydraulic Design Report (2013-11-25) that is included in the Reference Documents.

A concrete-lined ditch shall be constructed from the west end of the CBC at Cranes Roost to the existing stormwater pump station intake structure that is located to the west of the Project Right of Way between Station 638+00 and
Station 640+00. The ditch shall be lined with 6-inch reinforced concrete ditch pavement. The approximate minimum width of the ditch shall be 23 feet. Concessionaire shall coordinate the final location, dimensions, elevation(s) and specifications of the ditch with the City of Altamonte Springs Department of Public Works and Utilities, 950 Calabra Drive, Altamonte Springs, Florida 32714 and obtain design approval from FDOT prior to any submittals containing drainage components.

- A minimum 23-foot clearance shall be provided between any proposed construction and the existing stormwater pump stations that are located to the west of the Project Right of Way between Station 638+00 and Station 640+00. The 23-foot clearance shall be measured from the easternmost side of the pump intake structure that is located at an approximate offset of 162 feet left from the I-4 centerline of construction as shown in the Reference Design. Concessionaire shall field verify the location of the pump station intake structure, coordinate the location and extent of the 23-foot clearance with the City of Altamonte Springs Department of Public Works and Utilities, 950 Calabra Drive, Altamonte Springs, Florida 32714 and obtain design approval from FDOT prior to any submittals containing drainage components. With the exception of clearing, grubbing, grading and construction of the concrete-lined ditch, no construction shall be allowed within the 23-foot clearance. Additional information is included in the Project ROW Commitments and the A-FIRST Hydraulic Design Report (2013-11-25) that is included in the Reference Documents.

- Accommodate a drainage connection from the Church Street SunRail Station to Pond P-14 that is located in the area of South Street and north of Anderson Street on the east side of I-4. This connection is described in SJRWMD permit number 4-095-62355-15 that is anticipated to be obtained by SunRail prior to NTP 1.

- Design and construct drainage collection and storm sewer systems to convey stormwater runoff from portions of Parcel 180, located in the northeast quadrant of SR 436 and Westmonte Drive in Seminole County, to Cranes Roost. A design to convey stormwater runoff from Parcel 180 to Cranes Roost is documented in SJRWMD permit 4-117-22434-9. Construction of an alternative design may require Concessionaire to obtain additional permit(s).

- The City of Orlando’s proposed Lake Angel project will modify Lake Angel and the adjacent stormwater pond that is owned by Orange County and will impact the stormwater conveyance and management systems shown in the Reference Design. Concessionaire’s design shall accommodate the Lake Angel project and comply with the conditions contained within SJRWMD permit number 40-095-62355-11. The water surface elevations within Lake Angel shall not be raised above the designed and permitted stages that are documented in SJRWMD permit number 40-095-62355-11. [A tri-party agreement between FDOT, the City of Orlando and Orange County is included in Volume III – Additional Mandatory Standards.] The City’s tentative construction schedule for the Lake Angel project is to begin construction in May 2014 and complete construction in April 2015.

- Design and construct a Culvert to replace the two existing 48” reinforced concrete cross drains located at Station 100+55 of Kirkman Road. The replacement Culvert shall have a cross sectional flow area equal to or greater than a 6-feet wide by 5-feet high reinforced concrete box culvert, and be
referred to herein as the “CBC at Kirkman Road”. The flow line elevations and slope of the CBC at Kirkman Road shall be designed to provide Positive Drainage through the CBC at Kirkman Road and for the surrounding drainage systems.

- The conveyance systems within the Project shall be designed and constructed to accommodate a maximum discharge flow rate of 269 cubic feet per second from the Universal Studios 60-inch outfall pipe located on the west side of Kirkman Road at Station 99+30 to Shingle Creek during the 25-year, 24-hour storm with the Florida modified rainfall distribution and 8.60-inch rainfall depth.

- The increase in maximum discharge flow rate from Universal Studios to 269 cubic feet per second shall not cause a net increase in discharge to Shingle Creek or the Prime Outlet Canal that is located in the northeast quadrant of the I-4/Kirkman Road interchange adjacent to West Oakridge Road during the 25-year, 24-hour storm with the Florida modified rainfall distribution and 8.60-inch rainfall depth. A design that satisfies this requirement is described in the Universal Studios/Kirkman Road Regional Model that is included in the Reference Documents. This design reduces the maximum discharge flow rate to 63 cubic feet per second from Pond F-34 in the Reference Design, which is the outfall of the I-4/Kirkman Road interchange stormwater management system, to Shingle Creek during the 25-year, 24-hour storm with the Florida modified rainfall distribution and 8.60-inch rainfall depth. FDOT is preparing a permit modification package that includes this revised design of the stormwater management system for the I-4/Kirkman Road interchange. FDOT anticipates receiving the permit modification from SFWMD prior to NTP 1. Construction of an alternative design may require Concessionaire to obtain additional permit(s).

- Design, permit and construct the recommendations described in Section 4, Recommended Improvements as Part of FPID 242592-2-52-01, of the “Drainage Study of Wymore Road Improvements” that is included in the Reference Documents.

- FDOT is developing permit modification packages for the following areas within the Project. These permit modifications are for revisions made to the Reference Design that are shown in the Preliminary Design and/or described in the Contract Documents. FDOT anticipates receiving the permit modifications from SFWMD and SJRWMD prior to NTP 1. Construction of alternative designs may require Concessionaire to obtain additional permit(s).
  
  - Former Shopper’s World ponds located in the northeast quadrant of the I-4/Kirkman Road interchange.
  - Relocation of Florida Gas Transmission Company gas lines located in the northwest quadrant of the I-4 Florida’s Turnpike interchange.
  - United Truckers Association parcel located in the northeast quadrant of the I-4/Florida’s Turnpike interchange.
  - ML/GUL access ramps located between Conroy Road and John Young Parkway.
  - Avondale/Terry Avenue Extension located in the southwest quadrant of the I-4/SR 408 interchange.
  - Maitland Boulevard east of I-4.
- Wymore Road sidewalks at bridge over I-4.

- Manholes shall not be placed in the travel lanes of the I-4 mainline, I-4 ramps or SR 408.

- All drainage pipes and structures within the limits of the possible future light rail transit envelope shall be designed and constructed to accommodate the rail facilities and the structural design loads of the future railroad tracks and rail vehicles and the most restrictive railroad company requirements documented in Index Number 280 and Section 430-6 of the Standard Specifications.

- When designing the drainage collection systems that discharge to stormwater detention facilities, the orifice or V-notch weir in the receiving stormwater detention facility shall be presumed to be clogged. The initial elevation for routing the design storm through the stormwater detention facility to determine the tailwater elevation for the drainage collection system analysis shall be set equal to the lowest weir elevation and the storage volume below the lowest weir elevation shall be made unavailable during the routing calculations.

- Temporary drainage shall meet all FDOT criteria as specified in the Contract Documents. Temporary drainage calculations will be approved by FDOT prior to commencement of a given TTC phase. Concessionaire shall make use of the criteria contained in the FDOT Drainage Manual for selection and placement of temporary barrier wall to satisfy spread requirements during construction as well as address other temporary drainage issues associated with Temporary Traffic Control.

- A video inspection and evaluation shall be conducted of all existing drainage structures and Culverts within the Project Right of Way and easements that will become part of the final constructed drainage system(s). Inspection of existing drainage structures and Culverts shall be in accordance with Section 430-4 of the Standard Specifications. A signed and sealed written evaluation of the serviceability of any existing drainage components to remain and recommended repairs to same shall be prepared by a professional engineer and submitted to FDOT for concurrence. At a minimum, and unless otherwise approved by FDOT, Concessionaire shall implement the recommended repairs contained in the evaluation. Concessionaire shall be responsible for determining whether additional repairs are necessary to any other drainage structures or Culverts within the Project Limits that are to become part of the final constructed drainage system(s) and to perform those repairs.

- Maintenance of stormwater management facilities shall be the responsibility of Concessionaire, except as otherwise expressly provided in the Contract Documents. Concessionaire shall also be responsible for all corrective actions required by the regulatory agencies including payment of all fines.

- All connected outfalls of adjacent drainage systems or properties shall be maintained throughout the Term. Connected outfalls shall comprise all underground and above ground connections including overland flow.

- An inventory of the storm drain system shall be provided after construction in a format that is compatible with FDOT’s GIS system. This inventory shall be updated at Project handback.
Prior to proceeding with the drainage design, Concessionaire shall meet with FDOT. The purpose of this meeting is to provide information to Concessionaire that will better coordinate the preliminary and final drainage design efforts. This meeting is mandatory and shall occur within 60 days following issuance of NTP 1 and prior to any submittals containing drainage components.

Upon completion of construction, and in addition to the As-Built Record Plans, Concessionaire shall provide FDOT a comprehensive drainage design report signed and sealed by the drainage engineer of record and a copy of that signed and sealed report in PDF format on a Windows compatible CD/DVD. The report shall be a record set of all drainage computations. The report shall include all necessary supporting data in accordance with FDOT criteria as specified in the Contract Documents. Concessionaire shall provide FDOT with updated signed and sealed electronic and hard copy versions of this report as part of the Handback Renewal Work Plan required in Section 5 of the Technical Volumes.

b) Drainage Plans

Concessionaire shall submit a Master Drainage Plan as part of the Corridor Master Plan. The Master Drainage Plan shall consist of the following:

- Drainage maps, including above ground and underground stormwater management facilities, on-site and off-site drainage basins, ground contour elevations, drainage areas and flow directions, swales and ditches, conveyance structures, culverts and existing and structures and pipes. The term “conveyance structures” includes all storm drains and/or cross drains (pipe culverts, box culverts, and bridges) necessary to collect and convey both on-site and off-site stormwater runoff to the stormwater management facilities and/or receiving water bodies.
- Storm sewer tabulations (using ASAD or Geopak Drainage software) for all closed drainage systems which collect runoff and discharge it to stormwater management ponds, exfiltration trenches, French drains and/or underground vaults.
- Swale and/or ditch design calculations for all existing and new-open drainage systems.
- Design calculations for all existing and new cross drains.
- Calculations for floodplain impacts and compensation.
- Calculations for all stormwater management facilities and outfall systems, including water quality and quantity calculations, flood routing and modeling inputs and results (using ICPRv3 software) for the stormwater management ponds, exfiltration trenches, French drains and/or underground vaults.
- The Universal Studios/Kirkman Road Regional Model that is included in the Reference Documents shall be revised and updated. In the model, node “DCS-7” represents the Universal Studios outfall located on the west side of Kirkman Road at Station 99+30, and node “POND F34” represents the I-4/Kirkman Road interchange outfall from Pond F-34 documented in the Reference Design.
- All drainage components included in the Master Drainage Plan shall be clearly labeled with unique names that correspond exactly with the provided calculations. Nodal diagrams that identify and label every basin, node and link included in the ICPR models shall be provided with the ICPR calculations.
- A list and description of the environmental permits that will require modification and/or new environmental permits.

4. **Stormwater Pollution Prevention Plans (SWPPP)**

Concessionaire is responsible for the design of erosion and sediment control protection measures. Concessionaire shall prepare an erosion control plan and a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Section 104 of the Standard Specifications the requirements of the National Pollutant Discharge Elimination System (NPDES) permit program, FDOT’s Project Development and Environment Manual and the Florida Department of Environmental Protection (FDEP) Rule 62-621.300(4)(a), and shall submit copies of the completed plans to FDOT. The erosion control plan shall meet the criteria of FDOT and all jurisdictional regulatory agencies. Detailed limits of the erosion control items are required. The latitude and longitude of all outfalls shall be provided on the SWPPP by Concessionaire.

Concessionaire shall use the SWPPP Construction Inspection Form provided by FDOT to report all inspection findings and to document all corrective actions taken as a result of the inspection. Concessionaire shall sign each inspection report and submit it weekly to FDOT. Concessionaire shall protect existing or new French drains, exfiltration trenches and stormwater vault systems from silt and debris that could render the systems inoperable creating a violation of an existing stormwater management permit. All inlets are to be protected and erosion control devices visually inspected and if necessary replaced throughout the Construction and Operating Periods. Should the function of French drain, exfiltration trenches, stormwater vault system or any other stormwater management system be compromised, Concessionaire shall correct any deficiencies to the satisfaction of the Florida Department of Environmental Protection and water management district with jurisdiction of the area, including procurement of any necessary permits.

5. **Temporary Traffic Control (TTC)**

a) **TTC Analysis**

The design speed for TTC during the Construction Period shall be the existing posted speed limit of the facility.

Special consideration shall be given to the drainage system when developing TTC. Concessionaire shall ensure that Positive Drainage is maintained at all times and that the Work does not adversely affect offsite drainage to or from the Project Limits.

Physical separation in medians on divided highways shall be maintained at all times during construction. Separation shall be accomplished at a minimum with
temporary concrete barrier offset per the Design Standards. Concessionaire shall also use temporary concrete barrier to separate opposing directions of travel along the I-4 mainline, I-4 ramps and SR 408 at all times where permanent concrete barrier wall is not in place.

Auxiliary lanes with appropriate acceleration/deceleration lengths shall be provided as indicated in the Preliminary Design.

All existing turn lanes shall be maintained in their current length and number during TTC unless otherwise approved by FDOT in writing.

Retiming of traffic signals to optimize flow may be required throughout the duration of TTC. Revised traffic signal timing data shall be submitted for approval and the signal timing plan must be implemented concurrently with implementation the associated TTC. Concessionaire shall coordinate the adjustment of signal heads, signal timing, phasing and actuation with the signal maintaining agency and FDOT District Five Traffic Operations staff.

TTC related to tolling facilities shall meet the requirements of Volume II, Section 3, Attachment 2.

b) TTC Plans

Concessionaire shall utilize Standard Index 600 of the Design Standards for TTC plans. The TTC plan shall include construction phasing, utility relocation, drainage structures, signalization (including timing), signing, lighting, ditches, front slopes, back slopes, drop offs within clear zone, ITS, and traffic monitoring sites. The TTC plan shall address coordination with other construction projects in the area. Concessionaire shall prepare plan sheets, notes, and details as per FDOT's Plans Preparation Manual. Concessionaire shall prepare additional plan sheets such as cross sections, profiles, drainage structures, retaining wall details and temporary sheet piling as necessary for proper construction and implementation of the TTC plan.

If Concessionaire’s TTC includes a detour, it shall be Concessionaire’s responsibility to obtain and submit to FDOT written approval of detour use from FDOT, the detour road maintaining agency and the local government that the detour will pass through. Detour plans shall maintain all directions of traffic during any full or partial roadway or ramp closure. Detours shall be fully coordinated with local law enforcement and emergency services providers.

The TTC plan shall address adjustments to existing signing and placement of additional signs (including overhead signing) as necessary to accommodate construction phasing. Roadside exit signs may be used with approval by FDOT.

c) TTC Restrictions

1) General

For purposes of TTC, short term closures are defined as a closure less than 24 hours in duration and long term closures are defined as a closure equal to or longer than 24 hours in duration. Closure of auxiliary lanes shall be considered a
lane closure. All short term and long term closures shall be coordinated with FDOT and the impacted roadway maintaining agency.

Concessionaire shall prosecute work on SR 408 and SR 408 ramps to I-4 such that work activities are conducted in a continuous manner and for a minimum of five days per week until completion of the intended work. Inactive work periods during the construction of any area shall be limited to nights and weekends only.

2) Special Events

Numerous Special Events occur throughout each Calendar Year within or in close proximity to the Project Limits. A list of recurring Special Events near the Project and a list of all Special Events which occurred in the City of Orlando between October 2010 and October 2013 are provided in the Reference Documents. Concessionaire shall note that Special Events are subject to change and that these lists are provided for reference only and are not intended to be all-inclusive. Concessionaire shall abide by the following event-specific restrictions for the Special Events noted:

<table>
<thead>
<tr>
<th>Special Event</th>
<th>Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hot and Boom</td>
<td>For day of event, no lane closures are permitted on I-4, State Routes or local streets between SR 414 and SR 434.</td>
</tr>
<tr>
<td>Florida Classic Bowl</td>
<td>For day of event, no lane closures are permitted on I-4, State Routes or local streets between US 441 and Ivanhoe Blvd.</td>
</tr>
<tr>
<td>Champs Sports Bowl</td>
<td>For day of event, no lane closures are permitted on I-4, State Routes or local streets between US 441 and Ivanhoe Blvd.</td>
</tr>
<tr>
<td>Orlando Citrus Parade</td>
<td>For day of event, no lane closures are permitted on I-4, State Routes or local streets between US 441 and Ivanhoe Blvd.</td>
</tr>
<tr>
<td>Capital One Bowl</td>
<td>For day of event, no lane closures are permitted on I-4, State Routes or local streets between US 441 and Ivanhoe Blvd.</td>
</tr>
<tr>
<td>Zora Neale Hurston Festival</td>
<td>For the duration of the weekend of event, 1) no lane closures are permitted on Kennedy Blvd, 2) no construction activities or construction related traffic are allowed on Kennedy Boulevard, and 3) no construction activity is allowed on bridges over Kennedy Blvd. The Town of Eatonville will close Kennedy Blvd to traffic from Wymore Road to the east.</td>
</tr>
<tr>
<td>Halloween at Cranes Roost Park</td>
<td>For day of event, no lane closures are permitted on SR 436, SR 434 or any City of Altamonte local street.</td>
</tr>
<tr>
<td>City of Altamonte’s Light Up the Holidays</td>
<td>For day of event, no lane closures are permitted on SR 436, SR 434 or any City of Altamonte local street.</td>
</tr>
<tr>
<td>City of Altamonte Resolution 568</td>
<td>For the period of Thanksgiving Day through New Year’s Day no planned lane closures are allowed on SR 436.</td>
</tr>
<tr>
<td>All Other Special Events in Lane closures are prohibited between Gore Street and Ivanhoe</td>
<td></td>
</tr>
</tbody>
</table>
Special Event | Restriction
--- | ---
Downtown Orlando | Boulevard for the period between one hour before and one hour after the event.

For all other Special Events, Concessionaire shall coordinate lane closures, ramp closures and roadway closures occurring during a Special Event with the local agency or agencies within whose jurisdiction the Special Event falls.

3) **Required Roadway and Lane Closure Notifications**

Concessionaire shall request from FDOT road closure, lane closure and use of detour authorization a minimum of:

- 14 calendar days prior to any short term lane closure on I-4 or a state route (including SR 91 and SR 408).
- 14 calendar days prior to any road closure or lane closure on a local street. Notice shall also be provided to the local maintaining agency.
- 28 calendar days prior to any full roadway/ramp closure, long term lane closure or implementation of any detour.

Requests for any full roadway/ramp closures or long term lane closures shall include necessary backup documentation including, at a minimum, a fully designed Temporary Traffic Control (TTC) plan, CPM schedule showing the duration of the closure, detours, off-system improvements to accommodate the closure (permanent or temporary), traffic analysis, and a public outreach plan.

Concessionaire shall provide through FDOT a minimum 14 day advance notice to hospitals, emergency services and LYNX for any ramp or lane closures that may impact their operations.

4) **Short Term Lane Closures**

I-4 Mainline

Short term lane closures will be allowed on I-4 per the restrictions set forth in Figure 1. For purposes of Figure 1, “Location(s)” shall be defined per the following:

<table>
<thead>
<tr>
<th>Location #</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Begin Project</td>
<td>US 441</td>
</tr>
<tr>
<td>2</td>
<td>East of US 441</td>
<td>Ivanhoe Blvd</td>
</tr>
<tr>
<td>3</td>
<td>East of Ivanhoe Blvd</td>
<td>Lee Rd.</td>
</tr>
<tr>
<td>4</td>
<td>East of Lee Rd.</td>
<td>End Project</td>
</tr>
</tbody>
</table>

**Figure 1**

<table>
<thead>
<tr>
<th>Location</th>
<th>Eastbound Day</th>
<th>Westbound Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Weekday</td>
<td>1,3 &amp; 4</td>
<td>9:30P</td>
</tr>
<tr>
<td>2</td>
<td>10:30P</td>
<td>6:30A</td>
</tr>
</tbody>
</table>
Traffic pacing may be utilized on I-4 between the hours of midnight and 5:00 AM and shall comply with FDOT Standard Index 655.

SR 408

Lane closure requirements for SR 408 shall be in accordance with the Contract Documents, including Volume III – Additional Mandatory Standards, OOCEA Design Criteria. Single lane short term nighttime lane closures will be allowed on SR 408 between the hours 9:00 PM and 6:00 AM. Work which impacts any local side streets shall be coordinated with the local maintaining agency.

Florida’s Turnpike (SR 91)

Single lane short term nighttime lane closures will be allowed on SR 408 between the hours 10:00 PM and 5:00 AM. Work which impacts any local side streets shall be coordinated with the local maintaining agency.
State Routes (not including SR 408 and SR 91)

Short term lane closures or full closure will be allowed on state routes between the hours of 10:00 PM and 5:00 AM. Partial or full state route closures are not permitted on two successive cross roads on any given night.

Nighttime closure of one side of a state route and shifting of traffic to the opposite side will be allowed between the hours of 10:00 PM to 5:00 AM. Concessionaire shall provide off-duty law enforcement to route emergency vehicle traffic through the closure area. Work which impacts any local side streets shall be coordinated with the local maintaining agency.

Local Streets

Work affecting local side streets shall be coordinated with the local maintaining agency and FDOT. Concessionaire shall adhere to the following specific local agency requirements unless the local agency agrees otherwise in writing:

- For local roadways maintained by Orange County, lane closures shall be limited to the hours between 10:00 PM and 6:00 AM.
- Lane closures on the following City of Orlando maintained roadways shall be limited to Monday through Thursday nights between the hours of midnight and 6:00 AM:
  - Anderson St.
  - South St.
  - Church St.
  - Central Blvd.
  - The loop consisting of Garland Avenue, Amelia Street, Hughey Avenue, and Livingston Avenue.

  For all other City of Orlando maintained roadways, lane closures shall be limited to the hours between 10:00 PM and 6:00 AM.
- For local roadways maintained by the City of Maitland, Seminole County and the City of Altamonte Springs, lane closures shall be limited to the hours between 8:00 PM and 6:00 AM.

Modification of Short Term Lane Closure Requirements

Concessionaire may submit a request in writing for FDOT to reanalyze I-4 and/or state route traffic for possible modification of short term lane closure requirements listed herein. If FDOT analysis indicates a reduction in traffic on I-4, FDOT will further analyze the data to determine if lane closure restrictions may be correspondingly reduced. FDOT will provide a response within ten (10) working days of receipt of request from Concessionaire.

FDOT reserves the right, in its sole discretion, to suspend the modification of lane closure restrictions and to require adherence to the lane closure restrictions noted herein if FDOT judges that traffic conditions have deteriorated as a result of the modification.
5) Short Term Ramp Closures

Concessionaire may request, and FDOT may approve, nighttime short term full closure of individual ramps between the hours of 10:00 PM and 5:00 AM. No two adjacent ramps serving the same direction shall be closed at the same time.

6) Long Term Closures

Concessionaire may request, and FDOT may approve, long term I-4 lane closures and long term I-4 ramp closures in accordance with this section. Concessionaire’s written request shall include necessary backup documentation including, at a minimum, a fully designed Temporary Traffic Control (TTC) plan, CPM schedule showing the duration of the closure, detours, off-system improvements to accommodate the closure (permanent or temporary), traffic analysis, and a public outreach plan. Concessionaire shall submit with all written requests for long term lane and ramp closures a traffic analysis meeting the following requirements:

Capacity Analysis – Concessionaire shall develop, for FDOT’s approval, a ramp closure analysis using Synchro 8.0 to analyze the traffic impact of closing ramps. To analyze the ramp closure, the study intersection and adjacent interchanges along the I-4 Segments shall be analyzed during the AM and PM peak-hour periods. In addition to analyzing the ramp terminal intersections, at least one adjacent signalized intersection for each ramp terminal must be included in the analysis.

FDOT will provide current baseline construction traffic volume data to Concessionaire upon request. Concessionaire shall develop for FDOT approval traffic re-distribution based on FDOT provided baseline traffic data. Signal splits and offset optimization may be used to improve traffic operations for the adjacent interchanges. The cycle length shall remain the same as the existing condition. In addition, adequate pedestrian time must be provided for current pedestrian crossings. If a volume to capacity ratio of 0.9 or Level of Service E are reached for adjacent ramp terminal(s), then a simulation analysis shall also be performed. Key input parameters and sample results are provided in the Traffic Operational Analyses in Volume III – Additional Mandatory Standards. The Synchro analysis shall be summarized in a report and calculation files submitted for FDOT review and approval.

Simulation Analysis – Concessionaire shall develop for FDOT’s approval a simulation analysis (using VISSIM 5.4) if the volume to capacity ratio of 0.9 or Level of Service E are reached for adjacent ramp terminal(s) during the ramp closures. The spatial limits of the simulation analysis are similar to the capacity analysis; however, the freeway and arterial links shall be extended to provide adequate lane change distance and capture potential queuing. Similar to the capacity analysis, both the AM and PM peak-hour periods shall be analyzed. Each peak-period analysis should have a three-hour duration (not including the appropriate seed time to be approved by FDOT). The network construction and
simulation parameters shall be in accordance with the Traffic Operational Analyses standards.

Construction activity may change VISSIM’s Driving Behavior Parameters to produce lower freeway flow rates. Changes to CC1 and CC2 parameters may be performed to produce maximum flow rates no greater than 1,800 passenger cars per hour per lane (consult the flow contour table in the Traffic Operational Analyses. The modified parameters shall be approved by FDOT.

Based on the statistical test provided in the “VISSIM Existing Conditions Model Development and Calibration Report” in the Reference Documents, both the base condition and ramp closure scenarios shall be a simulation of the required number of runs (minimum of 5 runs each). The average measures of effectiveness (MOE) values shall be used for comparison purposes. The MOEs shall consist of node evaluations (ramp terminal intersections) and link evaluation for the TTC study area per the Traffic Operational Analyses. The VISSIM analysis shall be summarized in a report and all VISSIM/VISUM files must be submitted for FDOT review and approval.

A maximum of two long term ramp closures may be requested per ramp. Each long term ramp closure shall be a consecutive day event. Concessionaire shall not divide the allowable days per long term closure into multiple events. Construction during the closure period shall be a continuous operation, working twenty-four (24) hours a day from the beginning to end of the long term closure.

Long term ramp closures in the same direction may be permitted provided all movements at the next upstream and downstream interchange are open. At any interchange where a long term ramp closure is in place, no ramp closure shall be permitted in the opposite direction.

While a long term ramp closure is in operation, no short term ramp closure in the same direction is permitted between consecutive interchanges.

All ramp movements at SR 408 shall be maintained at all times throughout construction.

7) **Full Closure of I-4**

FDOT may approve requests, in its sole discretion, for short term full closure of I-4 from the South Street ramp to the SR 50 ramp with the following restrictions:

- Concessionaire shall provide off duty officers at all signalized intersections from Division Avenue to Orange Avenue and from South Street to SR 50.

- Full closures are restricted to between the hours of 10:00 pm to 5:00 am on the weekend nights of Friday/Saturday, Saturday/Sunday and Sunday/Monday.
• There shall be no Special Events at any downtown Orlando venues (Citrus Bowl, Dr. Phillips Center for the Performing Arts, Bob Carr Performing Art Center, Amway Center) scheduled after 7:00 pm.
I-4 Lane Closure Timing Flow Chart

Lane Closure Time Tool

Traffic Count Data
Stored in a Spreadsheet OR Database

Speed Data
Stored in a Spreadsheet OR Database

Create List of Unique IDs
Every Date
Every Count Station
Both Directions
All possible lane closers
(up to one lane open)

Data Validation Check
For each Unique ID
Is there Invalid Data?
Invalid data includes:
Volume per lane > 2500
Volume = 0

Speed Check
For each Unique ID
Is average speed < 50mph
Per hour?

Yes

No

Error Report
Showing ID that
contain invalid data

ID is not
considered in
analysis.

Adjust Volume to
represent lanes are
at capacity

Run Lane Closure Worksheet per
FDOT Plans Preparation Manual
for all valid data

Output:
Lane Closure Time for each Unique ID
Stored in a Spreadsheet OR Database called:
Lane Closure Time List

Lane Closure Time Summary Tool

Define Scenario
1. Count Stations or Segments to be closed
2. Direction
3. Dates (Quarter 1 – 4)
4. Number of lanes to be closed

List of Unique IDs
According to defined scenario

Check to see if
unique ID is in Lane
Closure Time List

No – would be
the case for
future years

Run Lane Closure Time Tool

Append Lane Closure Time
Spreadsheet or Database

Look up Lane Closure Times for Defined Scenario
From Lane Closure Time List

Run Statistical Analysis to find best lane closure
time for the defined scenario.

Output:
Lane Closure Time that is valid for 98% of all data for the Defined Scenario
(The scenario is defined by the count stations or roadway segment, direction, dates, and
number or lanes to be closed)
6. Pre and Post Construction Video Documentation

Concessionaire shall employ a professional videographer to take a pre-construction video of the entire Project Limits including the areas of adjacent properties within 100-feet of the Construction Period O&M Limits (both directions of the General Use Lane Segments and SR 408 mainline, all ramps, all crossroads and adjacent streets) and shall be made within 30-days of NTP 1. Concessionaire shall submit a quality audio-video recording documenting pre-construction field conditions for the entire project, including existing pavement and bridge conditions, unusual drainage patterns, and all existing Project signage. Pre-construction video documentation shall meet the following specific requirements:

- Video shall include all surface features within 100-feet of the Construction Period O&M Limits to be used by Concessionaire and shall be supported by appropriate audio description made simultaneously with video coverage. Such coverage shall include, but not be limited to, all existing driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, headwalls, and retaining walls, equipment, structures, pavements, manholes, vaults, handrails, etc. located within the work zone. Video coverage shall extend to the maximum height of all structures within this zone.

- The video recorder shall take special efforts to point out and provide audio commentary on cracking, breakage, damage, and other defects in existing features.

- Prior to commencement of audio-video recording, Concessionaire shall notify FDOT in writing within 48-hours of the audio-video recording. FDOT may provide a designated representative to accompany and observe all video recording operations. Audio-video recording completed without a FDOT representative present will be unacceptable unless specifically authorized by FDOT.

- All videos shall be recorded with character generator operating with date, time, and location on screen. During video recording, Concessionaire shall narrate video explaining what is being shown. All master videos shall be delivered to FDOT.

- The audio and video portions of the recording shall maintain viewer orientation. Overall, establishing views of all visible house and business addresses shall be used. In areas where the proposed construction location will not be readily apparent to the video recording viewer, highly visible yellow flags shall be placed in such a fashion as to clearly indicate the proposed centerline of construction. When conventional wheeled vehicles are used as conveyances for the recording system, the vertical distance between the camera lens and the ground shall not exceed 10-feet. The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.

- All video recording shall be done during time of good visibility. No video recording shall be done during precipitation, mist or fog or when more than 10% of the ground area is covered with standing water. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.
The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features within that construction area’s zone of influence. The rate of speed in the general direction of travel of the vehicle from which the videotaping is being performed shall not exceed 44-feet per minute.

Concessionaire shall employ a professional videographer to take a post-construction video of the entire Project Limits including the areas of adjacent properties within 100-feet of the Operating Period O&M Limits (both directions of the General Use Lane Segments and SR 408 mainline, all ramps, all cross-roads and adjacent streets) and shall be submitted to FDOT no later than 30-days after Final Acceptance.

Concessionaire shall submit a quality audio-video recording documenting as-built field conditions for the entire project, including pavement and bridge conditions, drainage patterns, and all Project signage. Post-construction video documentation shall meet the following specific requirements:

- Video shall include all surface features within the Operating Period O&M Limits and shall be supported by appropriate audio description made simultaneously with video coverage. Such coverage shall include, but not be limited to, all driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, headwalls, and retaining walls, equipment, structures, pavements, manholes, vaults, handrails, aesthetic elements etc. located within the Operating Period O&M Limits. Video coverage shall extend to the maximum height of all structures within this zone.
- Prior to commencement of audio-video recording, Concessionaire shall notify FDOT in writing within 48-hours of the audio-video recording. FDOT may provide a designated representative to accompany and observe all video recording operations. Audio-video recording completed without a FDOT representative present will be unacceptable unless specifically authorized by FDOT.
- All videos shall be recorded with character generator operating with date, time, and location on screen. During video recording, Concessionaire shall narrate video explaining what is being shown. All master videos shall be delivered to FDOT.
- The audio and video portions of the recording shall maintain viewer orientation. When conventional wheeled vehicles are used as conveyances for the recording system, the vertical distance between the camera lens and the ground shall not exceed 10-feet. The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.
- All video recording shall be done during time of good visibility. No video recording shall be done during precipitation, mist or fog or when more than 10% of the ground area is covered with standing water. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.
- The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features.
within that area’s zone of influence. The rate of speed in the general direction of travel of the vehicle used during taping shall not exceed 44-feet per minute.

- A nighttime video recording shall be done in areas where special lighting is installed. Special lighting includes aesthetic lighting illuminating bridges, water features, pedestrian walkways, architectural features and landscaping.

7. **WB I-4 Rest Area**

The existing WB I-4 Richey Green Rest Area near the north terminus of the Project will be replaced via a separate FDOT project (the Rest Area Project) that is scheduled to be let as a design-build contract in FDOT Fiscal Year 2016 (calendar year July, 2015 through June, 2016). Concessionaire shall be responsible for coordinating the Work with the Rest Area Project. A preliminary design for the Rest Area Project is included in the Reference Documents. The Rest Area Project will include the replacement of all rest area facilities, fixtures, and equipment, including roadways, parking surfaces, site amenities, sidewalks, construction of entrance and exit ramps for the rest area to the limits shown in the Preliminary Design, and construction of an interconnected stormwater pond system which includes Reference Design Pond II. The Rest Area Project interconnected pond system has been permitted (St. Johns River Water Management District Permit #40-117-22434-8) to accept roadway drainage from the Project. Should Concessionaire’s drainage design utilize the Rest Area Project interconnected stormwater pond system, Concessionaire shall be responsible for the construction of all drainage pipes and drainage structures from the Work to the outfall locations in the interconnected stormwater pond system.

I. **Structures**

1. **General Structural Information**

   **Purpose**

This section establishes the structural design criteria to be used for all bridges, retaining walls, and miscellaneous highway structures, except for toll facility structures. Toll facility structures design criteria is located in Volume II, Section 3, Attachment 2.

**Bridges Permitted To Be Widened**

Only the following existing bridges may be widened:

1. #750513  I-4 WB over John Young Parkway
2. #750514  I-4 EB over John Young Parkway
3. #750107  SR 408 WB over Tampa Avenue
4. #750108  SR 408 WB over Rio Grande Avenue
5. #750114  SR 408 WB viaduct east of existing Pier 10
6. #750183  SR 408 EB viaduct east of existing Pier 10
7. #750240  SR 408 over Parramore Avenue
8. #750569  Ramp C (SR 408 EB to I-4) over Connector Ramp
9. #755823  Anderson Street Bridge over I-4
10. #750572  I-4 EB ML Ramp E and Merge with Ramp E over Division Ave. and Gore St.

**Bridges To Be Removed**

The bridges listed below shall be removed. This requirement shall include pile removal to a minimum of 5 feet below proposed grade as well as removal of any existing bridge piling which conflicts with the Work.

1. #750042  Kirkman Rd. SB over I-4
2. #750941  Kirkman Rd. SB over I-4
3. #750174  Kirkman Rd. NB over I-4
4. #750175  Kirkman Rd. NB over I-4
5. #750284  Turnpike Ramp over I-4
6. #750151  I-4 WB over Tropical Trail
7. #750154  I-4 EB over Tropical Trail
8. #750005  I-4 WB over Shingle Creek
9. #750155  I-4 EB over Shingle Creek
10. #750157  I-4 WB over Rio Grande Avenue
11. #750203  I-4 EB over Rio Grande Avenue
12. #750158  I-4 WB over Orange Blossom Trail and Ramp
13. #750204  I-4 EB over Orange Blossom Trail and Ramp
14. #750159  I-4 WB over Westmoreland Drive
15. #750205  I-4 EB over Westmoreland Drive
16. #750160  I-4 WB over Michigan Street
17. #750206  I-4 EB over Michigan Street
18. #750161  I-4 WB over Kaley Street
19. #750207  I-4 EB over Kaley Street
20. #750162  I-4 WB over Gore Street
21. #750208  I-4 EB over Gore Street
22. #750014  I-4 WB over Division Avenue
23. #750038  I-4 EB over Division Avenue
24. #750183  SR 408 EB viaduct portion over I-4 (west of existing Pier 10)
25. #750114  SR 408 WB viaduct portion over I-4 (west of existing Pier 10)
26. #750050  I-4 WB over South Street
27. #750062  I-4 EB over South Street
28. #750064  I-4 over Church Street Viaduct
29. #750066  I-4 WB over Robinson Street
30. #750260  I-4 EB over Robinson Street
31. #750067  I-4 WB over Livingston Street
32. #750068  I-4 EB over Livingston Street
33. #750069  I-4 WB over Amelia Street
34. #750070  I-4 EB over Amelia Street
35. #750072  I-4 WB over Colonial Drive (SR 50)
36. #750189  I-4 EB over Colonial Drive (SR 50)
37. NA  Lake Lucerne Pedestrian Bridge
38. #750074  I-4 WB over Ivanhoe Boulevard
39. #750190  I-4 EB over Ivanhoe Boulevard
40. #750076  I-4 WB over Lake Ivanhoe Boat Pass
41. #750191 I-4 EB over Lake Ivanhoe Boat Pass
42. #750079 I-4 WB over New Hampshire Street
43. #750192 I-4 EB over New Hampshire Street
44. #750080 I-4 WB over Princeton Street
45. #750193 I-4 EB over Princeton Street
46. #750081 I-4 WB over Winter Park Street
47. #750194 I-4 EB over Winter Park Street
48. #750082 I-4 WB over Par Street
49. #750195 I-4 EB over Par Street
50. #750084 I-4 WB over Formosa-Minnesota
51. #750196 I-4 EB over Formosa-Minnesota
52. #750256 I-4 WB over Fairbanks Avenue
53. #750261 I-4 EB over Fairbanks Avenue
54. #750029 I-4 WB over Wymore Road
55. #750127 I-4 EB over Wymore Road
56. #750139 I-4 WB over Lee Road
57. #750197 I-4 EB over Lee Road
58. #750198 I-4 over Kennedy Boulevard
59. #750288 Maitland Blvd. WB over Wymore Road
60. #750289 Maitland Blvd. EB over Wymore Road
61. #750287 Maitland Blvd. WB over I-4
62. #750290 Maitland Blvd. EB over I-4
63. #770023 Wymore Road over I-4
64. #770006 SR 436 over I-4
65. #770022 I-4 over SR 434
66. #759001 Pedestrian Overpass over I-4 East of Kaley
67. #750130 I-4/ SR408 Connector Road over I-4
68. #750137 I-4/ SR408 Connector Road over Gore St
69. #750138 I-4/ SR408 Connector Road over Conley St.
70. #750299 I-4 EB Off-Ramp over Livingston Street
71. #750163 I-4 WB Off-Ramp to Colonial Drive (SR 50)
72. #750164 I-4 WB On-Ramp from Colonial Drive (SR 50)
73. #750165 I-4 WB at Lake Concord C-D Road over Utility Outfall
74. #750286 I-4 EB Ramp (to WB Maitland Blvd) over I-4
75. #770038 Central parkway over I-4
76. #750491 Ramp to I-4 WB over Shingle Creek
77. #750575 I-4 WB over Livingston Street]
78. #750112 SR 408 EB Exit Ramp over Parramore Avenue

Bridges To Remain

The following existing bridges are allowed to remain and be incorporated into the Project as-is:

1. #750603 Turnpike SB over I-4
2. #750610 Turnpike NB over I-4
3. #750490 I-4 EB Ramp B1 over Shingle Creek
4. #750489 Conroy Rd over I-4
5. #750513 I-4 WB over John Young Parkway
6. #750514 I-4 EB over John Young Parkway
7. #755812 Rosalind Avenue at Lake Lucerne
8. #750237 SR408 EB over Rio Grande Avenue
9. #750238 SR408 over Orange Blossom Trail
10. #750239 SR408 over Westmoreland Drive
11. #750236 SR 408 EB over Tampa Avenue
12. #750241 SR 408 over I-4 Connector Rd.
13. #755825 Anderson St. Ramp to CNL Parking Garage
14. #750570 Ramp D (SR 408 WB to I-4 WB)
15. #750571 Ramp D1 (SR 408 WB to I-4 EB)
16. #750573 Anderson Street Ramp F1 to EB I-4
17. #750574 Ramp F2 over South Street (I-4 WB to Anderson St)
18. #750515 I-4 WB Ramp over John Young Parkway

Existing Bridge Documentation

The following documents are for reference only and can be found in the Reference Documents:

- Existing Bridge Load Ratings
- Existing Bridge Inspection Reports
- Existing Bridge Plans
- Existing Bridge Scour and Hydraulics Reports
- Bridge Development Reports or Bridge Concept Reports
- Geotechnical Reports
- Reference Plans

Aesthetics

For aesthetic treatment of structures, see Section 3.P.3.

2. Structural Design Criteria

Horizontal Clearances

The minimum required horizontal clearances for bridges shall be per the Plans Preparation Manual, except as specified to accommodate future planned improvements as noted in the Off-system Construction and Maintenance Agreements.

Vertical Clearances over Roadways

The minimum vertical clearances for bridges over roadways shall be per FDOT’s Plans Preparation Manual with the exception of the following bridges which have been granted Design Variations for a reduced vertical clearance:

<table>
<thead>
<tr>
<th>Bridge</th>
<th>Approved Vertical Clearance Design Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-4 Bridges over New Hampshire Street</td>
<td>15.0 feet minimum</td>
</tr>
<tr>
<td>I-4 Bridges over Princeton Street</td>
<td>15.0 feet minimum</td>
</tr>
<tr>
<td>I-4 Bridges over Winter Park Street</td>
<td>15.0 feet minimum</td>
</tr>
<tr>
<td>I-4 Bridges over Par Street</td>
<td>15.5 feet minimum</td>
</tr>
</tbody>
</table>
I-4 Bridges over Formosa Street 15.0 feet minimum  
I-4 Bridges over Minnesota Street 14.5 feet minimum  
I-4 Bridges over Fairbanks Avenue 15.5 feet minimum  
I-4 Bridges over Riddle Drive 15.0 feet minimum  
I-4 Bridges over Wymore Road 15.0 feet minimum  
Ramp H over Sylvia Lane 14.5 feet minimum

**Vertical Clearances over Water**

The minimum vertical clearances for bridges over water shall be per FDOT’s Plans Preparation Manual with the exception of the I-4 boatpass bridges over Lake Ivanhoe, where the allowable vertical clearance above design high water is 10.0 feet minimum and 12.0 feet maximum.

**Vertical Clearances over Railroads**

The minimum vertical clearance for bridges over railroads shall be 24’-3”.

**Submerged Footings**

Submerged footings are prohibited at bridges over the following waterways, unless the entire top of the footing is located below the existing mudline:

- Lake Angel
- Lake Lucerne
- Lake Concord
- Lake Ivanhoe

**Pier Caps and Straddle Bents or Piers**

- Steel - All steel pier caps and steel straddle beams shall be constructed of ASTM A 709 HPS 50W, or HPS 70W. In addition to the requirements of SDG 2.10.A, provide a redundancy factor (ΠR) of 1.20 for steel C-Piers.
- Concrete Pier Caps - A permanent steel shell for forming and casting is not allowed.
- Concrete Straddle Beams and C-Piers Located Over Roadways - In addition to the requirements of SDG 2.10.A, provide a redundancy factor (ΠR) of 1.05.

**Location of New Substructure Units**

With the exception of I-4 over Division Street, new or replacement bridges carrying I-4 or I-4 connecting ramps over an intersecting roadway shall not utilize substructure units located in the median of the intersecting roadway. This requirement applies only to substructure locations in their final configuration, not to substructure locations in temporary construction phasing.

**Alignment and Location of New Substructure Units Located In Water**

To facilitate navigation, new permanent substructure units located within a waterway or lake shall be located and aligned to match the piers of adjacent bridges within the same waterway or lake. This requirement applies only to
substructure locations in their final configuration, not to substructure locations in temporary construction phasing.

**Lightweight Concrete for Minor Bridge Widений**

Lightweight concrete is permitted only for cast-in-place concrete in bridge decks, bridge barriers, and bridge raised traffic separators. Lightweight concrete is prohibited on major bridge widenings and new structures.

**Operational Importance Factor for Bridges**

The operational importance factor as described in AASHTO LRFD, Section 1.3.5, shall be taken as 1.0.

**Requirements for Use of Test Level 5 Barriers**

Provide a 42” F Shape Barrier (per FDOT Index 425) on both sides of ramp bridges and wall sections with a curve radius of 1200 feet or less, for the entire length of the ramp. In addition, provide a 42” F Shape Barrier for all SR 408 flyover ramps. Provision of a 42” F Shape Barrier on Ramp A2 may be limited to the limits of the curve radius of 1200 feet or less (curve PC to PT).

**Electrical Conduits in Barriers**

For all new outside concrete barriers mounted on bridges and/or retaining walls Concessionaire shall provide a minimum of two (2) PVC conduit runs in each exterior barrier. These conduits shall be 2 inches in diameter.

When additional conduits outside of the bridge barriers are required for ITS purposes, these conduits shall be supported directly under the bridge deck, and they shall be located in an interior beam bay.

**Sidewalk Areas**

All sidewalk areas of new bridges or bridge widenings shall be designed to accommodate future vehicular traffic.

**Existing Bridges - Deck Joints**

For existing bridges that are being widened, provide a new full width joint from bridge coping to bridge coping. Reuse of existing joint glands is prohibited.

**Existing Bridges - Beam Reuse**

Existing bridge beams may not be re-used for permanent structures.

**Existing Bridges – Widений**

When a bridge is designated to be widened, it shall match the configuration of the existing bridge. The widened portion of all major bridge widenings shall meet the profilograph requirements of the Structures Design Guidelines, and shall
have a minimum deck thickness of 8 ½”. The widened portion of all minor bridge widenings shall have a minimum deck thickness of 8”.

Pre-Built Foundations

At the following locations, foundations have been previously constructed in anticipation of future construction. Other than those foundations shown below, no existing foundations may be re-used.

1. Five piers located at 525 W. Magnolia Avenue were constructed under CFX Project 408-312 for the anticipated inside widening of SR 408 EB and WB. Construction as-built plans for these piers are located in the Reference Documents.

2. Three pier foundations are located next to the new Amway Arena for the anticipated Ramp B Flyover Bridge connecting WB I-4 to WB SR 408 in design section 242484-4. These existing piers were constructed under FIN 418760-2-52-01 and construction as-built plans are located in the Reference Documents.

Retaining Walls

Locations

Concessionaire shall be responsible for determining the necessity and locations of all retaining walls and bulkheads.

Position of Adjacent Piling

Any bridge end bent, abutment or pier, or any soil retaining system composed of piles and wrap-around MSE walls shall be constructed such that the piles are positioned behind the MSE wall panels and are not visible.

Maximum Wall Heights

The maximum allowable exposed vertical wall height shall be 40 feet.

Partial Height Walls

Partial height walls, such as perched and toe-walls, are prohibited except for walls associated with bridge abutments on the SR 408 mainline. See Structures Design Guidelines Figure 3.12-1. When these partial height walls are used on SR 408 bridge abutments, the minimum berm width shall be determined by external stability calculations and maintenance requirements.

MSE Walls In Water

- MSE wall backfill material placed below design high water level shall be aggregate within a range of #4 through #89, and the aggregate
shall meet the requirements of Standard Specification 901, with a maximum LA Abrasion loss of 35%. This material shall meet all other backfill requirements of Standard Specification 548.

- Soil reinforcements installed below the design water elevation shall be non-polyester structural geosynthetics only.

- Soil reinforcing material shall be the same for walls that have a height that encompasses areas below the water table and above the water table. Mixing soil reinforcing materials within a soil mass is prohibited.

Walls Located Between Twin Bridges

All walls located in the median between parallel structures shall be constructed with a sand filled hollow steel pipe to facilitate the future installation of 24” square concrete piles. These pipes shall be placed for the full height of the reinforced wall volume, and they shall be spaced no more than 8 feet on centers. Walls located in the median between parallel structures shall be designed for a full wall height sufficient to facilitate future bridge widening.

Noise Barriers Mounted on Retaining Walls

Noise barriers that are mounted on retaining walls, and that have a height of 8’-0” or less shall be in accordance with FDOT Standard Design Indices and FDOT Structures Manual.

Noise barriers that are mounted on retaining walls and that have a height greater than 8’-0” but less than or equal to 14’-0” shall be in accordance with FDOT Design Standards Index 5211 and shall utilize junction slab details similar to FDOT Design Standards Index 5212, but shall be designed for the additional barrier height per the requirements below:

Concessionaire shall prepare, and submit for approval, professionally endorsed designs and details that:

1. Provide the applicable loadings and limit state load cases.
2. Show the entire load transfer path from top of noise barrier to bottom of the soil resistance.
3. Provide an analysis showing that the strength, service, and stability requirements have been satisfied for all components – at a minimum the:
   a. noise wall
   b. junction slab system
   c. retaining wall panels
   d. strap lengths
   e. internal wall stability
   f. external wall stability
   g. soil support mechanism
4. Show all connection details.
5. Demonstrate that no more than 10% of the moment at the bottom of the noise barrier is transferred to the top retaining wall panels under any loading case, and that no more than 10% of the vertical load at the bottom of the barrier is transferred to the top retaining wall panels.

Load Ratings

Concessionaire shall “load rate” all new bridges and the entire structures of all widened bridges in accordance with FDOT’s Load Rating Manual (Procedure 850-010-035) and Structures Manual (Topic 625-020-018), except that (1) Load and Resistance Factor Rating shall be the only acceptable method for load rating bridges on the Project, (2) widened structures may, without the requirement for a design exception or variance, appropriately utilize barrier-enhanced effective flange widths per Load Resistance Factor Design 4.6.2.6.1-1, and (3) load ratings shall include input and output files in their native format. Bridges shall satisfactorily load rate: \( RF_{HL93 \ Inventory} > 1.00 \), \( RF_{SU4, C5, \ & \ ST5 \ Operating} > 1.00 \), and \( RF_{FL120 \ Permit} > 1.00 \); Concessionaire shall strengthen or replace structures failing to meet these criteria.

Extreme Event II Limit State for Sinkholes

Design all new foundations for new bridges to withstand the Extreme Event II Load Combination Limit State, modified as follows:

- **Pile Groups and Drilled Shaft Groups:** Assume the ground surface on three sides of the footing cap is at proposed finished grade elevation and the ground surface under the footing cap and on one side of the footing cap is 20 feet below the proposed finished grade elevation. For piers founded on more than one pile/shaft group, assume that 20 foot subsidence occurs along the same side of all footings.

- **Nonredundant Drilled Shafts:** Assume the ground surface on one side of the nonredundant drilled shaft foundation is at the proposed finished grade elevation and the ground surface on the other side of the nonredundant drilled shaft foundation is 20 feet below the proposed finished grade elevation.

- **Pile/Shaft Bents:** Assume the ground surface on one side of the pile/shaft bent is at proposed finished grade elevation and the ground surface on the other side of the pile/shaft bent is 20 feet below the proposed finished grade elevation.

- A graphical representation of the requirements for foundations for new bridges is included in Volume III, Additional Mandatory Standards.

Design all new foundations for widened bridges to withstand the Extreme Event II Load Combination Limit State with the lowered ground surface on only one side of the foundation no shallower than the depth the current foundation withstands. Analyze the existing structure under Extreme Event II removing the soil on the applicable side of the footing/bent/non-redundant drilled shaft until failure, then using Extreme Event II, design the footings to withstand at least the same depth of soil loss (not to exceed 20 feet).
Overhead Signs

- Overhead sign structures shall accommodate sign panels centered vertically (center justified).
- Signs in areas with walls or noise barriers are to be wall mounted in accordance with the Aesthetic Requirements.
- Overhead sign supports within median barrier sections shall follow the directions shown in the Design Standards (Concrete Median Barrier Wall Transitions at Overhead Sign Supports, Option 1).
- When foundations and/or vertical supports are placed in any concrete median barrier, or within any wall system, the bolt array at the top of the shaft must be at or above the top of the barrier or wall.
- All Project areas are considered urban for any structural sign design.
- Special designs for overhead sign elements such as dual uprights, quad chords, and monotubes are permitted. Dual uprights may assist in maintaining the standard median barrier width. Design variations of the inside shoulder widths are prohibited.

Pedestrian Bridge over Lake Lucerne

Concessionaire shall provide a new pedestrian bridge over a portion of Lake Lucerne as a replacement for the existing walkway structure. The new pedestrian bridge shall be located just south of Ramp A2. The low member of the pedestrian bridge shall be no lower than the low member of the existing Rosalind Avenue Bridge (755812). The superstructure and substructure materials shall be reinforced or prestressed concrete. Concessionaire shall provide a minimum clear walkway width of 10 feet, and shall provide an aesthetic treatment that matches the architectural features of the sidewalk portion of the existing Rosalind Avenue Bridge. Features to be matched shall include light fixtures, paving patterns, pedestrian railings, marque pylons, and shall include at least three lookouts.

Pedestrian Bridge over I-4, South of Maitland Blvd.

Concessionaire shall provide a new pedestrian bridge over I-4 just south of Maitland Boulevard with a minimum clear walkway width of 12 feet. The pedestrian bridge shall consist of one or two main spans and shall meet the aesthetic requirements of Level III Enhanced as defined in the I-4 Aesthetic Agreements. If a center pier is utilized the column cross section shall be oval in shape and flared in all elevation views.

Bridge Number 750764 over Lake Angel

To accommodate an existing/planned City of Orlando interconnection between POND OX and existing Lake Angel, Concessionaire shall construct Bridge Number 750764 over Lake Angel such that the south begin bridge location is at or south of Ramp D_KM Station 906+61.
J. Noise Barriers

As part of the completed PD&E study and the subsequent noise reevaluations, noise barriers at various locations were recommended for design and construction. The type, location, and dimensions of the recommended noise barriers are summarized in the Noise Study Report and NEPA reevaluations. Concessionaire shall be responsible for the construction of all noise barriers required by the Noise Study Report.

All noise barriers that fall within the limits of the Design Standards shall be designed using the Design Standards and as specified in FDOT’s Plans Preparation Manual (PPM). Freestanding noise barriers may be cast-in-place or precast. Concessionaire shall prepare all necessary noise barrier plans with typical sections, tabulations, plan, profiles, notes and details. The height of the noise barriers shall be as shown in the Noise Study Report. Design changes to the roadway geometry shown in the Preliminary Design may require FDOT to reevaluate the noise analysis using current FDOT noise policy for those areas affected by the design change. Such a reevaluation could result in an increase in the number or length of noise barriers required for the Project. Concessionaire shall be responsible for any additional noise barrier costs associated Concessionaire originated design changes.

Ground mounted noise barriers shall be placed at a minimum five (5) feet from the Project Right of Way line, up to an additional four (4) feet to allow for construction of the barrier and foundation. The ground mounted noise barriers shall be designed to prevent ponding of water on either side and must provide for the flow of water through the ground mounted noise barrier when required, in accordance with the Design Standards. Drainage openings shall not degrade the acoustical efficiency of the ground mounted noise barrier by more than 0.5 dBA at any location. Openings and details for openings shall be shown in the Plans.

Concessionaire shall maintain all existing fences at all times during construction. Temporary fencing shall be constructed when existing fences cannot be maintained during ground mounted noise barrier construction (i.e., when fences cross noise barriers). Fencing shall conform to Volume II, Section 2.D.1.

Access to existing fire hydrants for areas with noise barriers shall be per Volume II, Section 3.H.2.h and coordinated with the appropriate fire protection agencies having jurisdiction, and in accordance with the Design Standards. Signs shall be mounted to the noise barriers above all fire access points. Details and locations of fire access points in the noise barriers shall be shown in the Plans.

For each ground mounted noise barrier, construction activities shall be continuous until complete. This includes final paint applications.

K. Specifications

As a condition precedent to NTP 2, Concessionaire shall prepare and submit a signed and sealed specifications package for the Project (the “Specifications Package”) containing all applicable Standard Specifications. The signed and sealed Specifications Package shall include the Value Added Specifications included in Volume III – Additional
Mandatory Standards and Concessionaire’s individually signed and sealed Technical Special Provisions for any and all Work not addressed by the Standard Specifications.


Concessionaire shall use the Definition of Engineer document provided in Volume III – Additional Mandatory Standards as a supplement to the Standard Specifications.

L. Signing and Pavement Markings

The Conceptual Signing Plan (CSP) in Volume III – Additional Mandatory Standards has been developed to ensure the Preliminary Design can be adequately signed with respect to Express Lane and General Use Lane operations. Specific issues or details have not necessarily been resolved within the scope of the concept. The signing requirements of this section (Volume II Section 3.L) shall control with respect to any discrepancy with the CSP. Concessionaire shall complete all necessary signing and pavement marking plans per FDOT’s Plans Preparation Manual. These plans shall meet the specific requirements of the multiple maintaining agencies within the Project Limits. The design and construction of signing and pavement markings within CFX’s maintenance limits shall comply with OOCEA Design Criteria included in Volume III – Additional Mandatory Standards.

In some locations additional right of way has been acquired specifically to accommodate the placement of sign foundations. The placement of signs shall be carefully coordinated with the right of way maps to ensure that all sign placement can be accomplished within the right of way acquired.

1. Pavement Marking Criteria:

   - Special emphasis crosswalks shall be provided at all signalized intersections. Crosswalks shall be 10-feet wide and stripes shall be positioned so they are parallel to the wheel path.
   
   - Gore striping for the Express Lanes slip ramps shall contain 18 inch white chevrons spaced at 20 feet (center to center) with bi-directional yellow-red reflective pavement markers placed per the Design Standards.
   
   - Lane lines that separate the through movements at signalized intersections shall be extended 200 feet from the stop bar when vehicle detection loops are not used. Lane lines shall extend from the stopbar to the advanced loop(s) when vehicle detection loops are used.
   
   - All gore, island, diagonal stripe markings, bike lane symbols and messages shall have a maximum thickness of 0.12 inch for the particular product used, after application of the glass spheres (if applicable), when measured above the pavement surface at the edge of the stripe or marking. All other stripes and markings within traffic wearing areas shall have a maximum thickness of 0.18 inch for the particular product used, when measured above the pavement surface at the edge of the stripe or marking.
- Pavement stripes shall retain, at all times, a minimum retro-reflectivity of not less than 150 mcd/lx-m².
- Final pavement markings placed on state maintained roadways outside the O&M Limits shall be thermoplastic.
- Material type for final pavement markings placed on local agency maintained roadways outside the O&M limits shall match the existing pavement marking material at the point where construction ties back to the existing local agency roadway.
- Grinding as a means of removing pavement markings on any final pavement surface shall not be allowed.
- Blacking out (tape, paint, or other) to obliterate or cover pavement markings for TTC purposes shall not be allowed on any pavement surface.
- Pavement markings identifying the exit number for each of the I-4 exit ramps (General Use Lanes only) shall be provided as shown in the Design Standards.
- Reflective pavement markers shall be placed throughout the Project in accordance with guidelines in the current Design Standards.

2. Signing Criteria:

General:
- All signs within the Project Limits shall be new with the following exceptions:
  - Signs shown to remain in the CSP.
  - As otherwise noted in the Project Commitments.
  - Existing signs within the Project Limits that are not impacted by construction may remain if they meet all current FDOT and MUTCD criteria (or if on the SR 408 mainline, all CFX criteria).
  - Existing City of Orlando wayfinding signs shall be removed and re-installed per the requirements of the Aesthetic, Lighting, Streetscape, Hardscape, Mast Arms and Fire Suppression Agreement with the City of Orlando in Volume III – Additional Mandatory Standards.
- All removed sign assemblies, foundations, and associated elements become the property of Concessionaire.
- Background sheeting of overhead signs shall be Type-XI retro-reflective sheeting material.
- Interchange classifications for all interchanges along I-4, SR 408, and SR 91 (Florida’s Turnpike) will be considered as ‘Major’ (as defined in MUTCD) for the purpose of all signing elements.
Concessionaire shall adhere to the following MUTCD categories for establishment of sign sizes:

- SR 408 mainline and I-4 mainline – Freeway Criteria
- All three lane and greater roads or streets – Expressway Criteria
- All two lane roads or streets – Conventional Road Criteria

The minimum capital letter height and shield sizes shall be per MUTCD standards. The font used for white text on guidesigns shall be Clearview or FDOT approved equal. Sign legends for street names, historical districts, attractions, cultural interests, parks, destinations and cardinal directions (not affiliated with street names) shall not contain abbreviations except those shown in the MUTCD Table 1A-1.

“Keep Right” signs (R4-7) and nine-button delineators shall be placed on all raised median noses at signalized intersections.

For roadways approaching a traffic signal with three or more travel lanes, advance street name signs shall be placed at the beginning of the longest turn lane directional median opening per the detail listed in the Design Standards. Installation of advance street name signs shall only be required on intersection legs where Construction Work is being performed.

Street name signs shall be provided within the Project Limits at all ramp to street and street to street intersections. Street name signs shall conform to style and size requirements of the maintaining agency.

Intersection Lane Control Signs, Mandatory and Optional Movement Lane Control Signs, and Advance Intersection Lane Control Signs (as defined in MUTCD Sections 2B.19 through 2B.24) shall be used on all roadways that interchange with SR 408, with I-4 and on intersecting and adjacent roadways affected by the Project.

Merge Signs (MUTCD Section 2C.40) shall be used in all locations along the I-4 Segments to identify merging roadways. Added Lane signs (MUTCD Section 2C.41) are required where two roadways converge and a merging movement is not required.

Concessionaire shall replace all I-4 trailblazing signage (MUTCD Section 2D.45) impacted by construction or due to I-4 access reconfigurations. A preliminary concept of trailblazing signage is included in the Reference Documents.

Concessionaire shall coordinate way-finding signage impacted by construction with the City of Orlando and FDOT in accordance with the Off-system Construction and Maintenance Agreement with the City of Orlando.

All General Service signs (MUTCD Chapter 2I) and General Information signs (MUTCD Chapter 2H) within the Project Limits or within areas of construction.
shall be replaced. New signs shall be placed within 100 feet (+/-) of the original sign location along the roadway.

- Speed Limit signs are required on all roadways per the following criteria:
  - General Use Lanes and SR 408 – dual mounts (i.e. left and right side of each direction of travel) are required for all installations (see post interchange sign requirements below).
  - Express Lanes – signs shall be mounted on the right side of each direction of travel. Post interchange placement criteria shall apply beyond slip ramps entering the Express Lanes.
  - For the I-4 mainline and SR 408 mainline, the spacing between speed limit signs shall not exceed five miles in any one direction of travel.
  - Cross-roads – Speed Limit signs shall be provided and/or replaced within the limits of construction
  - If used, W3-5 (Reduced Speed Ahead), signing must be dual mounted (left and right side of traveled way) for all locations where there are more than two travel lanes in the applicable direction

- Single post signs mounted behind or on barrier walls, retaining walls and noise barriers shall conform to the following:
  - Sign assemblies shall be crashworthy, per the Design Standards.
  - No part of the assembly (sign panel or mount) shall encroach into the required vertical and horizontal clearances of the respective travel and shoulder areas.
  - A uniform aesthetic mounting treatment is required. Concessionaire shall submit for FDOT approval a final detail prior to fabrication and installation.

- When roadside signs are located behind a sound wall, the vertical clearance to the bottom of the sign shall be located to meet horizontal sight distance criteria.

- All existing emergency management signing and/or hurricane evacuation signing shall be replaced within 100 feet (+/-) of the original sign location along the roadway.

- The R5-10b “Pedestrian and Bicycles Prohibited” regulatory sign is required on this Project. These signs shall be provided at all interchange entrance ramps serving the General Use Lanes, SR 408 and at all Express Lanes entrance ramps originating from local streets.

- Wrong way traffic control is required at all exit ramp termini at cross-road intersections, including dual assemblies each for Do Not Enter, One Way and Wrong Way signs (signs on each side of respective ramp).

- Signs of dissimilar shape shall not be mounted back to back.
• Sign panels that are normally single or multi post mounted may be attached
to overhead sign uprights as long as no other sign panels are on that
structure facing the same direction of travel.

• Mile post markers shall be provided and shall be appropriately placed on the
right side of each direction of General Use Lanes travel at ½ mile intervals.

• The existing variable speed limit signs shall not be replaced as part of the
completed Project. See Section 3.L.6. for requirements as to how these
signs shall be maintained during construction.

• Concessionaire shall install Dead End signage per the Design Standards at
all terminated roadways.

• Exit gore signs (as defined in MUTCD Section 2E.34) are required for exits
from the Express Lanes and for exits from the General Use Lanes. General
Use Lanes exit gore signs shall be E5-1a and the SUL exit gore signs shall
be E5-1.

• DMS signs that are mounted to Express Lanes signs shall have a horizontal
dimension that is equivalent to the sign panel it is mounted to.

• Concessionaire shall provide ramp designation signing for use by first
responders at all ramps within the I-4/SR 408 interchange. Concessionaire
shall develop an alphabetical naming sequence for all ramps. The ramp signs
shall include roadway name (I-4) and ramp by designated name. Ramp signs
shall be affixed to the left barrier wall face at a recurring minimum interval of
not less than one thousand (1000) foot with a minimum of two signs per
ramp. Signs shall be 18 inches by 36 inches in size, 0.08” thick aluminum
with 3M diamond grade reflective green and white vinyl sheeting.

3. Guide Signing Criteria

The CSP is designed in accordance with the Preliminary Design. The following
is noted relative to the CSP:

• Only roadside signs specifically noted as ‘ground mount’ in the CSP legend
may be ground mounted. All others shall be placed overhead.

• Placement of all overhead guide signs located at ramp exits shall be limited
to a maximum deviation of 100’ from the painted gore point.

• Placement of all overhead guide signs with a legend displaying a distance
shall be limited to a maximum deviation of 300’ from the distance represented
on the sign.

• Placement of any overhead guide signs shall be a minimum of 800’ from the
Tolling Pavement Areas.

• Placement of all other guide signs, with the exception of ramp exit signage
and signs with distances represented in the legends, (overhead, ground
mount, bridge mount) shall be in accordance with Concessionaire’s geometric design and available right of way.

- The intent conveyed by the guide signing on the CSP is based upon the geometrics as presented in the Preliminary Design. It is the responsibility of Concessionaire to incorporate a final guide signing plan consistent with the final Project geometrics and the criteria noted herein.

- DMS’s with full color changeable displays shall be provided per Volume II Section 3 Attachment 1 subsection D.5 and as shown in the CSP.

- The sequencing and legends shown for the Express Lanes signage as shown in the CSP shall not be changed.

- Recreational, historical, and cultural interest signing (brown signs) for Wekiva Springs State Park, Maitland Art Center, Eatonville Historical District, Winter Park Historic District and History Center shall be installed.

- Concessionaire shall design sign panels with blank space reserved for future text where “future destination” is shown on the CSP.

- Concessionaire shall use arrow per lane signage (MUTCD Section 2E.21) for the SR 408 and Maitland Blvd. interchanges.

- Partial overlays of roadside signs shall match the letter style used on the remainder sign copy. Concessionaire shall confirm existing font type.

- All overhead sign components shall be new, including at a minimum, foundations, sign structure, panels, mounting hardware, conduits, luminaires, hangars, and attachments.

- Post-interchange signs, including route sign assemblies and speed limit signing, are required along I-4, SR 408 and SR 414. Route sign assemblies along SR 408 shall include a 48” x 60” toll shield and the CFX logo.

- Overhead guide signs shall be externally illuminated per the Design Standards when located along curves with radii of 2500 feet or less. Sign luminaires shall not block any portion of the sign panels. For sign assemblies including a panel with a combination of static and dynamic messaging (DMS), when the latter is across the bottom portion of the sign, the sign panel shall be illuminated from the top of the panel.

- The minimum vertical clearance for all overhead sign structures shall be measured from the highest roadway elevation over the entire roadway width of the pavement and shoulder to the lowest light fixture of the sign. Concessionaire shall coordinate electrical power to the signs with the lighting system.

- Lane arrows shall be positioned over the center one-third of each applicable lane. Similarly, for a sign panel with a single arrow, the arrow shall fall within the center one-third of the applicable lane.
- Existing distance signs (i.e. Orlando, Tampa, Daytona), shall be replaced by Concessionaire. Concessionaire shall be responsible for addressing appropriate message content (city and mileage) and placement.

- Concessionaire shall use the following destinations for exits:

<table>
<thead>
<tr>
<th>Exit No.</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>8B</td>
<td>Tampa Avenue</td>
</tr>
<tr>
<td>9</td>
<td>Orange Blossom Trail</td>
</tr>
<tr>
<td>10A</td>
<td>Tampa</td>
</tr>
<tr>
<td>10B</td>
<td>Daytona Beach</td>
</tr>
<tr>
<td>74B</td>
<td>Universal</td>
</tr>
<tr>
<td>74A</td>
<td>Sandlake Road International Drive</td>
</tr>
<tr>
<td>75A</td>
<td>Universal Boulevard International Drive</td>
</tr>
<tr>
<td>75B</td>
<td>Kirkman Road International Drive</td>
</tr>
<tr>
<td>75C</td>
<td>Grand National Boulevard</td>
</tr>
<tr>
<td>77</td>
<td>Miami / Ocala</td>
</tr>
<tr>
<td>78</td>
<td>Conroy Road</td>
</tr>
<tr>
<td>79</td>
<td>John Young Parkway</td>
</tr>
<tr>
<td>80</td>
<td>Orange Blossom Trail</td>
</tr>
<tr>
<td>81</td>
<td>Kaley / Michigan</td>
</tr>
<tr>
<td>82</td>
<td>EAST / WEST EXPWY</td>
</tr>
<tr>
<td>83</td>
<td>South Street Anderson Street</td>
</tr>
<tr>
<td>84A</td>
<td>Amelia Street Colonial Drive</td>
</tr>
<tr>
<td>84B</td>
<td>Colonial Drive</td>
</tr>
<tr>
<td>84C</td>
<td>Ivanhoe Boulevard</td>
</tr>
<tr>
<td>85</td>
<td>Princeton Street</td>
</tr>
<tr>
<td>86</td>
<td>Par Avenue</td>
</tr>
<tr>
<td>87</td>
<td>Fairbanks Avenue</td>
</tr>
<tr>
<td>88</td>
<td>Lee Road</td>
</tr>
<tr>
<td>90A</td>
<td>Maitland Boulevard</td>
</tr>
</tbody>
</table>
### 4. Specific Service Signs

Existing specific service signs (blue gas, hotel and food roadside sign assemblies) will be removed for construction and not replaced as part of the Project. The following requirements apply for these signs:

- As these signs are managed by an outside agency, FDOT or Concessionaire shall provide notification one year in advance of when the respective signs require removal. These signs shall be maintained in their current location along the roadway during that one-year period.

- After the one-year period, Concessionaire shall notify FDOT, and will provide fourteen (14) days for the outside agency and/or FDOT to remove these signs from the Project Limits. Sign assemblies shall be protected from damage during that period. If the sign assemblies are not removed during this period, they become the property of Concessionaire.

### 5. Plan Production Criteria

Concessionaire shall submit a Master Signing and Pavement Marking Plan as part of the Corridor Master Plan. The Master Signing and Pavement Marking plan shall consist of the following in roll plot format:

- The location, size and message content of all overhead and roadside guide signs and Dynamic Message Signs (DMS); DMS locations shall be based on the Express Lanes Signing Plan set forth in Volume III – Additional Mandatory Standards. Deviation from these locations must be approved by FDOT, in its reasonable discretion.

- The location and integration of all General Use Lanes, Express Lanes and tolling information signing; and Pavement markings for lanes, shoulders, gores and Express Lane exchange areas.

The following elements are requirements in addition to those requirements identified in FDOT Plans Preparation Manual for the preparation of signing and pavement marking plans:

- Plan Views - All existing signs shall be shown along with ultimate disposition. Concessionaire signing plans must show any existing signs and/or sign
series beyond the project limits which require coordination with or otherwise impact the signing plan.

- Sign Cross-Sections - cross sections are required for all new guide sign assemblies (single column and multi-column overhead structures and roadside ground mounts).

6. Signing Criteria related to Temporary Traffic Control (TTC)

Signing criteria during all phases of construction apply to all roadways (I-4, SR 408, ramps, cross-roads and other streets) affected by, or within the limits of construction of, the Project.

All existing signing (including regulatory, warning, guide, DMS or other) within the Project Limits, or as affected by the Project, must be similarly maintained in accordance with MUTCD requirements.

Existing variable speed limit signs shall not be removed until at least one static speed limit sign has been installed to replace the variable speed limit sign(s). The following shall also apply:

- All existing overhead signs that are lit shall remain lit throughout construction.
- Any signs that conflict with traffic patterns shall be covered with an opaque material until such a time where the signs are no longer in conflict with the traffic patterns.
- The following signage must be retained during all phases of construction, in the general location that it was in prior to the initiation of construction:
  - 511 signage
  - Emergency management (hurricane) shelter and hurricane evacuation signing

M. Signalization

Traffic signal design, details and installation shall meet the Design Standards as well as the standards of the local agencies of Orange County Traffic Engineering Division, City of Orlando, City of Winter Park, Seminole County Traffic Engineering Division, City of Altamonte Springs and the City of Maitland. Concessionaire shall be responsible for all traffic signal equipment necessary to construct the Project, including all traffic signal installations and requirements included in the Project Commitments.

All new and replacement traffic signals shall be mounted on structures or shall be placed on mast arm structures. Span wire mounting of traffic signals is prohibited. Any local agency who specifies aesthetic mast arms in place of standard mast arms must have an agreement with FDOT (see Project Commitments).

Minimum signalization requirements are as follows:
General Signalization Criteria:

- Concessionaire shall be responsible to coordinate with UAO’s for a dedicated power service for each signal installation and any necessary communications connections for signal installations and is responsible for all costs involved with this activity.
- Concessionaire shall be responsible for establishing the initial signal timing and phasing.
- Concessionaire shall calculate the pedestrian and vehicular clearance intervals using methodologies found in the Traffic Engineering Manual. Any changes to the existing phasing must be approved by FDOT.
- Sixty days after the completion of construction of traffic signals along an interconnected network of signals, Concessionaire shall establish final system timings for the reconstructed sections of the intersecting roadways, which may include traffic signals outside the area reconstructed. Timing plans shall be developed for the AM, PM, mid-day, off-peak and weekend periods and shall be coordinated with all signals located outside the Project Limits that are part of the affected traffic signal system along the Project. Traffic volume data required to determine timing parameters shall be collected by Concessionaire. FDOT and the local agency will review and approve the proposed timings prior to implementation.
- Up to sixty days after final system timings are implemented along an interconnected network, Concessionaire shall be responsible for timing adjustments along the network as directed by FDOT.
- Signal equipment shall meet the requirements of FDOT Minimum Specifications for Traffic Control Devices and be listed on FDOT's Approved Product List (APL) and/or Qualified Products List (QPL). Traffic signal equipment criteria were provided to FDOT by each local agency and are included in the Reference Documents. These criteria are provided for information only and it shall be Concessionaire’s responsibility to meet each local agency’s requirements in effect at the time of equipment installation.
- All signals shall include a new traffic controller cabinet assembly, including uninterruptable power source system. Each new traffic signal controller assembly shall be compatible and interchangeable with the existing traffic signal equipment within the traffic signal system. Concessionaire shall contact the maintaining local agency for their latest cabinet and controller specifications.
- Traffic signal and ITS related communications exist throughout the Project and along the crossing arterials. Concessionaire shall be responsible for replacement of any impacted interconnect cable with fiber optic interconnect cable (minimum 72 strand SM) along with terminations and integration into the existing system.
- All cabinets shall have the appropriate termination equipment to support fiber optics.
- As between the Design Standards and FDOT Structures Manual, local agencies’ adopted/accepted standards included in the Project commitments shall govern. All signal structures shall be designed and constructed for ultimate left turn phasing (i.e. arms long enough to handle future protected phases).
- Traffic signal structure designs shall include the potential to add a future 30-inch by 30-inch static-sign panel near the farthest signal head from the pole.
- When a protected left turn phase is provided, the traffic signal structure design shall accommodate single left turn lane 4-section signal heads (flashing yellow arrow). The 4-section signal head shall be centered in the left turn lane. If the signal head cannot be centered on the middle of the left turn lane, then approval from FDOT, in its sole discretion, is required. This criterion applies to both side street and mainline
left turn movements that are not controlled by dual left turn signal heads, opposing
dual left turn movements, or are split-phased.

- If a protected left turn phase is not provided, the traffic signal structure shall be
designed to accommodate a future 4-section signal head. The design shall allow a
placement so the head is positioned in the middle of the left turn lane.
- All street name signs shall be LED, internally illuminated and double sided where
applicable.
- All traffic signal heads shall be mounted vertically over the travel lanes, with the
exception of single point diamond interchange (SPDI) locations, at the Michigan and
Kaley intersections, and where the I-4 General Use Lanes are cantilevered over
Garland Avenue, unless otherwise approved by FDOT, in its sole discretion.
- Signal heads shall be positioned at least two-thirds of the way through the
intersection.
- Emergency pre-emption equipment exists throughout the Project (Opticom infrared
and GPS). Concessionaire shall be responsible for maintaining the existing pre-
emption equipment during construction and replacing it in-kind as part of the traffic
signal(s) installation. All pre-emption equipment removed shall be returned to the
maintaining local agencies.
- Unless otherwise authorized by FDOT, in its sole discretion, none of the existing
traffic signal equipment may be reused in the Project. All removed equipment,
except for poles, shall be delivered to the maintaining local agency by
Concessionaire as mutually agreed upon between Concessionaire and the local
agency. Reasonable efforts must be made to schedule delivery with the local
agency.
- As part of Concessionaire’s TTC plan(s), Concessionaire shall develop and finalize
the design of all temporary signalization and shall submit the designs to FDOT for
approval and the corresponding local agency for review and concurrence prior to
initiating construction. Existing traffic signal timings shall be retained.
- If temporary signalization is required, whether to accommodate the construction of
new traffic signal(s) or due to maintenance of existing traffic signals, Concessionaire
shall have the temporary signal installed and activated at the time the existing signal
is taken out of operation. Switch-over from existing to temporary signal shall be
scheduled during non-peak periods and approved by FDOT.
- Temporary detection for all movements shall be maintained throughout construction.
Temporary detection shall detect only the appropriate approach lane for the
associated phase. Temporary detection must be approved by FDOT through the
COS prior to implementation.
- Concessionaire shall coordinate with the City of Orlando for placement of
surveillance cameras at signalized intersections. Cameras shall be IP addressable
- Concessionaire shall replace the existing strain pole signal installation at Kirkman
and Major Blvd. with new mast arms. Signal phasing during peak periods of the day
shall provide the eastbound right turn overlap phase and provide an electronic blank
out “No U-Turn” sign for the northbound approach. During non-peak periods,
estbound right turns shall be phased with the eastbound through movement and
northbound U-Turns shall be allowed. The City of Orlando will be responsible for
maintenance of the new signal installation on Final Acceptance.

Concessionaire shall, at its sole cost, comply with traffic signal requirements, as
amended from time to time, of local agencies, and shall bear all schedule impacts of
such compliance. Concessionaire shall coordinate with such local agencies and obtain
acceptance of each such local agency of the traffic signal installation as a condition precedent to Substantial Completion. Local agency traffic signal maintenance responsibilities are contained in the Off-system Construction and Maintenance Agreements, which form part of the Project Commitments. Traffic signal requirements contained within Volume III – Additional Mandatory Standards shall take precedence over any requirements listed in Volume II.

N. Lighting

The preparation and furnishing of lighting plans and calculations shall be in accordance with the Design Standards and the commitments and local agency agreements in Volume III – Additional Mandatory Standards. The design and construction within CFX’s maintenance limits shall comply with OOCEA Design Criteria included in Volume III – Additional Mandatory Standards.

Concessionaire shall submit a Master Lighting Plan as part of the Corridor Master Plan. The Master Lighting Plan shall show locations of light poles, load centers, service point conduits and pull boxes. The Master Lighting Plan shall also include a Lighting Design Analysis Report (LDAR). The LDAR shall include photometric point-by-point computer model analysis utilizing standard lighting design practice outlined in American National Standard Practice for Roadway Lighting published by IESNA (RP-08). The report shall provide printouts showing the illumination for the entire Project and an analysis for the bridge under deck lighting and associated side street lighting. In addition, the report shall include the overhead sign lighting analysis for all overhead signs. The LDAR shall demonstrate that light spill over beyond the Project Right of Way does not exceed 0.2 foot candle as measured from the Project Right of Way line closest to any residential development adjacent to the Project Right of Way.

If Concessionaire elects to use LED luminaires, Concessionaire shall comply with the following requirements:

1. LED luminaires are designed and placed to meet FDOT standard roadway illumination lighting criteria.
2. If used within the O&M Limits, LED luminaires shall be used consistently and not randomly intermixed with other types of light sources.
3. Lighting fixtures to be installed outside the O&M Limits that will be maintained by the local agency may be LED fixtures provided the local agency provides written approval.
4. LED luminaire housings shall consist of precision cast aluminum with a corrosive resistant polyester powder coat finish.
5. LED fixtures shall meet the following requirements: UL 1598 listed and labeled for installation in wet locations; CCT 4500 K (± 500K); maintain 94.1% Intensity at 10,000 hours (IES LM-80) and have IESNA light distribution curves (IES LM-79) by an EPA-Recognized Laboratory.
6. The driver/ballast shall meet ANSI/NEMA C78.377 and have a power factor ≥ 95% at full load with a total harmonic distortion ≤ 15% at full load. The fixture shall accommodate an appropriate designed circuit voltage.
7. LED luminaires shall be provided with a minimum 10Kv/5Ka internal surge suppression module meeting UL 1449/ANSI C62.41.2 Category C.
8. The fixture shall be rated for a minimum lamp efficiency of 70% lumen output at 75,000 hours @ 25°C.
In addition to pedestrian lighting required by the Governing Regulations in Section 2.B, all traffic signal poles (mast arm or strain pole) shall be equipped with a 200 watt high pressure sodium luminaire mounted on top of the pole to illuminate the cross walks. The light fixture shall match the adjacent light fixtures. The electrical service to these signal pole mounted lights shall be from a separate power source and not from the signal controller.

The pedestrian underpass at SR 436 (Altamonte Drive) shall be illuminated 24 hours a day, 7 days a week with a minimum average illumination of 8.0 foot-candles throughout the underpass.

Background sheeting of overhead signs shall be ASTM D 4956 – 09 Type-XI retro-reflective sheeting material for all signs, eliminating the need for external illumination except if overhead signs are located along curves with radii of 2500 feet or less. Concessionaire may utilize a lower wattage light to increase retro-reflectivity of signs located along curves with radii that are 2500 feet or less. In these instances, the average initial illumination of overhead sign panels shall be suitable with the ambient luminance of “high” as identified in Section 10.3 of the AASHTO Roadway Lighting Design Guide (Current Edition).

Concessionaire shall provide all new lighting equipment for all roadway facilities, cross roads and ramps within the Project Limits.

Concessionaire shall be responsible for coordinating with FDOT, the municipality and/or maintaining agency having jurisdiction in the area for any adjustments or replacements of an existing crossroad lighting system during construction. Any existing enhanced or decorative lighting impacted by construction within the jurisdiction of a local agency shall be replaced in-kind. The location of light poles shall be coordinated with the design of all walls, bridges or noise barriers, and be consistent with the I-4 Aesthetic Requirements.

High mast lighting systems (fixtures greater than 50’ above grade) shall not be permitted within the Project Limits. Any existing high mast lighting system(s) shall be removed and replaced with a new standard lighting system in accordance with FDOT lighting criteria.

Concessionaire shall provide, install and maintain under-deck bridge lighting for every structure passing over a roadway within the Project Limits. Under-deck lighting shall illuminate to FDOT standard illumination levels the street/highway, sidewalk (if present) and any existing parking areas (if present) beneath the structure. White (Metal Halide or LED) lighting with separate power sources and photo cells for daytime and nighttime lighting shall be provided for under-deck lighting on bridges within the City of Orlando.

Concessionaire shall provide a conduit run consistent with National Electric Code under barrier wall or within barrier wall on bridges to accommodate lighting conductors. No overhead conductors will be allowed for the final lighting system.

Lighting pull boxes will not be permitted in paved roadways. No pull boxes are permitted within the designated roadway shoulder, paved or unpaved.

No surface mounted conduits shall be placed on the visible exterior surfaces of any structure. Surface mounting conduits on bridges between interior beams is allowed.
Load center panels shall be readily accessible by maintenance vehicles and inspection crews.

Conductors for lighting shall be in separate conduits and pull boxes from ITS and tolling electrical conductors. Unified electrical service points for lighting, ITS and tolling will be allowed, provided that distribution panels/pull boxes clearly indicate each circuit. Concessionaire shall coordinate and maintain the electric connectivity for all existing lighting beyond the Project Limits that are fed from the branch circuits. When electrical service within the Project Limits is to provide service to lighting outside the O&M Limits, Concessionaire shall provide a separate distribution panel(s) and electric meter (if required by the power company/agency) for that lighting.

Additional requirements related to the roadway lighting system in the vicinity of the Tolling Pavement Areas are included in Section 3, Attachment 2.

**Temporary Lighting Systems:** Where existing roadway lighting exists within the Project Limits, Concessionaire shall maintain current light levels utilizing either existing or temporary systems during construction until the final lighting is installed and operational. In areas of the Project that currently do not have roadway lighting, at points where TTC requires lane shifting, provide temporary or final lighting systems at those points prior to shifting of traffic. Light levels of temporary systems shall comply with standard lighting illumination requirements for the facility. As part of its 90% TTC plan submittal, Concessionaire shall submit a temporary lighting analysis which provides a temporary lighting layout by TTC stage, lighting fixtures to be used, lighting fixture spacing and an temporary lighting analysis which confirms the that temporary lighting criteria are met. In areas where temporary lighting is installed. Concessionaire shall maintain the system throughout the Construction Period until the area is complete and the final lighting system is in operation.

**Construction Zone Lighting:** During active nighttime operations, Concessionaire shall furnish, place and maintain lighting. Concessionaire shall use and maintain lighting with 5 foot-candle minimum intensity. Concessionaire shall arrange the lighting to prevent interference with traffic or produce undue glare to property owners. Concessionaire shall operate such lighting only during active nighttime construction activities. Concessionaire shall provide a light meter to demonstrate that the minimum light intensity is being maintained. Lighting may be accomplished by the use of portable floodlights, standard equipment lights, existing street lights, temporary street lights, or other lighting methods approved by FDOT.

During active nighttime operations, Concessionaire shall furnish, place and maintain variable message signs to alert approaching motorists of lighted Construction Zones. Concessionaire shall operate the variable message signs only during active construction activities.

**O. Traffic Monitoring**

**Existing Traffic Monitoring Instrumentation**

Traffic on I-4 is currently monitored via instrumentation placed in the pavement approximately every half mile. This instrumentation provides real-time volume, speed, and occupancy data to the Regional Traffic Management Center (RTMC) every thirty
seconds. In addition, state routes have been instrumented as shown below to provide real-time volume, speed, and occupancy data to the RTMC every thirty seconds:

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Location of Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 435</td>
<td>On SR 435 at intersection with I-4</td>
</tr>
<tr>
<td>CR 423</td>
<td>On CR 423 just north of I-4</td>
</tr>
<tr>
<td>US 441</td>
<td>On US 441 at intersection with I-4</td>
</tr>
<tr>
<td>SR 50</td>
<td>On SR 50 just west &amp; east of I-4</td>
</tr>
<tr>
<td>SR 426</td>
<td>On SR 426 at I-4 EB on/off ramp</td>
</tr>
<tr>
<td>SR 423</td>
<td>On SR 423 at I-4 EB on/off ramp</td>
</tr>
<tr>
<td>SR 414</td>
<td>On SR 414 at intersection with I-4</td>
</tr>
<tr>
<td>SR 436</td>
<td>On SR 436 at intersection with I-4</td>
</tr>
<tr>
<td>SR 434</td>
<td>On SR 434 just west of I-4</td>
</tr>
</tbody>
</table>

Concessionaire shall install and maintain a traffic monitoring system to provide traffic monitoring data equal to or better than the existing instrumentation from NTP 2 for the duration of the Construction Period and Operating Period.

**Portable Traffic Monitoring Sites (PTMS)**

Throughout the Construction Period and Operating Period, Concessionaire shall collect traffic classification / volume counts at each of FDOT’s existing PTMS sites within the Project Limits. Data collection shall be in accordance with FDOT Traffic Monitoring Handbook. Traffic classification / volume counts shall be collected once annually for a single continuous 48 hour period between the dates of January 15 and April 15 of each calendar year. Proposed dates for data collection shall be submitted and approved by FDOT prior to collection of any data. The location of existing PTMS sites within the Project Limits is as follows:
All data shall be submitted in a format that can be processed with FDOT software. Any data not determined acceptable by FDOT District 5 Data Collection Manager, in FDOT’s good faith discretion, shall be recounted / resubmitted for approval.

**Telemetered Traffic Monitoring Site (TTMS)**

Throughout the Construction Period and Operating Period, Concessionaire shall maintain the data collection ability provided by FDOT’s existing Telemetered Traffic Monitoring Sites (TTMS) at the following locations:

- Site 750196 located just east of Kaley Avenue (mile point 16.408)
- Site 770343 located 400’ west of EE Williamson overpass (mile point 5.135)

Refer to FDOT Roadway and Traffic Design Standard Index for TMS installation requirements.

All work associated with the TTMS sites shall be coordinated with FDOT. Concessionaire shall contact FDOT ten days prior to any roadwork performed in the vicinity of the existing TTMS sites and ten days prior to installation of any new or replacement site.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Mile Point Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>753007</td>
<td>10.898</td>
</tr>
<tr>
<td>750307</td>
<td>11.65</td>
</tr>
<tr>
<td>753075</td>
<td>12.336</td>
</tr>
<tr>
<td>753012</td>
<td>14.324</td>
</tr>
<tr>
<td>753018</td>
<td>15.414</td>
</tr>
<tr>
<td>753027</td>
<td>16.341</td>
</tr>
<tr>
<td>753034</td>
<td>17.364</td>
</tr>
<tr>
<td>753044</td>
<td>17.863</td>
</tr>
<tr>
<td>753051</td>
<td>18.497</td>
</tr>
<tr>
<td>753056</td>
<td>19.357</td>
</tr>
<tr>
<td>753061</td>
<td>20.06</td>
</tr>
<tr>
<td>753064</td>
<td>20.622</td>
</tr>
<tr>
<td>753069</td>
<td>21.732</td>
</tr>
<tr>
<td>753074</td>
<td>22.682</td>
</tr>
<tr>
<td>753080</td>
<td>24.654</td>
</tr>
<tr>
<td>770267</td>
<td>2.874</td>
</tr>
</tbody>
</table>
P. Aesthetics & Landscape

1. General

The Work shall express Florida’s distinctive sense of place (the Florida Experience) through intentional design, construction, and maintenance strategies that will create lasting visual appeal with an optimum expenditure of costs. The Florida Experience means a captivating experience unique to Florida’s subtropical environment which cannot be found anywhere else in the United States. The Florida Experience is what visitors expect to see, feel, and take part in, enjoy and remember when they visit Florida, leaving them with a wish to return and do business. A successful aesthetics concept cannot be achieved through merely installing plant material in unused spaces within the Project Right of Way. FDOT envisions a signature corridor where roadway, structures, utilities, grading, drainage, lighting, landscape, and other design features work together to reflect the Florida Experience. Project aesthetics shall comply with the requirements of the Aesthetic Requirements. The Aesthetic Requirements include all local agency I-4 Aesthetic Agreements, City of Orlando Streetscape requirements, SR 408 Aesthetic Guidelines and Criteria, and a Corridor Supplement for I-4 Aesthetics. Concessionaire shall comply with the requirements of this Section except as otherwise expressly provided in Volume III – Additional Mandatory Standards.

Aesthetics Master Plan – Prior to beginning work on the Aesthetics Master Plan, Concessionaire shall conduct an initial aesthetics workshop with FDOT and any other individuals as may be determined by FDOT. The goal of this workshop should be to obtain FDOT input on the Preliminary Aesthetics Master Plan and consensus on the major elements of the overall Project aesthetics prior to beginning work on the Aesthetics Master Plan. Subsequent to this workshop, Concessionaire shall develop and submit for FDOT’s approval, as part of the Corridor Master Plan, an Aesthetics Master Plan that demonstrates how the Florida Experience will be expressed along the Project through hardscape and landscape treatments. The Aesthetics Master Plan shall show:

- The aesthetic treatment of the roadway elements, bridges, walls, slopes, ponds, planting areas, lighting, and other Project elements
- A detailed preliminary landscape concept (including plant list indicating species, sizes, locations and quantities)
- Aesthetics treatments, including renderings, depicting adherence to the overall aesthetic theme and aesthetic guidelines for each of the following locations:
  - Kirkman Road/Grand National Drive Interchanges
  - Conroy Road Interchange
  - SR 408 interchange
  - Downtown I-4 viaduct including Garland Avenue and Hughey Street.
  - Lake Ivanhoe Gateway Feature
  - Maitland Boulevard Interchange
  - SR 436 Interchange
2. **Landscape**

**Overview**

The Aesthetic Master Plan shall include landscaping elements including plant material, grading, drainage, lighting, utilities and other Project components to achieve the Florida Experience along the Project. All design disciplines shall consider landscape as a vital contributor to Project success. Engineering features of the Project (roadway, ponds, utilities, etc.) shall be designed not only to accommodate landscape but to enhance landscape opportunities.

**Plant Material Cost**

The cost of plant material shall meet FDOT’s requirement that plant material comprise at least 1.5% of the aggregate value of Items III through XV (as defined in Form F in Appendix D of the Instructions to Proposers) on the Schedule of Values (“Minimum Landscaping Budget”). Any variation from this amount must be reviewed by FDOT and will require written approval from FDOT. Plant material does not include sod but may include minor planting incidentals like fertilizers, mulch, and staking and guyng. Plant material cost includes the installation cost of the plant material and the installation cost of irrigation. Plant material cost shall not include the cost of water beyond one year after Final Acceptance or the installation cost of irrigation wells. Concessionaire shall provide detailed summaries of plant material costs to demonstrate that the Minimum Landscaping Budget is allocated for plant material. Plant material cost validation shall be included with each submittal of landscape plans, and prior to and following landscape installation. Plant material cost validation will require written approval by FDOT.

**Distribution of Landscape**

Landscape design and installation shall be prioritized such that the largest financial investment is made in the highest landscape priority levels. The following table identifies landscape priority levels (Priority Levels 1-4, with Level 1 being the highest priority) for the various interchanges within the Project Limits.

<table>
<thead>
<tr>
<th>I-4 Interchange with:</th>
<th>Aesthetic Priority Level (1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirkman Road/Grand National Boulevard</td>
<td>1</td>
</tr>
<tr>
<td>Conroy Road</td>
<td>2</td>
</tr>
<tr>
<td>John Young Parkway</td>
<td>3</td>
</tr>
<tr>
<td>Orange Blossom Trail</td>
<td>3</td>
</tr>
<tr>
<td>Kaley/Michigan</td>
<td>4</td>
</tr>
<tr>
<td>SR 408</td>
<td>1</td>
</tr>
<tr>
<td>SR 50 &amp; Ivanhoe Blvd</td>
<td>2</td>
</tr>
<tr>
<td>I-4 Interchange with:</td>
<td>Aesthetic Priority Level (1-4)</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Princeton Street</td>
<td>4</td>
</tr>
<tr>
<td>Par Street</td>
<td>4</td>
</tr>
<tr>
<td>Fairbanks Avenue</td>
<td>3</td>
</tr>
<tr>
<td>Lee Road</td>
<td>4</td>
</tr>
<tr>
<td>Maitland Boulevard</td>
<td>1</td>
</tr>
<tr>
<td>SR 436</td>
<td>2</td>
</tr>
<tr>
<td>Central Parkway</td>
<td>4</td>
</tr>
<tr>
<td>SR 434</td>
<td>1</td>
</tr>
</tbody>
</table>

Landscape Design Criteria

Landscape shall comply with the guidelines provided in FDOT’s Bold Vision for Florida’s Highway Beautification Program and FDOT’s Highway Beautification Policy. Prior to beginning work on landscape plans and subsequent to submittal of the Aesthetic Master Plan, Concessionaire shall conduct a second workshop with FDOT to obtain input on the Aesthetics Master Plan and consensus on the major elements of the overall Project aesthetics and landscape. Subsequent to this workshop, Concessionaire shall prepare landscape plans in accordance with applicable FDOT criteria, manuals, forms, Design Standards, and technical specifications. The landscape plans shall provide all necessary notes, details, and technical special provisions to facilitate proper installation of landscape. The landscape plans shall list minimum size requirements and quantities for all plant species as well as other landscape items to be used.

Concessionaire is encouraged to complement landscape plant materials with additional aesthetic features which help to achieve the signature corridor envisioned by FDOT. Examples are shown in document titled “Conceptual Landscape Opportunities” provided in the Reference Documents. These features may include but are not limited to contouring of stormwater ponds; use of fountains and/or other water features; use of decorative nighttime effect lighting including spot lighting and up-lighting to accent landscape and hardscape features such as bridges and walls; and aesthetic grading including the use of contouring, terracing, earth massing and decorative walls.

Plant Palette Requirements

Concessionaire shall utilize a diversity of plant species and sizes. Concessionaire shall, at a minimum, utilize the quantities and sizes of plant material in the following Minimum Plant Palette Requirements. Plant species other than the minimums specified may be incorporated at Concessionaire’s discretion, but shall generally follow the minimum installed size criteria listed herein.
## Minimum Plant Palette Requirements

<table>
<thead>
<tr>
<th>Plant Type (1)</th>
<th>Minimum Species Required</th>
<th>Minimum Quantity</th>
<th>Minimum Installed Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimen Palms</td>
<td>4</td>
<td>300</td>
<td>20’ Clear Trunk</td>
</tr>
<tr>
<td>Palms</td>
<td>4</td>
<td>5,000</td>
<td>16’ Clear Trunk</td>
</tr>
<tr>
<td>Canopy Tree</td>
<td>6</td>
<td>3,000</td>
<td>20’ Height x 12’ Spread, 6” Caliper</td>
</tr>
<tr>
<td>Flowering Trees</td>
<td>4</td>
<td>2,000</td>
<td>12-14’ Height x 8-10’ Spread</td>
</tr>
<tr>
<td>Transitional Wetland Trees</td>
<td>2</td>
<td>700</td>
<td>20’ Overall, 6” Caliper</td>
</tr>
<tr>
<td>Buffer Trees</td>
<td>2</td>
<td>3,500</td>
<td>15’ Overall</td>
</tr>
<tr>
<td>Native Shrubs</td>
<td>6</td>
<td>40,000</td>
<td>3 Gallon, 30” Height x 24” Spread</td>
</tr>
</tbody>
</table>

### Plant Type Definitions

1. **Specimen Palm**: Palm tree used in high visibility locations such as bridge crossings, focal points and key design areas. Specimen palms for this project shall include: Bismarkia nobilis ‘silver’, Phoenix canariensis, Phoenix dactylifera ‘Medjool’ and Phoenix sylvestris.

2. **Palm**: Palm tree’s consisting of pinnate and palmate species that are native to Florida or adapted to local conditions. Palms trees shall be planted in staggered heights.

3. **Canopy Trees**: Tree capable of reaching a minimum height of 40’ tall and minimum spread of 40’ wide.

4. **Flowering Trees**: Tree capable of producing showy flowers during a portion of the year. Flowering trees may include evergreen and deciduous species and may include standard and multi-trunk varieties. Flowering trees shall be capable of reaching a minimum height of 25’ and minimum spread of 25’.

5. **Transitional Wetland Trees**: Trees capable of surviving in wet soil conditions or in locations that may be exposed to periodic or seasonal flooding. Transitional wetland trees shall...
be capable of reaching a minimum height of 50’ and minimum spread of 25’.

Buffer Trees
Trees capable of providing a dense visual screen. Buffer trees shall be evergreen and shall be capable of reaching a minimum height of 30’ and minimum spread of 25’.

Native Shrubs
Shrub species capable of reaching a minimum height of 5’ and a minimum spread of 4’. Native shrubs may include flowering species and should be evergreen. Native ornamental grasses may also be included in this category. Native grasses should be capable of reaching a minimum height of 3’ and minimum spread of 3’.

Concessionaire shall develop as part of the Aesthetics Master Plan a comprehensive plant list that includes all planting materials which are compliant with the Minimum Plant Palette Requirements, are hardy and suited by hardiness zone designation to the Project location, are generally drought tolerant and resistant to pests, diseases, and insects, and which are aesthetically pleasing in appearance.

Concessionaire shall observe the following criteria for landscape design:

a) Landscaping outside and adjacent to the O&M Limits is encouraged in high impact visual areas of the I-4 Segments provided Concessionaire first enters into a Landscape and Irrigation Maintenance Agreement with the local agency for the maintenance of the landscaping.

b) Within CFX right of way, Concessionaire shall install landscaping in accordance with the OOCEA Design Criteria included in Volume III – Additional Mandatory Standards.

c) Landscaping is permitted in median areas provided setbacks, offsets and clearances (horizontal and vertical) are in accordance with the Design Standards and the Plans Preparation Manual (Volumes I and II).

d) The landscape plans, in concert with the roadway plans, shall specify that soil be replaced in landscaped areas as part of roadway construction in accordance with Section 987 of the Standard Specifications.

e) The landscape plans shall feature a diverse mix of palm, tree and shrub species. Concessionaire shall install at least the minimum quantity of each plant species shown in the Minimum Plant Palette Requirements list. The size of plant material shall be per the “Minimum Installed Size” requirements shown in the Minimum Plant Palette Requirements.

f) The use of shrubs and grasses will be limited to locations where they are needed to address a specific landscape need (buffering, erosion control, etc.), where they are required to meet a commitment of the contract, and in locations outside the O&M Limits covered by Landscape and Irrigation Maintenance Agreements with others.

g) The quality of plant material shall be Florida #1.

h) Wherever possible, landscape material shall be used to highlight and frame pleasing views and to screen or buffer unsightly conditions.
i) Concessionaire shall introduce color where possible.
j) Concessionaire shall use bold, simple design, which is enjoyable at highway speeds.
k) Wherever possible, intersections at crossroads connecting to the I-4 mainline shall be landscaped.
l) New landscaping in the interchange areas shall compliment nearby existing plant material and be coordinated with the adjacent local municipality.
m) An opaque visual landscape buffer which obscures the view of I-4 from property owners on the west side of Markham Woods Road shall be placed between the existing trail adjacent to Markham Woods Road and the water management ponds from approximate Ramp D1 LT Station 429 to Baseline SR 400 LT Station 743.
n) An opaque visual landscape buffer which obscures the view of I-4 from adjacent property owners of Hidden Estates shall begin at approximately Station 552+00 RT and end at approximately Station 567+00 RT.

Irrigation

Concessionaire may determine the manner in which to apply water efficiently to landscaping, provided that it shall not materially detract from the aesthetic appearance of the installed landscaping. The water and power source(s) for any irrigation system shall be identified by Concessionaire and, where outside the O&M Limits, shall be approved by applicable maintaining agencies. Irrigation shall not be permitted in areas outside the O&M Limits unless Concessionaire has entered into a Landscape and Irrigation Maintenance Agreement with the local agency for maintenance of the irrigation system.

Concessionaire shall submit for FDOT approval a complete set of irrigation plans that include plan sheets matching the landscape plan scale, installation notes, installation details, materials lists, legend, technical specifications, flow and pressure calculations, pipe sizes, connection points, thrust blocks, backflow preventers, gate valves, and technical special provision(s). Concessionaire shall be responsible for obtaining approvals and permits from applicable agencies for any water and electrical power source(s), if required for operation of the irrigation system.

Coordination of Landscape Design

Concessionaire’s LAOR shall coordinate with other disciplines, including, at a minimum, roadway, structures, drainage, Utilities, and ITS to accommodate each discipline’s engineering requirements and to identify the best landscape opportunities that meet the objectives of the Aesthetics Master Plan and the intent of FDOT’s Bold Vision for Florida’s Highway Beautification Program. The landscape design shall be fully coordinated with other Project activities and the following:

Outdoor Advertising (ODA) - Concessionaire shall verify all necessary information pertinent to ODA. Concessionaire shall ensure that the landscape design complies with Section 479.106, Florida Statutes “Vegetation Management at Outdoor Advertising Sign Locations,” including: ODA sign locations, identification numbers, ownership, permit status, written notification to permit
holders and view zones to be established or preserved with landscaping or buffer plantings. Concessionaire shall coordinate with ODA permit holders to obtain all required clearances. Information on ODA licenses, permits and tags are available on the ODA database. The database can be accessed at: http://www2.dot.state.fl.us/rightofway.

Utilities - Concessionaire shall coordinate landscaping with all Utility facilities and all FDOT facilities, including ITS, communications and electric.

Local Municipalities - Concessionaire shall coordinate landscaping with local municipalities in areas covered by Landscape and Irrigation Maintenance Agreements between FDOT and the local agencies. Concessionaire shall assist FDOT in coordination with the local municipalities for any new or revisions to Landscape and Irrigation Maintenance Agreements (or preparation of new agreements).

Landscape Plans Preparation

Concessionaire shall prepare 90% and final landscape construction plans in accordance with the Contract Documents. The 90% and final landscape construction plans shall include the following:

a. Landscape Plans
   i. Plantings
   ii. Irrigation
   iii. Aesthetic grading
   iv. Effect lighting
   v. Water features and fountains
   vi. Landscape walls, screens, fencing, etc.
   vii. Pedestrian paving
   viii. Pond shaping and treatment of pond shoreline

b. Special installation details not already covered by the Design Standards.

c. A plant list clearly noted and cross-referenced and classified by soil types.

d. Locations of plants, trees and palms to remain, to be removed or be relocated.

e. Landscape installation, operations and maintenance setback table which provides minimum distances for plants to be installed away from the following elements: travel lanes, side streets, ramps, bridge structures, MSE walls, fences, light poles, back of guardrails, ITS equipment (poles, cameras, pull boxes and conduit), signs and support structures, drainage structures, underground utilities, overhead wires, and stormwater management facilities' seasonal high water elevations. Setbacks, offsets and clearances (horizontal and vertical) identified in the table shall be in accordance with the Design Standards and the Plans Preparation Manual (Volumes I and II).

f. Detailed estimate of Project plant material costs shall be submitted by Concessionaire confirming that the Minimum Landscaping Budget has been allocated for plant material.

g. The final landscape design shall be submitted to FDOT for review and approval.
Landscape Installation

The following requirements are in addition to the Standard Specifications relating to landscape installation:

a) Soil pH and nutrient level testing shall be conducted by an independent lab prior to any planting installation to confirm that planting soil meets the Design Standards and any requirements developed by the LAOR.

b) Concessionaire shall provide a Health Certificate for Large Palms Affidavit from the nursery of purchase certifying that palms are disease free. Ganoderma zonatu is a lethal fungal infection that affects most palms. All care shall be taken in transporting, planting, and staking activities to avoid trunk damage; such injuries to the trunks are known to increase exposure to the fungus, and increase the chances of infection.

c) Concessionaire shall be responsible for protecting existing trees to be preserved. Trees and palms shall be protected with tree barricades. Concessionaire shall erect tree protection barricades prior to beginning any other site work. Concessionaire shall be responsible for maintaining tree protection throughout construction.

d) Concessionaire shall coordinate with the appropriate municipality prior to the removal of any plant material from within an area included in an existing Landscape and Irrigation Maintenance Agreement. Concessionaire shall provide sixty (60) days notice before removing any local agency owned/installed landscape plantings to allow the local agency adequate time to relocate plantings if desired.

e) Concessionaire’s LAOR shall provide post design services for quality assurance as follows: shop drawing review; plant material approval at the nursery; approval of layout prior to planting; preparing punch lists; participating in Final Acceptance procedures.

3. Hardscape

Concessionaire shall incorporate the hardscape elements into the Plans, depicting the aesthetic aspects of the Project, including bridge structures, sign structures, walls, noise barriers, light poles, guardrails, pavers, walks, and site amenities. The hardscape elements shall specify exact colors, materials, and finishes.

Any hardscape elements not specifically addressed in the I-4 Aesthetic Requirements shall be designed in a compatible style, providing a pleasing relationship between all hardscape elements along the Project.

For aesthetic purposes, the term “box” shall include Florida ‘U’ Beams or any three sided closed member.

Unless otherwise directed by the I-4 Aesthetic Requirements, the following requirements shall be observed:
Treatment of Areas Under Bridge Ends

Grass and plant material is prohibited under bridges with vertical clearances above ground of 20 feet or less. Concessionaire shall provide hardscape such as brick pavers, roadway pavement, slope pavement, or sidewalks within the footprint of these bridges. All hardscape elements shall meet the requirements of the I-4 Aesthetic Requirements.

Except at the ends of the SR 408 bridges, full height vertical faced retaining walls shall be used in front of the end bents – and specifically, vertical fill slopes and or partial fill slopes are prohibited.

The area under each bridge end of the Existing SR 408 Bridge #750241 shall be reconstructed such that the lower portion of the existing slope fill is removed and the upper portion is retained with the use of a partial height gravity or retaining wall. The exact location and design of each wall shall be determined by Concessionaire, but the designs must meet the following requirements:

a) Ten foot clear width pedestrian walkways shall be provided in the space between the new retaining walls and the existing pier columns.

b) The walls shall be similar to the existing partial height walls under the bridge ends of the existing Expressway Exit Ramp over Parramore Ave. (Bridge #750112).

c) The walls shall receive a Class 5 Applied Finish in accordance with the Standard Specifications, with texture and color according to the I-4 Aesthetic Requirements.

Partial fill slopes on the sides of the end bents are prohibited unless specified elsewhere within the Contract Documents.

Treatment of Miscellaneous Metal Structures

All metal elements and fixtures within the Project Limits shall have a coordinated appearance. Except as otherwise expressly provided in Volume III – Additional Mandatory Standards, such appearance shall include the following elements:

a) Light Poles

All light poles within the O&M Limits shall be black with a fade-resistant finish as per the Federal Standard Color 595 B 17038. The color of light poles outside the O&M Limits shall be coordinated with the maintaining local agency.

b) Mast Arms

All color of all traffic signal mast arms within the Project Limits shall be coordinated with the maintaining Governmental Entity. If the maintaining Governmental Entity has no preference, traffic signal mast arms shall be
black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

c) Fencing

All fencing fabric within the Project Limits shall be black vinyl coated, AASHTO M181B (bonded coating). The fencing hardware (including railing, posts, caps, and tension wire elements) shall also be black vinyl coated or black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

d) Metal Railing

All metal railing within the Project Limits shall be black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

e) Overhead Sign Structures and Signs

- All overhead sign structures shall be the same structure type - either all multi-chords or all monotubes.
- All surfaces of monotube structures and multi-column and/or multi-chord type structures shall be galvanized per the Design Standards and painted black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.
- The back face of all overhead mounted sign panels shall be painted black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

f) Single and Multi-Column Signs

All posts, beams, mounting hardware and the back face of sign panels for single and multi-column signs within the Project Limits shall be black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

g) Toll Gantries

All toll gantry structures within the Project Limits shall be either galvanized per the Design Standards or galvanized and painted black with a fade-resistant finish as per the Federal Standard Color 595 B 17038.

Weathering Steel

All steel bridges shall be weathering steel except for the following bridges which shall be painted with a high performance coating system: The I-4 over John Young Parkway bridges, the SR 408 bridges and the SR 408 connecting ramps, the South Street bridges, the Anderson Street bridge, and the eastbound on-ramp from the Anderson Street bridge to the EB Express Lanes. See “Treatment of Structures” requirements below for painting limits of weathering steel structures.
Use of weathering steel is not permitted for sign structures or guardrail elements.

**Depth of Fascia Members**

For all bridges, the depth of the fascia members throughout the length of the bridge shall only vary if the transition is smooth — no stepping of beams is permitted. For the purpose of this requirement, bridge shall be defined as a structure spanning from roadway fill to roadway fill.

**Cheek Walls**

FDOT shall have the sole discretion to determine where full cheek walls are required. Generally, full height cheek walls shall meet the following guidelines:

a) Full height cheek walls shall be provided on each side of every end bent.

b) Except for item c) below, full height cheek walls shall only be provided on the end of an interior pier which meets the following conditions over that pier:

1. Beams that are chorded in plan view
2. Adjacent exterior pedestals with height differences exceeding 2”
3. Where a gap exists between the backs of beams meeting at an interior pier
4. Material discontinuity in the structural framing system (an example would be steel meeting concrete)
5. Beam type discontinuity in the structural framing system (an example would FIBs meeting FUBs)

c) For bridges framed with boxes, cheek walls shall not be provided at interior piers.

d) Full height cheek walls shall be built so that the top of the cheek wall is no greater than one inch below, and parallel to, the bottom of the deck.

**Stiffeners on Steel Plate Girders**

Other than bearing stiffeners, no stiffeners shall be permitted on the outside of exterior steel plate girders.

**Piping on Bridges**

All drainage conveyance on bridges shall be hidden from view. Piping inside boxes is not permitted.

**Bridge Superstructure Framing Members - Types and Materials**

a) Except as noted below, all bridges shall be framed with the same beam type (e.g. flat slab, Florida ‘I’ Beam, AASHTO beam, Florida ‘U’ Beam, steel plate girder, steel box girder) and same material (e.g. steel or concrete)
throughout the length of the bridge. For the purpose of this requirement, a bridge shall be defined as a structure spanning from roadway fill to roadway fill, except for the Ramp A2 bridge.

b) All existing bridges to be widened shall be framed with the same beam type and material as the existing structure, except that Florida 'I' Beams may be used in lieu of AASHTO beams.

c) At the SR 408 interchange, the flyover ramp bridges are defined as Ramp A, Ramp A1, Ramp B, and Ramp D; and these flyover ramp bridges shall be framed with boxes of the same material type throughout the entire interchange, however the number of boxes per span may vary.

d) The existing steel box girders at the western terminus stub out of the existing bridge for the SR 408 Ramp D bridge shall not prohibit the use of the all concrete box girder option for the flyover bridges at the SR 408 interchange. However, if the concrete box option is selected,

- the existing steel box girders located in the stub out shall not be removed or extended.
- there shall be a smooth fascia transition between the existing steel box girders and the new concrete box girders.
- the color of the Class 5 Finish of the new concrete boxes and supporting substructures shall match the color of the existing steel box girders and their corresponding supporting substructures.

e) All curved bridges with radii less than 1,500 feet shall be framed with curved girders.

f) All bridges within an interchange, or grade separation area shall be framed with the same beam type and material throughout the length of the bridges, with exceptions permitted at the following locations:

- The Ramp D bridge within the Orange Blossom Trail interchange need not match the beam type and material of the other bridges in the interchange.
- All the bridges directly over Kaley Street shall be of one beam type and material. However, this beam type and material for the bridges over Kaley Street need not match the beam type and material for the adjoining Lake Angel ramp bridges to the south.
- I-4 @ Lake Ivanhoe: It is permissible to use concrete flat slabs for Ramps A and B over Lake Ivanhoe, regardless of the material of the adjacent mainline bridges.
- I-4 @ SR 408: The following bridges or bridge segments at this interchange may have different beam type and materials than the flyover ramp bridges, however the following four bridges must match each other in terms of beam material and beam type:
  - EB SR 408
  - WB SR 408
  - Ramp A2 (Western 800’ portion of bridge)
  - Ramp H
The following bridges or bridge segments are not considered part of the SR 408 interchange:

- the Anderson Street bridge over I-4
- the I-4 bridges over Division Avenue
- the I-4 bridges over Gore Street
- the Ramp A2 bridge (the entire bridge except the western 800’ portion of bridge is considered one bridge)
- the Ramp B1 bridge
- the Ramp C bridge
- the Ramp C1 bridge
- the Ramp E bridge
- the Ramp F bridge

Treatment of Structures

a) Existing Bridges to Remain or to be Widened
The following concrete components (existing and new) shall receive a Class 5 Applied Finish in accordance with the Standard Specifications, with texture and color according to the I-4 Aesthetic Requirements.

- The exterior face and bottom flange of all fascia members
- External edges of deck slab (coping)
- Underside of deck slab overhangs at exterior beams
- All exposed surfaces of bents, except top of caps and top of pedestals
- All exposed surfaces of piers, except top of caps and top of pedestals, plus all columns to be treated to 1’-0” below finished grade
- All exposed surfaces of abutment walls (including MSE wall copings, caps and panels), wing walls, and cheek walls.
- All exposed surfaces of straddle bents and integral pier caps
- Sign and lighting pedestals

b) New and Replacement Bridges
With the exception of the Express Lanes bridges over John Young Parkway (JYP), all new and replacement bridges within the Project Limits shall meet the following applicable aesthetic requirements:

- Concrete Beams
  The exterior face and bottom flange of all fascia members shall receive a Class 5 Applied Finish in accordance with the Standard Specifications that is colored according to the I-4 Aesthetic Requirements.

- Concrete Boxes
  The exposed surfaces of all primary and secondary superstructure framing members shall receive a Class 5 Applied Finish in accordance
with the Standard Specifications that is colored according to the I-4 Aesthetic Requirements.

- **Steel Bridges Designated to be Fully Painted**
  The exposed surfaces of all framing members shall be painted with a high performance coating system in accordance with the Standard Specifications and the I-4 Aesthetic Requirements.

- **Weathering Steel**
  The exterior face and bottom flange of fascia beams, all exposed surfaces of straddle bents, and all exposed surfaces of integral pier caps shall be painted with a high performance coating system in accordance with the Standard Specifications and the I-4 Aesthetic Requirements. Painting of the interior girders is prohibited. Substructure units shall be protected from rust runoff of the weathering steel until the deck is placed.

- **Other Concrete Bridge Components**
  The following concrete components shall receive a Class 5 Applied Finish in accordance with the Standard Specifications, with texture and color according to the I-4 Aesthetic Requirements.
  - External edges of deck slab (coping)
  - Underside of deck slab overhangs at exterior beams
  - All exposed surfaces of bents, except top of caps and top of pedestals
  - All exposed surfaces of piers, except top of caps and top of pedestals, plus all columns to be treated to 1'-0" below finished grade
  - All exposed surfaces of abutment walls (including MSE wall copings, caps and panels), wing walls, and cheek walls.
  - All exposed surfaces of straddle bents and integral pier caps
  - Sign and lighting pedestals

c) **John Young Parkway (JYP) Bridges**
  Should Concessionaire choose to construct new Express Lanes bridges over JYP, the aesthetic treatment of the new bridges shall match the textures, colors, paints and finishes of the existing I-4 bridges over JYP. This requirement applies to all components of the bridge including superstructure, substructure, deck, safety features, and all attachments. Alternatively, if the existing JYP bridges over I-4 are widened to accommodate the new Express Lanes, Concessionaire shall follow the guidelines provided in part a) above: “Existing Bridges to be Widened”.

d) **Crash Barriers**
  All exposed surfaces of existing barriers to remain and all new barriers within the limits of the Project shall receive a Class 5 Applied Finish with texture and color according to the I-4 Aesthetic Requirements. This
requirement applies to all roadway and mounted barriers. The color scheme of the roadway barriers shall match that of the bridge barriers, as outlined in the I-4 Aesthetic Requirements.

e) Walls
All exposed concrete surfaces of existing wall elements to remain, and all new wall elements within the limits of the Project shall receive a Class 5 Applied Finish with texture and color according to the I-4 Aesthetic Requirements. This requirement applies to all concrete copings, caps and facing of retaining walls, noise barriers, and bulkhead walls as well as to MSE wall panels and wall pedestals (lights and signage).

f) Anti-Graffiti Coatings
No anti-graffiti coatings are required for this Project except as provided in the I-4 Aesthetic Agreements in Volume III – Additional Mandatory Standards.

Bridge Pier Shapes

To the extent Concessionaire uses atypical bridge pier types not specifically addressed in the I-4 Aesthetic Requirements, Concessionaire shall provide aesthetic treatments similar to those that are addressed in the I-4 Aesthetic Requirements, and these bridge piers shall be made compatible throughout the Project by attention to form, shape, and consistent proportion. Examples of atypical bridge pier types include straddle bents and integral cantilever pier caps.

Pier shapes for bridges to be widened shall match the adjacent existing bridge piers.

Intermediate Pile Bents

Intermediate pile bents shall only be permitted at the I-4 bridges over Shingle Creek.

Noise Barriers

All exposed surfaces of existing noise barrier walls to remain and all new noise barrier walls within the limits of the Project shall receive a Class 5 Applied Finish. For noise barrier walls mounted on bridges, the color, texture and architectural features of the noise barrier shall match those of the bridge the noise barrier is mounted on.

The color, texture and architectural features on the roadway face and outside community face of the noise barrier walls shall be per the options shown in “Corridor Supplement for I-4 Aesthetics” in Volume III – Additional Mandatory Standards. Note that the noise barrier may have roadways on both sides.

FDOT will provide Concessionaire with specific information as to which of the optional colors and textures are to be applied to outside community noise barrier faces based on coordination with others.
Noise barrier wall profiles and elevation changes in the top edge of ground mounted noise barrier shall be per the noise barrier height transition requirements shown in the I-4 Aesthetic Requirements.

Canal or Lake Sheet Pile Walls

- All steel sheet pile walls shall have concrete facing with a concrete cap. The concrete facing shall extend three feet below the mean low water elevation.
- Exposed steel walls and or exposed wall anchors are prohibited.

Retaining Walls

- All permanent retaining walls shall be vertical and have a concrete facing.
- When a continuous retaining wall is located within the jurisdictions of two or more local agencies, Concessionaire shall consult the adjoining local agencies for transition requirements.

Exterior Fascia Panels for Superstructures

Necessity:
Concessionaire shall install exterior fascia panels on one or both sides of a bridge when addition of this aesthetic element is specified in the I-4 Aesthetic Agreements or required by design.

Approval:
All exterior fascia panels shall be approved by FDOT prior to any fabrication or construction.

Materials:
All materials shall be approved by FDOT.

Structural Integrity:
Concessionaire shall provide calculations for the effects on the fascia panels from live load deflections, live load vibrations, thermal movements, and horizontal wind loads.

Geometry:
The bottoms of the panel shall not encroach into the minimum vertical clearance envelope, and the top of the panels shall not protrude upwards past the top of the topmost concrete barrier or parapet element.

Compounding vertical arches with horizontal curves within the entire panel system will require approval by FDOT.
Aesthetics:

The finish and color on the exterior portion of the panels shall meet the requirements of the I-4 Aesthetic Requirements.

Lake Ivanhoe Gateway Feature

Concessionaire shall design and construct a Lake Ivanhoe Gateway Feature on I-4 which extends from approximately the north shore of Lake Ivanhoe to just south of the Colonial Drive bridge over I-4. For reference, a rendering developed by others for the City of Orlando is included in the I-4 Aesthetic Agreements which illustrates one possible design concept. The design concept shall generally integrate and coordinate with the existing City of Orlando gateway feature at Conroy Road and I-4 under FDOT Conroy Road/I-4 Interchange Project No. 75280-3408. Other design elements should include but are not limited to:

- The design in general shall incorporate tower spires from the Conroy Road over I-4 Bridge Gateway Feature.
- The Colonial Drive bridge shall incorporate a minimum of four spires with a base, column and top to match with the design of the Conroy Road bridge.
- Lighting, up-lighting, and conduit for specialty lighting shall be incorporated and be consistent with the I-4/Conroy Road project specifications. Lighting should highlight the gateway features at roadway level. LED or high-efficiency fixtures are desired and should be capable of being controlled to change colors for events and holidays.
- Element colors shall match the colors shown in the I-4 Aesthetic Agreements.
- Final design for all features shall be coordinated with and reviewed by the City of Orlando, with final approval by FDOT.

Aesthetic Lighting for Pedestrian Overpass just south of Maitland Blvd.

In addition to the lighting requirements in Section 10.17 of FDOT Structures Design Guidelines and those stated in Volume II, Section 3.N, Concessionaire shall provide aesthetic lighting for the pedestrian overpass that meets the following requirements:

a) The entire north elevation and south elevation of the bridge shall be illuminated in such a way as to accentuate the architectural features of the overpass structure.

b) Illumination shall reach an average intensity of 1.0 foot candles for the entire length of the bridge, on each side of the bridge. This 1.0 average is not intended to be even or constant, but rather reflects an overall average level of intensity when lighting is considered as a whole.

c) Illumination shall either be trace lighting along the primary structural element(s), spot lighting, or flood lighting.

d) Illumination methods shall either be:
   - Metal Halide Spotlight
   - LED Floodlight
e) Illumination shall emanate from outside of the bridge, and shine inward toward the pedestrian bridge longitudinal centerline. Outboard cantilever brackets may be used to achieve anchorage for this outside positioning.

f) Illumination shall be capable of projecting multiple light colors. Source lighting color shall be coordinated with the maintaining agency.

g) The finished color of the fixture shall match the color and aesthetic theme of the overpass.

h) Conduits for aesthetic lighting shall be hidden.

i) In all cases, the source lighting shall be shielded, and any direct glare shall be minimized.

Q. Toll System

Concessionaire shall follow the requirements of Section 3 Attachment 2. There are seven (7) bi-directional Tolling Points required for toll collection on the Project. The final Tolling Point locations are subject to Concessionaire’s final design including the roadway geometrics layout, drainage design, signing design, utility adjustment design, bridge design, and ITS design. The final Tolling Point locations shall be confined by the closest upstream or downstream Express Lanes ramps in each direction.

The Master Tolling Plan shall include details that show the locations of gantries, equipment buildings and surrounding infrastructure, equipment layouts, driveway layouts, loop layouts and conduit lengths. Additional requirements are set forth in Volume II, Section 3, Attachment 2.
Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

SECTION 3, ATTACHMENT 1 - ITS DEPLOYMENT REQUIREMENTS

A. Systems Engineering Management Plan (SEMP) ................................................... 1
B. Turnover of Existing ITS .......................................................................................... 1
C. ITS .......................................................................................................................... 1
D. ITS Devices ............................................................................................................. 2
E. Communication Network ....................................................................................... 11
F. Supporting Infrastructure ....................................................................................... 13
G. Physical Requirements ........................................................................................... 15
H. Security Requirements ........................................................................................... 15
I. Additional CFX Requirements .............................................................................. 15
J. 511 System ............................................................................................................ 16
K. Software ................................................................................................................ 16
L. Experience Requirements ....................................................................................... 16
M. ITS Testing Requirements ...................................................................................... 17
N. ITS Operation and Maintenance .......................................................................... 17
O. Toll Gantries .......................................................................................................... 17
P. Coordination ......................................................................................................... 17
Q. Permitting for ITS ................................................................................................. 17
Section 3  Intelligent Transportation Systems (ITS) Plans

Concessionaire shall be responsible for the design and construction of the new/permanent I-4 Intelligent Transportation System (ITS) to support traffic management and operations of the Express Lanes and the general purpose lanes. The ITS shall include a Fiber Optic Network (FON), a Freeway Management System (FMS), an Express Lane Management System (ELMS), and FDOT provided Express Lane Software (ELS), including all ancillary components within the ITS Construction Project Limits.

A. Systems Engineering Management Plan (SEMP)

Prior to proceeding with the ITS design, Concessionaire shall be responsible for developing the Project System Engineering Management Plan (Project SEMP) for the I-4 ITS Project. The Project SEMP shall comply with Federal Title 23 CFR 940 and Florida Statewide and regional ITS Architecture per Florida Procedure No. 750-040-003. Concessionaire shall submit the Project SEMP to FDOT within 120 days after NTP 1 for FDOT's review and approval. The Project SEMP shall be updated annually and as otherwise required under 23 CFR 940. Concessionaire shall adhere to and meet or exceed all requirements outlined in the then current approved Project SEMP, including all applicable appendices, throughout the Term.

B. Turnover of Existing ITS

All ITS devices referenced in Section D below in place on the Effective Date shall be replaced prior to Substantial Completion with new ITS devices. Poles, fiber, conduit, pull boxes, special pull boxes, loops and loop detectors shall be disposed of by Concessionaire unless otherwise noted. Concessionaire shall remove the following existing field devices from the ITS Maintenance Project Limits and turn over the removed devices to FDOT (deliver to FDOT DeLand maintenance facility) within seven (7) days of such removal: cameras; vehicle detection devices; Gig Ethernet Switches; Layer 2 Switches; power supplies; patch panels; cabinets; VSL; media converters; and DMSs installed in 2011 or later (installed by FPN 428915-1-92-01). DMSs installed prior to 2011 shall be disposed of by the Concessionaire.

C. ITS

Concessionaire shall design/procure and construct/install the following:

a. FON
   i. Fiber optic cable
   ii. Conduit
   iii. Pull Boxes
   iv. Communication equipment
   v. Ancillary equipment necessary for functionality

b. FMS
   i. Dynamic Message Sign Subsystem (FMS DMS)
   ii. Closed Circuit Television Subsystem (FMS CCTV)
   iii. Microwave Vehicle Detection Subsystem (FMS MVDS)
   iv. Ramp Signaling Subsystem (RSS)
c. ELMS
   i. Dynamic Message Sign Subsystem (ELMS DMS)
   ii. Closed Circuit Television Subsystem (ELMS CCTV)
   iii. Microwave Vehicle Detection Subsystem (ELMS MVDS)

All ITS devices shall conform to the requirements of the Standard Specifications and shall consist of those items found on FDOT Traffic Engineering Research Lab’s (TERL) FDOT Approved Products List (http://www3.dot.state.fl.us/trafficcontrolproducts/).

Concessionaire shall ensure each subsystem is designed and constructed/installed in accordance with the requirements of the Contract Documents. All devices shall be compatible with the then current devices utilized within the ITS.

Concessionaire shall be responsible for connectivity to the existing RTMC via the existing CFX fiber currently used by FDOT along both sides of State Road 408. Additionally, Concessionaire shall be responsible for connectivity to a future RTMC. Potential future RTMC will be located adjacent to I-4 on the east side southwest of State Road 423 (Lee Road) and will be deployed if FDOT determines to be feasible and funding is available. Concessionaire will not be responsible for construction and population of the future RTMC, but will be responsible for connectivity at the I-4 right of way line adjacent to the future RTMC.

Connectivity also includes the interoperability of ITS devices. If any proposed devices require software modification and/or additional software drivers to be operated from the RTMC, Concessionaire shall be responsible for providing such software modifications and/or additional software drivers. All new software and software drivers shall be the responsibility of Concessionaire and shall be tested and operational with the existing equipment at the RTMC by Concessionaire prior to implementation.

The design of the new ITS shall integrate with the overall existing ITS network and connect to the existing system at the east and west ends of the ITS Construction Project Limits per the ITS Construction Project Limits Map included in Volume III - Additional Mandatory Standards. As part of the ITS design, the Concessionaire shall provide a splicing scheme to connect to the existing system.

The ITS outside the O&M Limits along SR 408 shall be designed in accordance with Volume III – Additional Mandatory Standards, OOCEA Design Criteria.

D. ITS Devices

Concessionaire shall be responsible for maintaining all existing ITS devices within the ITS Construction Project Limits during the Construction Period per the ITS Construction Period Limits Map included in Volume III - Additional Mandatory Standards, excluding CCTV and detection associated with signalized intersections not integrated into the Controlling Software as of the Effective Date. The following sections include functional requirements of the ITS devices. These devices are present within both the ELMS and the FMS and the requirement herein shall apply to the devices in either system.
1. **Digital Video Encoder**

The encoded streams and SAP broadcasts shall be decoded and recognizable by FDOT's then current ITS decoders, including existing FDOT District 5 video wall decoders. The encoder shall have a COM port that is capable of camera pan, tilt, and zoom (PTZ) and shall be configurable/integratable with the then current Controlling Software. Video shall be provided in MPEG-2, MPEG-4 and H.264 compliant formats.

2. **Layer 2 Switch**

The Managed Field Gigabit Ethernet Switch (MFGES) shall support both Unicast and Multicast. A minimum of 128 Virtual Local Area Network (VLANs) and IP Multicast sessions shall be supported. The MFGES shall support VLAN classification, blocking, learning, filtering and forwarding. The MFGES shall be capable of automatic rerouting of data in case of an edge ring fiber cut or loss of an interconnected MFGES.

3. **Port Server**

New port servers shall be provided for devices that require serial communications in order to convert the signal to Ethernet. The port server shall provide user selected port(s) for RS-232, RS-422 or RS-485.

- Data channels shall be able to be independently configured for bit rates up to 115,200 bps, asynchronous and full/half duplex
- TCP/IP shall serve the port server operation
- All data ports shall be Female RJ-45
- Network Management shall be SNMP v1 or v3
- Ethernet ports shall be 10/100 Base-T

Concessionaire shall be responsible for configuration and integration of the port servers into the ITS. Configuration shall include the following:

- IP address, subnet, and gateway
- System Identification Information (Location, ID #)

4. **Layer 3 Switch**

All layer 3 switches shall comply with Standard Specification 684. The layer 3 switches shall support both Unicast and Multicast. A minimum of 4,096 VLANS and 16,000 Media Address Control (MAC) addresses shall be supported. The layer 3 switches shall support VLAN classification, blocking, learning, filtering and forwarding. The layer 3 switches shall be capable of sub-second convergence in the case of a ring fiber cut or loss of an interconnected layer 3 switch.

5. **Dynamic Message Sign (DMS)**

The DMS locations shall be based on the Conceptual Signing Plan set forth in Volume III – Additional Mandatory Standards. Any proposed deviation from these locations must be approved by FDOT. All DMSs (with the exception of the
Express Lane ingress two (2) line DMSs that are proposed to display “Minimum Toll”, “Congestion Ahead”, or “Express Lanes Closed” and complemented by static guide signs) shall be new walk-in type and shall be sized to provide the messages as shown in the Conceptual Signing Plan or as required by Standard Specification, whichever is the more stringent requirement. DMS’s shall provide, at a minimum, 20 mm full color displays and meet the requirements of FHWA for use as a standard guide sign. The Express Lane ingress two (2) line DMSs that are proposed to display “Minimum Toll”, “Congestion Ahead”, or “Express Lanes Closed” and are complemented by static guide signs are not required to be walk-in type and shall be sized to provide the messages as shown in the Conceptual Signing Plan. These two (2) line DMSs shall meet the same display requirements as the walk-in type signs (20 mm full color displays and meet the requirements of FHWA for use as a standard guide sign).

The following sign mounting criteria shall be followed:

- Box-span sign support structures shall be used to mount DMS centered over the direction of travel lanes.
- Pedestal-type sign support structures shall be used to mount DMS outside the clear zone.
- Concessionaire shall not mount DMSs on bridge structures.

All DMS support structures shall be located outside the roadway clear zone. The supporting structure for DMSs shall have walkways and safety railing for maintenance access without closing a lane of traffic. The DMS shall be equipped with tamper proof components to prevent unauthorized access to the walkway or sign.

The existing DMSs shall be operational during all phases of construction. If temporary DMSs are necessary during construction to replace or augment the existing system, these signs shall be equivalent in size and operation to the existing DMSs.

6. Closed Circuit Television (CCTV)

Concessionaire shall be responsible for the installation of a functional CCTV subsystem in accordance with the criteria specified below and the other requirements of the Contract Documents.

The CCTV subsystem shall have the following video coverage criteria:

- 100% video coverage of all lanes of the I-4 mainline and ramps throughout the Project Limits.
- 100% video coverage of interchanges and ramps throughout the Project Limits.
- 100% coverage shall be defined as video coverage of all roadway, shoulder, guardrail, median, clear zone areas, sign structures and supports, and ITS cabinets located within the Project Limits.
- Within areas of noise barrier installation, the above criteria may be modified to exclude any item located behind the noise barriers.
For roadway facilities with access to the I-4 mainline, coverage shall be a minimum of one-half of a mile from I-4 in each direction of each facility.

100% coverage of the DMS sign display (for sign verification – DMS sign display must be visible and legible).

100% coverage of toll sign display (a dedicated CCTV camera is required at each toll sign that shall not be used to meet above noted video coverage criteria – toll sign display shall be visible and legible).

The CCTV subsystem shall include, at a minimum, the deployment of the following field subsystem components:

- CCTV camera assembly;
- CCTV support structure (pole type, foundation, sign truss, etc.);
- Pole mounted cabinet (where applicable);
- Video encoder (where applicable);
- Surge protection; and
- Uninterruptible Power Supply

Concessionaire shall design, construct, and integrate the CCTV subsystem into the Controlling Software. The design shall include all required supporting hardware and software necessary for full integration to the specified tie-in location of the network as defined by the Contract Documents. Concessionaire shall provide reasonable assistance to FDOT to ensure functionality of the CCTV subsystem and all ancillary components. The connection is subject to FDOT’s reasonable approval. The design shall include:

- Final CCTV pole locations;
- Support structure design;
- Pole-mounted CCTV cabinet design;
- Utility coordination;
- Power service; and
- Line-of-sight assessments.

The CCTV subsystem shall be operated and controlled from the RTMC. The CCTV shall PTZ via the then current Controlling Software.

The CCTV cameras shall feature built-in electronic image stabilization. The CCTV cameras shall be wired for and have all firmware necessary to fully integrate into FDOT’s then current Controlling Software. CCTV poles shall be installed in areas with sufficient room for off-highway staging to allow future maintenance without lane closures. CCTV cameras shall be placed at a one (1) mile spacing maximum, while providing video coverage as noted in this section.

7. **Microwave Vehicle Detection Systems (MVDS)**

Within 60 days after NTP 2, a MVDS subsystem shall be deployed to replace the existing VDS within the ITS Maintenance Limits for monitoring traffic flow in accordance with the Standard Specifications. The MVDS subsystem shall provide vehicle classifications per FHWA vehicle classification criteria and handle low speed detection (below 10 mph) within the accuracy ranges established in
section 660 of the Standard Specifications. Concessionaire shall ensure compatible reporting of the data collected such that travel time calculations can be developed using FDOT’s then current methodology. Devices shall be located at the furthest termini (ingress or egress) of the mainline facility on each side of an interchange and maintain a maximum spacing along the General Use Lanes of 1/2 mile and along the Express Lanes of 1/3 mile. Data shall be reported separately between General Use Lanes and Express Lanes. The Concessionaire design shall determine if / where MVDS devices can be shared between General Use Lanes and Express Lanes or where separate devices are required to meet the above noted separate reporting requirements.

Detectors shall provide connectivity options for integration into legacy systems of the existing ITS and shall support all data protocols necessary to transmit collected data to the travel time data analysis devices of FDOT’s ITS.

8. RAMP SIGNALING SUBSYSTEMS (RSS)

(a) General

Concessionaire shall design, install, integrate, and test Ramp Signaling Subsystems (RSS) at the following locations:

Westbound on-ramps to the General Use Lanes from
- Orange Blossom Trail
- Kaley Ave./Michigan Blvd
- South Street
- Amelia Street
- SR 50

Eastbound on-ramps to the General Use Lanes from
- John Young Parkway
- Orange Blossom Trail
- Kaley Ave./Michigan Blvd
- Amelia Street
- SR 50
- Ivanhoe Blvd

At all remaining I-4 on-ramps, except system to system ramps and ramps to the Express Lanes, Concessionaire shall design, install, integrate and test the underground infrastructure (conduit and pull boxes) needed for a future RSS. Noted conduit at remaining on-ramps shall be tested and left with a pull-string terminated in the supporting pull boxes for future use.

The RSS shall provide the RTMC the ability to remotely control the ramp meters via the then current Controlling Software. Concessionaire shall provide FDOT with performance data including traffic demand volumes, back of queue, and release rates by ramp and by time of day (15 minute intervals) for 3 typical days out of one typical week each year, number of lanes metered and queue storage distance. Data collection shall occur six months after first turning on the ramp meters and annually thereafter.
No data shall be collected any earlier than 10 months after or any later than 12 months after any prior data collection. The RSS shall be designed to meet and/or exceed the testing requirements contained in Section D.8.e of this Section 3 Attachment 1.

The RSS shall include the following components:

- **Cabinet Equipment:**
  - Controller
  - Modem
  - Display Panel
  - Detector Amplifiers
  - Output/Power Distribution Assembly
  - Load switches
  - Current Monitor
  - Flasher for Warning Sign Beacon
  - Ability to support continuous operation for a minimum of 1 hour in the event of power loss
  - Power Distribution Unit (PDU)

- **Supporting Infrastructure:**
  - Conduit Infrastructure
  - Detectors
  - CCTV Camera dedicated to RSS monitoring (CCTV cameras shall provide 100% coverage of the ramp signal operations). This includes unobstructed views of the entire ramp, ramp signal heads, cabinet(s), and ramp signal signs. In addition, there shall be an unobstructed view of intersecting arterials to determine the impacts ramp queues may have on the arterials.
  - Two (2) Head (Red and Green) Signal Display (LED)
  - Flashing Beacons (LED)

- **Signing and Pavement Markings**
  - Ramp signaled When Flashing (W3-4)
  - One Vehicle per Green (R10-13)
  - Two Vehicle per Green (RXX-XX), if needed
  - All Vehicles Stop on Red
  - One car per Green Each Lane (R89-1)
  - Right Lane Ends (W4-2R)
  - Merging Traffic (W4-1)
  - 12 inch-wide stop bar running from edge line to edge line
- 6 inch-wide solid white centerline for a minimum distance of 250 feet upstream of the stop bar and terminated at the stop bar on two-lane metered ramps.

Concessionaire shall control and locate detectors for the RSS in accordance with Figure 1-1. Concessionaire shall also provide the following: a mainline detector as part of the FMS MVDS and RSS; upstream and downstream detectors as part of the FMS MVDS; and demand, passage, and ramp queue detectors as part of the RSS. Additionally, demand detectors shall be placed approximately six feet upstream of the stop bar to detect the presence of a vehicle queued at the ramp meter; passage detectors shall be placed approximately eight feet downstream of the stop bar to detect a vehicle having passed through the ramp meter; and queue storage detectors shall be placed at the head of the ramp to detect a queue prior to obstructing the mainline arterial or declaration lane, approximately 150 feet from the arterial edge of the travel lane.

![Ramp Signaling Subsystem Conceptual Layout](image)

**Figure 1-1: Ramp Signaling Subsystem Conceptual Layout**

The detectors for demand, passage, and ramp queue shall be designed and constructed in accordance with Section 660 of the Standard Specifications. Loop Type A shall be used if loops are used for demand, passage, and ramp queue detectors. Concessionaire may use the existing FMS MVDS to serve as the upstream, mainline, and downstream detectors or may install separate detection devices. Concessionaire shall ensure the traffic data reported to the then current Controlling Software via the ramp signaling controller matches the data reported via the FMS MVDS.

The RSS to be deployed shall be compatible with the then current Controlling Software to work with workstations at the RTMC for ramp
signaling operations. Concessionaire shall obtain the then current FDOT firmware and chips compatible with the then current Controlling Software. Concessionaire shall burn the then current firmware on the chips.

Motorists shall be given advance warning of the ramp signal operation prior to entering the signaled ramp by means of warning signs and yellow flashing beacons located at the head of the ramp or on the adjacent local arterial.

(b) RSS Firmware

The firmware shall support time of day ramp signal timing plans to accommodate diurnal variations in traffic flow. This may require that the firmware be updated from a central computer or in the field. Concessionaire shall be responsible for all firmware installation and updates as follows:

- Field installation and update of the firmware using the Model 170E (as defined in FDOT’s Minimum Specifications for Traffic Control Signals and Devices) controller keypad, LED display, indicators, communications input and output functionality.
- Use of the common access keypad for manual access to firmware parameters and controller operation.
- Input of pre-defined configurable firmware parameters.
- Input of firmware parameters for data collection and ramp metering algorithms.
- Firmware parameters downloaded from a central system.

Concessionaire shall provide all data storage or microprocessor equipment required to install and update the firmware.

(c) RSS Field Cabinets

Concessionaire shall design, install, integrate and test the RSS Field Cabinets. Any cabinet serving the RSS shall be a Model 334 (as defined in the Standard Specifications) cabinet and include a Model 170E controller. The cabinets shall also meet or exceed the Standard Specifications and the additional requirements contained herein. Concessionaire shall develop Technical Special Provisions for the RSS Field Cabinets.

(d) RSS Implementation Plan

Concessionaire shall develop and submit a comprehensive RSS implementation plan to FDOT for approval not later than 90 days prior to commissioning.
The plan shall include, at a minimum:

- Details of proposed arrangements for RSS commissioning. This shall define the minimum number of RSS stations to be turned on simultaneously
- A location map showing the proposed sequencing and grouping for RSS commissioning
- Schedule for RSS commissioning turn on
- Arrangements for schedule coordination with FDOT
- Proposed arrangements for coordination of field contacts
  (Concessionaire must designate a central point of contact at the RTMC during implementation)

(e) RSS Testing Requirements

Concessionaire shall ensure ramp signaling sites, loops, etc. are in proper working condition before testing can begin. During testing, Concessionaire shall provide a minimum of one staff person available in the field and a minimum of one staff person in the RTMC to ensure consistency between RTMC and field conditions.

Concessionaire shall pull the load cards prior to testing. After the test, Concessionaire shall ensure load cards are plugged into the cabinet and shall check to ensure no error traps have not been tripped prior to leaving the site.

Concessionaire shall ensure the ramp signal site is ready for testing by:

- Checking incoming voltage and document
- Ensuring all signs are legible, no tree trimming required, no down / damaged signs
- Ensuring load cards are plugged into the cabinet and signal heads / warning beacons operate
- Ensuring conflict monitor has not been tripped
- Ensuring all loops (mainline, demand, passage and queue) are actuating as vehicles pass
- Ensuring all signal heads are bagged (as applicable) prior to leaving the site

Concessionaire shall, at a minimum, develop a test plan to conduct the following tests:

- Firmware version test
- Local TOD setting test
- Ping test the controller from RTMC
- Power down / power up UPS from RTMC
- Metering from central TOD
- Metering in fuzzy mode
- Metering in local TOD mode with communication and power failure
- Local metering
- Red violation
- All then current Controlling Software ramp signaling functionality.

E. Communication Network

The quality of service of the ITS shall be verified at the RTMC. All fiber shall be tested within the ITS Construction Project Limits using Optical Time Domain Reflectometer (OTDR) that uses bi-directional averaging in accordance with the Standard Specifications. In lieu of reports required under section 633 of the Standard Specifications, Concessionaire shall certify all fiber meets the requirements of the Standard Specifications. All communications shall be received at light levels strong enough to be interpretable by the RTMC’s core switch GBICs and SFPs.

The ITS design shall include the necessary infrastructure and components to ensure the functionality of all ITS subsystems with the other subsystems of the ITS design. This shall include all other ITS subsystems of this Project as well as existing subsystems.

Two 144-strand single mode fiber trunk lines shall be provided within the Limited Access Right of Way, separated by a horizontal minimum distance of 20’. One 144-strand single mode fiber optic cable shall serve as the mainline backbone trunk. The second 144-strand single mode fiber optic cable shall provide complete redundancy. Concessionaire shall use only the blue, orange, green and brown buffer tubes and the remaining fiber shall be provided to FDOT. Each buffer tube shall contain 12 fiber optic cables.

Concessionaire shall provide a minimum of a single 24-strand single mode fiber optic cable for each lateral drop. All fiber strands shall be terminated at the cabinets, and patch panels shall be used at all locations. All 24-lateral drop strands shall be terminated in the Fiber Distribution Panel (FDP) using standard SC duplex connectors. All patch panel terminations shall be labeled reflecting industry standard strand count (buffer tube color and strand count/color). Splicing in the splice vault shall be by fusion method only.

All communications shall be maintained and remain fully operational throughout construction. In order to provide temporary communications throughout the duration of construction, Concessionaire may install fiber optic cable either underground or above ground outside of the ITS Construction Project Limits.

All ITS communications infrastructure shall be hardwired; no wireless communications shall be implemented as part of the ITS. All device communications shall be tied into the designated network communications point. All communications shall be transmitted over a secured network. The Internet Protocol (IP) address scheme shall follow FDOT’s naming scheme.
ITS and toll networks shall be separate, physically and logically. A single cable may contain both networks.

Concessionaire shall obtain FDOT’s prior written approval, for any proposed use of available fiber optic strands outside of the ITS Construction Project Limits to provide redundancy. FDOT does not guarantee a LOS of these fibers or a LOS of any devices along these links.

1. **Connectors**

Concessionaire shall use only Type SC connectors for patch panel connections unless legacy equipment requires otherwise.

2. **Jumpers**

Concessionaire shall provide jumpers of sufficient length and connector type to connect all ITS equipment. Sufficient length shall be no less than 110% of the separation between two connected devices and no more than 200% of the separation or 1 meter whichever is greater. All jumpers that span more than a single equipment rack shall be installed in a non-metallic fiber optic cable tray. All fiber optic slack loops present in the cable tray shall maintain the minimum bend radius per manufacturer’s specification.

3. **Splice Trays**

Individual fibers shall be looped one full turn within the splice tray to avoid micro bending. Concessionaire shall maintain a minimum bend radius of twenty (20) times the cable diameter during installation and ten (10) times the cable diameter after final assembly in the optical fiber splice tray. Concessionaire shall place buffer tubes and bare optical fibers such that there is no discernible tensile force placed upon them. There shall be only one buffer tube per splice tray. All splice trays shall be deep trays and capable of closing without the use of tape or other adhesive devices. Fiber optic strands shall not enter more than one splice tray.

4. **Fiber Termination Requirements**

A minimum of twelve (12) fibers in each direction shall be terminated in patch panels within all local hubs for a total of twenty-four terminated fibers. Patch panels shall be pre-terminated. All fibers, except for fibers used for tolls, that are run into a master hub, shall be terminated. All terminated fiber shall terminate to a patch panel. Pigtails shall be used for all fiber terminations. All pigtails shall match the color of the fiber strand that they are spliced to. Fiber used for tolls shall not be terminated and expressed through master hubs.

5. **Configuration and Integration**

Concessionaire shall be responsible for configuration and integration of the MFGES into the ITS. The configuration shall be in the FDOT approved uni-cast and multi-cast range. The range will be provided by FDOT upon request.
Configuration files shall be submitted to FDOT for approval in electronic form. Configuration files shall include the following:

- IP address, subnet, and gateway
- System Identification Information (Location, ID #)
- Enable LLDP on trunked ports
- Enable Loop Prevention Protocol (RSTP or MSTP)
- Disable all unused ports

As an alternative, Concessionaire may, with FDOT’s approval, elect to use Network Address Translation. To utilize this option, Concessionaire shall, within 60 days following NTP 1, submit a request in writing to FDOT.

Concessionaire shall be responsible for configuration and integration of the Layer 3 Switches into the ITS. Configuration shall include, at a minimum, the following:

- IP address, subnet, and gateway
- System Identification Information (Location, ID #)
- Enable LLDP on trunked ports
- Communications verification to the RTMC

6. Master Hub Communications

Both 144-strand fiber optic cables used for mainline I-4 communications shall be terminated at each master hub within the master hubs (except for fiber(s) used for tolls, which shall be expressed through). The communications from the master hub to field switches shall be 1 Gbps. An uninterrupted fiber link between master hubs shall be installed with a communications speed of a minimum of 10 Gbps.

Concessionaire’s design shall identify the location of the placement of new master hubs, cabinets and supporting devices. A master hub shall be provided within the I-4 and SR 408 Interchange at an existing cross connect field. Master hub cabinets shall be designed for ground mounting onto a concrete base in accordance with the Design Standards for Base Mounted Cabinets. Master hub locations, if outside of I-4 Limited Access Right of Way, shall have vehicle access from a nearby state road or partnering agency facility eliminating any requirement of right of way procurement. Master hub locations within I-4 Limited Access Right of Way shall require door alarm and internal video surveillance with external video surveillance provided by mainline CCTV viewing. Master hub locations outside of I-4 Limited Access Right of Way shall require fencing, door alarm, and both internal and external video surveillance. A minimum of 1 parking space shall be provided at master hub locations.

F. Supporting Infrastructure

1. Conduit (Communications)

All new conduit installed along I-4 to house the fiber optic cable runs for ITS communications shall be 1-1/4” diameter. Trunk line(s) conduit shall be four (4) x
1-1/4" conduit within innerduct. Drop line conduit shall be three (3) x 1-1/4" conduit. The separate conduits shall be colored white, orange, red, and yellow with no matching colors in any concurrent run. Conduit shall be proofed with mandrel and pressurization. Proposed bridge mount conduit shall not be visible upon approach to bridges from roadways traversing under the bridges (must be installed on interior web area of beams not visible from roadway or integral to bridge deck or barrier).

Two (2) of the four (4) trunk line conduits shall be empty and available for use by FDOT. Concessionaire may request use of such conduits, which FDOT may approve in its good faith discretion. With respect to trunk line and drop line conduits, one occupied conduit shall be the fiber optic communication cable and the second occupied conduit shall be the required tone wire.

2. Splice Vaults/Pull Boxes (Communications)

Splice vaults/pull boxes shall not be placed in a swale or drainage area. For any in-shoulder installation, the vaults and lids shall be traffic load rated. Each Lid shall be marked “FDOT Fiber Optic Cable.”.

3. Conduit (Power)

All new conduit installed along I-4 to facilitate the power distribution network shall be a minimum of 2" conduit and otherwise in compliance with the Contract Documents. Conduit shall be proofed with mandrel and pressurization. Proposed bridge mount conduit shall not be visible upon approach to bridges from roadways traversing under the bridges (must be installed on interior web area of beams not visible from roadway or integral to bridge deck or barrier).

4. Pull Boxes (Power)

Power pull boxes shall not be placed in a swale or drainage area. Standard pull box spacing for power shall not exceed five hundred (500) feet. Lids shall identify “FDOT Electric” on each lid.

5. Cabinets

Cabinets with locks and keys that are compatible with FDOT’s then current access control software, currently Cyber Locks brand, shall be furnished and installed by Concessionaire at all cabinet locations within the Project Limits.

6. Power

Minimum power requirements shall be determined by and designed by Concessionaire, sufficient for accommodating all ITS subsystems. Concessionaire’s ITS design shall provide for sufficient power to accommodate all devices deployed while limiting the number of power access points. This will be accomplished by combining devices and installing a power network within the ITS Maintenance Project Limits that can be completely switched over to generator power in the occasion of a power outage. The generator switch over shall accommodate 100% of the devices installed within the ITS Maintenance
Project Limits and future ramp meters where only underground infrastructure is provided. Power distribution design shall provide 100% power backup from generators (8 hour fuel supply) and an uninterruptable power supply.

Lighting and ITS may be powered from the same source provided separate circuits are provided with separate disconnects. Lighting power and ITS power shall not share conduits or pull boxes and no power shall share ITS splice vaults / pull boxes.

7. Generators

All power service locations shall have an integrated emergency generator system with remote management to provide an alternate source of power in the event of a power outage. The existing generators within the ITS Maintenance Project Limits, excluding those at microwave tower sites, may either be reused or replaced. FDOT makes no warranty as to the condition, remaining useful life or fitness for any particular purpose of the existing generators. If Concessionaire elects to replace existing generators or add additional generators, each such generator shall meet the generator requirements for Tolling Equipment Buildings in Section 3, Attachment 2 or exceed all capabilities currently supplied by the existing FDOT owned generators. Concessionaire shall have a monitoring system that notifies FDOT when a generator is running. This notification shall be immediate and provided through central software provided by Concessionaire.

G. Physical Requirements

The design shall protect integrated circuits from radio frequency interference and electromagnetic interference. The front panel shall include, at a minimum, indicators for power failure, communications faults, and port active status. The Layer 3 Switches shall be equipped with redundant (1+1), hot-swappable, load-sharing AC power supplies. The Layer 3 Switches shall be provided with mounting provisions. Rack mounting provisions shall be used. EIA 310 electronic packing standards are acceptable. The Layer 3 Switches shall not exceed 2 RU (3 inches) in height.

H. Security Requirements

The Layer 3 Switches shall support MAC filters and Layer3/Layer4 Access Control Lists (ACL’s) to prevent unauthorized access to the network. The switches shall support SNMPv3, SSLv3, and SSHv2 to provide encryption of switch management traffic. RADIUS and TACACS+ shall also be supported in order to provide centralized, remote authentication and administrative access to the switch. The Layer 3 Switches shall support management access filtering via MAC address, IP address, and VLAN.

I. Additional CFX Requirements

The ITS outside the O&M Limits along SR 408 shall be designed in accordance with Volume III – Additional Mandatory Standards, OOCEA Design Criteria.
The following requirements are included within the CFX right of way:

- Mainline fiber on State Road 408 within the ITS Construction Project Limits shall be the responsibility of the Concessionaire during the Construction Period.
- Fiber drops from mainline State Road 408 fiber shall be the responsibility of Concessionaire (including splice vaults and necessary splices) during the Construction Period.

All existing equipment within CFX right of way that is located within the ITS Construction Project Limits shall be replaced. The new equipment shall provide equal or better coverage and level of service and meet the requirements of OOCEA’s Design Criteria, found in Volume III - Additional Mandatory Standards.

J. 511 System

Concessionaire shall be responsible for updating the appropriate contact personnel of any changes affecting the ITS (6) hours prior to the change. Concessionaire shall coordinate with FDOT to identify the appropriate contact personnel. Changes warranting reporting include:

- Relocation of MVDS
- Relocation of DMS
- Relocation of CCTV

Concessionaire shall ensure accurate traveler information is made available via the existing public information web pages (www.FL511.com and www.moving-4-ward.com) by ensuring subsystem functionality.

K. Software

All ITS equipment supplied by Concessionaire, with the exception of CCTV, shall be compatible with the latest NTCIP standards and the then current Controlling Software. Concessionaire shall transmit data in a format compatible with the then current Controlling Software. Concessionaire shall be responsible for all related modifications and any changes that are necessary to the existing network or network devices for interoperability with the overall system. Concessionaire shall furnish a table of devices needing IPs by location (latitude and longitude) and device (ports used).

FDOT shall integrate all devices at the RTMC. Concessionaire shall furnish, install and integrate any additional software drivers necessary for functionality.

L. Experience Requirements

A minimum level of experience shall be required for any configuration efforts performed by non-FDOT personnel. Concessionaire shall submit for FDOT approval written documentation that all personnel involved in any configuration efforts of the ITS have had previous experience in the configuration of at least two intelligent transportation systems that have been in satisfactory operation for at least one year. The experience shall include cameras, network equipment, DMS, CCTV, MVDS, and all other system components that comprise the existing and new system being installed on this Project.
M. ITS Testing Requirements

Concessionaire shall comply with the testing requirements set forth in Volume II, Section 3, Attachment 4.

N. ITS Operation and Maintenance

Concessionaire shall comply with the ITS operation and maintenance requirements set forth in Volume II, Section 4.

O. Toll Gantries

See Tolls Infrastructure Requirements, Section 3, Attachment 2, Subsection 2.

P. Coordination

Concessionaire shall coordinate with FDOT and partnering agencies to obtain network infrastructure data. Concessionaire shall verify the collected infrastructure data and obtain any additional information necessary to produce accurate and reliable pre and post construction network designs. Concessionaire shall provide partnering agencies with notification regarding network adjustments that affect the agency’s network and record the date of notification. Concessionaire shall maintain all records of partnering agency coordination and shall make available to FDOT upon request.

The following list of contact personnel is provided for use in coordination efforts:

- FTE Traffic Operations Engineer - 954-975-4855
- FTE Director of Toll Operations - 561-470-6650
- City of Orlando Traffic Systems Engineer - 321-235-5350
- Orange County Traffic Engineer - 407-836-7866
- CFX Director of Operations - 407-690-5000
- Seminole County Traffic Engineer - 407-665-5686
- BrightHouse Networks –407-532-8587

Concessionaire shall contact the partnering agency’s designated personnel seven (7) days prior to any work that may affect any portion of that agency’s system.

In addition to ITS network items specific to the partnering agencies, local aesthetic requirements included in Volume III – Additional Mandatory Standards shall be adhered to by Concessionaire on items within the partnering agency’s right of way. Concessionaire shall coordinate with the partnering agencies prior to design and/or construction within the partnering agency’s right of way.

Q. Permitting for ITS

Concessionaire shall request in writing any installation or use of a temporary fiber optic trunk line outside of the I-4 Limited Access Right of Way for approval by FDOT.
I-4 Volume II - Technical Requirements
Section 3, Attachment 2 – Tolls Infrastructure Requirements

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# TABLE OF CONTENTS

## SECTION 1  GENERAL TERMS AND CONDITIONS .......................................................... 1
   A. Responsibilities .................................................................................................. 1
   B. Governing Regulations .................................................................................. 1

## SECTION 2  TOLL EQUIPMENT STRUCTURES (GANTRIES) ................................. 2
   A. General Requirements and Definitions ......................................................... 2
   B. Gantry Location Criteria .............................................................................. 2
   C. Gantry Structural Requirements .................................................................. 4

## SECTION 3  TOLL EQUIPMENT STRUCTURE (GANTRY) GEOTECHNICAL ....... 7
   A. General Requirements .................................................................................. 7
   B. Geotechnical Services .................................................................................. 7
   C. Gear Boxes and Upper Arms ...................................................................... 8
   D. Toll Equipment Arms (J-Arms) ................................................................... 9
   E. Toll Equipment J-Arm Attachment Hardware ........................................... 11
   F. Accessible Gantry Electrical ....................................................................... 11
   G. Cable Trays ................................................................................................... 12
   H. E6 Reader Mounting System ...................................................................... 12
   I. Wireway Transition and Wire Troughs ......................................................... 13
   J. Lightning Protection .................................................................................... 13

## SECTION 4  GANTRY-BUILDING INFRASTRUCTURE CONNECTION ............. 14
   A. General Requirements .................................................................................. 14
   B. Connections to New Toll Equipment Buildings ......................................... 14

## SECTION 5  BUILDING SITE AND ARCHITECTURAL ...................................... 15
   A. General Requirements .................................................................................. 15
   B. Building Site Requirements ....................................................................... 15
   C. Building Permitting Requirements ............................................................ 16
   D. Tolling Equipment Building Architectural Requirements ....................... 17
   E. Maintenance Pull-Off Area Requirements ................................................ 18

## SECTION 6  BUILDING ELECTRICAL ................................................................. 20
   A. General Requirements .................................................................................. 20
   B. Underground Electrical Utility Power Service .......................................... 20
   C. Electrical Power Panels ............................................................................ 20
D. Critical Power Panels .................................................................................................... 21
E. SCADA Control Panels ............................................................................................... 21
F. Uninterruptible Power Supplies (UPS) ........................................................................ 21
G. UPS Maintenance By-pass Switches (MBS) ............................................................. 21
H. Cable Trays ................................................................................................................... 22
I. Generators, Fuel Tanks and Automatic Transfer Switches ............................................ 22
J. Surge Protection Devices ............................................................................................. 23
K. Lightning Protection .................................................................................................... 23
L. Emergency Power-off Stations .................................................................................... 23
M. Interior Lighting .......................................................................................................... 23
N. Critical Power Receptacles ......................................................................................... 23
O. “Dirty” Power Receptacles ......................................................................................... 24
P. Access Control and Security System ......................................................................... 24

SECTION 7 BUILDING MECHANICAL .......................................................................... 26
A. HVAC Requirements ................................................................................................... 26

SECTION 8 TOLLING COMMUNICATIONS .................................................................. 27
A. General Requirements and Definitions ....................................................................... 27
B. Tolls Lateral Fiber Drops and Interconnects ............................................................. 28
C. Splicing and Termination of Drops and Interconnects ................................................ 28
D. Tolls Communications Cabinets ................................................................................ 29
E. Impacting Existing Tolls Communications ............................................................... 29
F. Fiber Optic Communications Testing ........................................................................ 30

SECTION 9 LOOP PAVEMENT AND ELECTRICAL ................................................... 30
A. General Requirements ............................................................................................... 30
B. Loop Pavement Requirements .................................................................................. 31
C. Loop Pavement Placement Restrictions .................................................................... 32
D. Loop Conduit Stub-Ups ............................................................................................ 32
E. Loop Pullboxes .......................................................................................................... 33
F. Loop Homerun Conduits ........................................................................................... 34

SECTION 10 CABLE DISTANCE LIMITATIONS .......................................................... 34
A. Definitions and Measurement .................................................................................. 34
B. Cable Distance Limitations ....................................................................................... 35
C. Boosters and Amplifiers ........................................................................................... 35
SECTION 11 TOLLING POINTS ACCEPTANCE; TOLLING EQUIPMENT INSTALLATION AND TESTING ........................................................................................................ 35

A. Tolling Point Acceptance Walk-Throughs ........................................................................ 35
B. Tolling Equipment Installation Scheduling ......................................................................... 36
C. End to End Testing ............................................................................................................. 37

SECTION 12 TRAFFIC CONTROL AND TOLL LANE CLOSURE RESTRICTIONS ........................................................................................................ 39

A. General Requirements ........................................................................................................ 39
B. TTC Responsibilities .......................................................................................................... 39
C. Temporary Traffic Control Design ..................................................................................... 39
APPENDIX LIST

The following Appendices are incorporated into and made a part of the Technical Volumes. These Appendices are located within Volume III and are titled “General Tolling Requirements.”

Appendix 1 - Technical Special Provisions
Appendix 2 - Toll Equipment Arm Positioning Diagrams and Equipment Areas, Wind Load Areas, and Toll Equipment Layouts
Appendix 3 - Toll Equipment Cabling Inventory
Appendix 4 - Loop Electrical Infrastructure Layout and Details
Appendix 5 - Access Control System Details
Appendix 6 - Door Hardware and Access Control Devices Cutsheets
Appendix 7 - Encompass 6 Technical Specifications
Appendix 8 - Toll Equipment Building Power Plans
Appendix 9 - Toll Equipment Building Power Riser Diagram
Appendix 10 - UPS with External Maintenance Bypass Switch Riser Diagram
Appendix 11 - Emergency Power Off Riser and Wiring Diagrams
Appendix 12 - SCADA Block Diagram
Appendix 13 - CCTV Riser Diagram and Site Plans
Appendix 14 - Tolling Communications Cabinet Details
Appendix 15 - Toll Equipment Building Fiber Optic Cable Splicing Details
Appendix 16 - Tolling Site Acceptance Checklist
Appendix 17 – Conceptual Accessible Gantry Site Plan
Appendix 18 - Not Used
Appendix 19 - Not Used
Appendix 20 - Accessible Gantry Sample Plans and Calculations
Appendix 21 - Toll Equipment Building Sample Plans
Appendix 22 – Electrical Site Sample Plans and Details
SECTION 1 GENERAL TERMS AND CONDITIONS

A. Responsibilities

1. Concessionaire shall furnish and install infrastructure necessary to support the Toll Equipment Contractor (TEC) provided Toll Collection System. This shall include tolling equipment structures (gantries) and associated elements, special pavement (asphalt or concrete) in the tolling area under the gantry to accommodate the inductive traffic classification and detection tolling loops, NEMA enclosures, concrete pads, directional bores, underground ductbanks (ductbanks), wireways, pullboxes, conduits, tolling equipment support buildings (buildings), building penetrations, maintenance pull-off areas, generators, fuel storage tanks, automatic transfer switches, uninterruptable power supplies, maintenance by-pass switches, communications (fiber optic, telephone), utilities, mechanical, plumbing, electrical and intelligent transportation systems (ITS).

2. Except as otherwise expressly provided in this Volume II, Section 3, Attachment 2, the Appendices to this Volume II, Section 3, Attachment 2, set forth minimum design requirements for the tolling infrastructure, provided that Concessionaire shall be solely responsible for compliance of the final design and construction with all applicable codes, standards and the requirements of the Contract Documents.

3. Concessionaire is ultimately responsible for the design and construction of the tolling infrastructure included in this Volume II, Section 3, Attachment 2. Concessionaire shall also be responsible for all permit applications and fees for obtaining building related permits, and utility connections (power, communications, etc.) as defined in the Contract Documents.

4. FDOT’s TEC shall furnish, install, and test all new tolling equipment and tolling equipment cabling.

5. FDOT shall commission and activate the TEC provided Toll Collection System such that it is collecting tolls.

B. Governing Regulations

1. This Volume II, Section 3, Attachment 2 alone may not contain all tolling infrastructure requirements necessary to enable the successful installation and testing of a fully functional Toll Collection System. For additional requirements, directly or indirectly related to tolling, Concessionaire shall refer to current versions of standards and codes listed under the Governing Regulations in Volume II Section 2.B.

2. Concessionaire shall coordinate with and obtain approval from FDOT regarding any conflicts early enough in the process so as not to impact the Project Schedule, budget, and quality.
SECTION 2  TOLL EQUIPMENT STRUCTURES (GANTRIES)

A. General Requirements and Definitions

1. Toll facilities outside the O&M Limits along SR 408 shall be designed in accordance with the Volume III – Additional Mandatory Standards, OOCEA Design Criteria.

2. Concessionaire shall furnish and install gantries and all associated gantry components and supporting elements as described in this Volume II, Section 3, Attachment 2.

3. Concessionaire shall provide accessible gantry design. The accessible gantry design provides a deck (walkway) to maintain equipment over live traffic and allows for secured access to the deck via an elevated platform and connecting stairway reached with maintenance vehicles such as scissor lift and bucket trucks. The tolling equipment must be able to retract to the deck where it can be serviced over live traffic by trained technicians. Refer to the Accessible Gantry Sample Plans in Volume III for additional information.

4. Concessionaire’s design shall follow the requirements of Appendices 17 and 20 of this Volume II, Section 3, Attachment 2 as they relate to accessible gantry. FDOT will not accept deviations from the requirements of Appendices 17 and 20, except for the location of tolling equipment (and associated attachments), foundation size and length, upright length and size, chord member sizes and spacing (transverse and longitudinal) to the extent existing site conditions require adjustments thereto to ensure that the gantries and related appurtenances are structurally sound.

5. Concessionaire’s design of the tolling equipment structures, including foundations, tolling equipment structure plans, and the site adaptation of any conceptual materials at each Tolling Point are the responsibility of Concessionaire.

6. The attachment of overhead roadway signs to gantries shall not be permissible without express written consent of the I-4 Ultimate Construction Program Manager.

7. Tolling equipment support assembly design shall take into account tolling equipment clearances, j-arm adjustments, line of sight of cameras/VDACs, positioning, separation, rigidity, supports and wiring as described in this Volume II, Section 3, Attachment 2.

8. The coating of all gantries shall be hot-dipped galvanized.

B. Gantry Location Criteria

1. Gantries shall be located on tangent segments of the roadway. If the gantry cannot be located on tangent segments, then the gantry may be located in curved roadway segments with radii greater than 3,000 feet.

2. The Tolling Pavement Area tangent or curved section of the roadway shall, at a minimum, be 100 feet in length split in two equal 50-foot long segments located before and after the gantry centerline (50 feet before and 50 feet after), assuming that the gantry centerline and the tolling equipment centerline are the same. If the
centerlines mentioned in this paragraph are not the same, Concessionaire shall coordinate with and obtain approval from FDOT on the final placement of the tangent section for each gantry during the roadway design.

3. Gantries shall be 90 degrees (perpendicular) to the roadway striping and pavement loops of all lanes and shoulders of the existing and future roadway alignments, except in curved roadway segments. The gantry centerline shall be perpendicular to the middle segment of the roadway, such that the curve is bisected equally and the deflection distance is equal at both ends of the 100-foot Tolling Pavement Area.

4. Tolling Points shall not be located in proximity to the low points of sag vertical curves or other areas along the roadway that could experience standing water and/or flooding.

5. The lane and shoulder widths shall not vary in the 100-foot long Tolling Pavement Area.

6. Merge movements shall not begin or end (in whole or in part) within 200 feet of the gantry centerline and the beginning or end of the ramp taper.

7. The horizontal portion of the gantry truss shall be level and not follow the cross slope of the roadway.

8. The j-arm spatial positioning is directly related to all roadway aspects, especially the lane/shoulder widths and roadway striping. The requirements for lateral positioning for the overhead j-arms for single-lane tolling movements and for tolling movements with two or more tolling lanes can be found in Volume III.

9. For accessible gantries, Appendices 17 and 20 of Volume II, Section 3, Attachment 2 provide the positioning requirements for the j-arm retraction assembly system elements (gear box/upper arm/j-arm/etc. as defined elsewhere in this document) for typical lane and shoulder configurations.

10. The gantry and associated structural support shall provide for a staggered mounting pattern of the overhead j-arms. This staggered pattern requires the approach set of j-arms be approximately 11 feet and 6 inches in front of the departure set of j-arms. The staggering dimension is directly dependent on the TEC used by FDOT. FDOT will provide the final staggering dimension upon written request from Concessionaire on or before October 1, 2018. Concessionaire shall coordinate with and obtain approval from FDOT on the final j-arm positioning requirements for each gantry during the gantry design.

11. The difference in elevation between the lowest and highest j-arms shall not exceed 2 feet and 2 inches for each tolling movement. This shall apply to the existing tolling movement configuration and planned expansions (widening, auxiliary lanes, etc.). Depending on the overall elevation difference between opposing tolling movements, the gantry truss over each tolling movement may have to be constructed at different elevations in order to comply with these requirements. The truss vertical elevation should be established based on the maximum change in pavement elevation within the tolling loop area. Divide the difference between highest and lowest elevations in the tolling loop area by two and add it to the lowest elevation to attain the average
pavement elevation (APE). The APE sets the truss height based on the neutral j-arm adjustment position which allows for 13” of adjustment up or down. The APE should be accurate to three decimals.

12. The vertical clearance between the final riding surface of the pavement and the centerline of the following gantry-mounted tolling equipment devices shall be as follows: 18 feet and 6 inches for antennas and for violation enforcement cameras, and 24 feet and 6 inches for Vehicle Detection and Classification laser units (VDACs). These clearances shall apply for every lane and shoulder.

13. The gantry shall be designed and located to ensure that the operation of all tolling equipment is not impacted (obstructed, causes interference, etc.) by any member (structural/non-structural) of the gantry or nearby elements such as sign structures or bridges. There shall be at least 3 inches between the highest point of any gantry-mounted tolling equipment device (antennas, cameras, and illuminators only) and the lowest point of any gantry truss element to prevent interference and obstruction issues between the gantry and the tolling equipment.

14. Volume III provides longitudinal tolling equipment arm positioning requirements for different roadway cross sections. Concessionaire shall coordinate with and obtain approval from FDOT on the final longitudinal location of all j-arms during the gantry design.

15. The transverse (to the traffic direction) centerline of the gantry and the transverse centerline between approach and departure overhead tolling equipment (Toll Equipment Centerline – see Volume III) shall be the same in Concessionaire’s design in those locations where the gantry is situated on a tangent. The Toll Equipment Centerline is used for locating the in-pavement loops under the gantry. If Concessionaire situates the tolling equipment on a curve, the Toll Equipment Centerline shall be used as the basis for providing 100 feet of Tolling Pavement Area (as required in Volume III) centered in the Toll Equipment Centerline.

16. There shall be no high voltage (> 600V RMS) line closer than 200 feet from a gantry site. For the purposes of this requirement, the gantry site shall be defined by the perimeter around the gantry, loop pavement, and equipment building.

17. Roadway light poles shall be a minimum of 75 feet away from the gantry.

18. Concessionaire shall not install any devices located within the Project ROW that transmit or emit radio or microwave energy within 500 feet of any gantry, unless Concessionaire obtains prior FDOT approval.

C. Gantry Structural Requirements

1. Notwithstanding any other provision contained in the Contract Documents, gantry structures shall utilize only multi-chord structures configured as spans (two (2) uprights) (see Item 7 below).

2. Volume III contains the tolling equipment cross section and projected areas to be utilized to perform wind-load analysis. Concessionaire shall request from FDOT, not earlier than FDOT has retained the TEC (anticipated to occur in 2018), and FDOT...
will provide cut sheets for each piece of tolling equipment for use in final structural analysis.

3. Gantries and their foundations shall be designed for the 50 year mean recurrence interval wind speed based on the location per Volume 9 of the FDOT Structures Manual in effect.

4. Gantry designs shall include a fatigue analysis per LTS-6 and Volume 9 of FDOT Structures Manual.

5. Gantry uprights shall be filled with concrete 8 feet above the top of the foundation regardless of roadside barrier/protection devices. Details/notes shall be provided in the structural plans.

6. The design weight of the tolling equipment mounted on each tolling equipment arm is 50 pounds. This does not include the weight of the tolling equipment arm.

7. The tolling equipment gantries shall be designed to:
   a. Use two uprights in a “span” configuration. For two-span gantries with a center upright, the horizontal truss elements shall be designed as simply-supported independent spans which share a common center upright.
   b. Provide a multi-chord truss-type superstructure system for the horizontal element.
   c. Limit the natural frequency of any element that supports the equipment to less than 500 Hz. Equipment is defined as any electronic device that is mounted to the gantry.
   d. Limit displacements when the structure is subjected to a wind load of 30 mph, such that the averaged effect on the highest and lowest superstructure chords shall be within the following two limits:
      1) Movement of any point along the chords shall not exceed 1.25 inches relative to the position of any other point along the chords; and
      2) Rotational orientation of any point along the chords shall not exceed 8 milliradians (0.47 degrees) relative to the rotational orientation of that point at rest, for all three rotational axes.
   e. Accommodate a 12 feet wide x 10 feet high future sign panel on each upright approximately at the truss elevation. No additional sign area needs to be considered.
   f. Support a minimum uniform dead load of 200 plf across the entire structure, divided as appropriate among the superstructure chords, to account for the self-weight of the tolling equipment and attachments (conduits, etc.). Verify the actual load and use the actual load for design if it exceeds the minimum load. Identify the loads used during design on the plans for future reference and usage.
   g. Provide vertical clearance as outlined in this document, and horizontal clearance as outlined in Volume II, Section 2.
8. The structural elements supporting the tolling equipment shall:
   a. Meet all rigidity requirements indicated above for the gantry.
   b. Attach to the gantry with a redundant connection system.
   c. Include all equipment supporting elements depicted in the Accessible Gantry Sample Plans.

9. Shop Drawings are required for all work and shall include the following:
   a. Field verification of all upright heights.
   b. Foundation elevations necessary to ensure minimum vertical clearance.
   c. Anchor bolt orientation with respect to centerline of structure and direction of traffic.
   d. Equipment support elements (e.g. j-arms, etc.).
   e. Method to be used to provide required camber.

10. Fabrication:
    The structure shall be shop assembled and inspected by FDOT prior to shipment. Shop assembly shall occur after galvanization.

11. The following minimum material requirements shall be met:
   a. Steel Pipe: API-5L-X42 or ASTM A500, Grade B.
   b. Steel Plate/Angles: ASTM A709, Grade 36 or 50 (as required by design, see the Accessible Gantry Sample Plans).
   c. Weld Metal: E70XX.
   d. Bolts: ASTM A325 Type 1 (1/2” minimum diameter).
   e. Anchor Bolts: ASTM F1554, Grade 55 with ASTM A563 Grade A heavy-hex double nuts.
   f. Galvanization: Nuts, bolts and washers per ASTM F2329. Other steel items per ASTM A123.
   g. Aluminum: Aluminum Association’s Alloy 6061-T6 for Tubes; Aluminum Association’s Alloy Aluminum Association’s Alloy 5052 for Sheets; ASTM B209 for Plates; ASTM B221 for Extruded Tube Bar, Rod, and Shapes.
   h. Fiberglass: With fire retardant orthophthalic polyester architectural grade resin that meets Class 1 flame rating of 25 or less per ASTM E-84 requirements.
   i. Stainless Steel: ASTM A555, Type 316 for Sheets; ASTM A240, Type 304L for Plates; and Type 304 for U-Bolts.
   k. No field welding shall be permitted.
   l. No shop-welded splices shall be permitted for uprights and chords.
SECTION 3 TOLL EQUIPMENT STRUCTURE (GANTRY) GEOTECHNICAL

A. General Requirements

Concessionaire shall be responsible for furnishing the geotechnical services described herein.

B. Geotechnical Services

1. Geotechnical investigation associated with gantries shall consist at least of one standard penetration test (SPT) boring within ten (10) feet horizontal distance from each proposed column serving the gantry/associated elements and to a depth of at least ten (10) feet below the design tip elevation of deep foundations.

2. Gantries shall be supported by driven piles or drilled shafts. Shallow foundation systems are not permitted. Lateral deflection shall be limited to less than 1 inch at top of pile or drilled shaft under service design load for the wind speed in Section 2.C.3 of this document. Foundations must work in conjunction with the gantry superstructure to satisfy the other requirements of Section C. Requirements of Soils and Foundations Handbook Appendix B shall be followed for selection of soil and rock design properties and design water table.

3. Where the foundation is located in close proximity to sloping ground, include the portion of the foundation with less than 2.5D horizontal soil cover (face-of-foundation to face-of-slope) in the unsupported length, and design the portion of the foundation with more than 2.5D horizontal soil cover as though founded in level ground (D is foundation width).

4. After foundation length is determined based on design analyses, two (2) feet shall be added to the required foundation length when subsurface soil and/or rock are modeled as non-cohesive material and six (6) feet shall be added to the required foundation length when any soil or rock is modeled as cohesive material in design. A minimum safety factor of 2.5 shall be provided for axial capacity of the deep foundations service load.

5. Preformed pile holes installed in rock shall be grouted following FDOT Standard Specifications Section 455 to restore lateral stability of the foundation unless the rock is modeled as non-cohesive soil in design.

6. Design of the drilled shaft shall include reduction of skin friction in limestone associated with the use of temporary casing.

7. Concessionaire shall comply with the following construction requirements and shall demonstrate such compliance in the Design Documents:

   a. Shallow Foundations: Shallow foundations shall not be allowed.

   b. Driven Piles: All preformed pile holes installed through rock shall be grouted according to Volume III, Additional Mandatory Requirements, unless the rock is modeled as non-cohesive soil in design and sand backfill is used per the Contract Documents.
c. Drilled Shafts:

(1) Drilled shaft supporting a gantry shall be installed using a temporary casing extending to the drilled shaft tip elevation.

(2) Concessionaire shall perform cross-hole sonic logging (CSL) tests at every drilled shaft supporting tolling equipment structures and the results shall be included in the foundation certification packages.

8. A Pile Installation Plan and a Drilled Shaft Installation Plan shall be submitted for all the gantry foundations following the same requirements for bridge structure foundations, as set forth in Volume III, Additional Mandatory Standards. A signed and sealed foundation certification package shall be submitted for each foundation unit following the same requirements as the certification package for bridge foundations. A foundation unit is defined as all the foundations within a gantry. Concessionaire shall be responsible for the items listed in Volume II, Section 3.D(2)(a) & (2)(b).

C. Gear Boxes and Upper Arms

1. Concessionaire shall be responsible for all engineering aspects of the gantry, gear boxes, upper arms, j-arms, and associated attachment hardware. The attachment of the j-arms to the upper arms shall conform to the rigidity and vibration requirements defined in the Contract Documents.

2. The gantries shall be designed to support the required equipment retraction assembly system. The gantry design shall support the gear boxes, upper arms (j-arm support arm), j-arms, and all associated arm and equipment attachment hardware such as u-bolts, mounting plates, pipe saddle plates, and self-locking nuts as shown in the Accessible Gantry Sample Plans.

3. The gear boxes shall meet the requirements provided in Appendix 20 Accessible Gantry Sample Plans.

4. There shall be one retraction assembly (gear box/upper arm/j-arm/etc.) per j-arm for all I-4 Express Lanes and shoulders. For roadway cross sections (per direction) with two (2) lanes and two (2) shoulders, Concessionaire shall install nineteen retraction assemblies at each gantry. For roadway cross sections with three (3) lanes and two (2) shoulders, Concessionaire shall install twenty-four retraction assemblies at each gantry.

5. Each j-arm shall be individually retracted to the gantry walkway without retracting other j-arms.

6. The retraction assemblies shall retract the tolling equipment devices mounted to the j-arms to the gantry walkway. When retracted, the tolling equipment device shall completely fall within the gantry walkway as shown in the Accessible Gantry Sample Plans or as follows: be at a minimum 6 inches away from the gantry facade (inside of the walkway) and be at a maximum 5 feet above the gantry walkway top grating.

7. The gear box attachment system to the gantry shall allow a minimum 6-inch adjustable lateral movement (right and left) of the gear boxes so that the upper arms...
and j-arms can be placed where needed by the TEC as shown in the Accessible Gantry Sample Plans. The lateral movement shall not cause any conflict with other retraction assemblies (gear box/upper arm/j-arm) and gantry elements (facade, facade posts, etc.) as shown in the Accessible Gantry Sample Plans. This requires that the facade posts be removable so that they can be repositioned within the gantry facade. The lateral adjustability shall be able to accommodate future lanes and shoulders without the need to modify the positioning of any facade elements such as facade posts and panels.

8. One (1) spare gear box per gantry and complete set of attachment hardware shall be provided to FDOT and delivered to the FTE Central Repair Depot at Turnpike Milepost 99. The Contractor shall provide two (2) weeks advance notice prior to delivering the spare items to FDOT. The spare gear boxes and attachment hardware shall be delivered to FDOT in the original manufacturer’s storage packaging and labeled with the packaging contents.

9. The upper arms shall be as shown in the Accessible Gantry Sample Plans. Each upper arm shall be attached to a single gear box and as shown in the Accessible Gantry Sample Plans. The upper arms shall allow the j-arms to move in all three dimensions as shown in the Accessible Gantry Sample Plans. All upper arms shall be identical and shall not follow the cross slope of the roadway, including the shoulders.

10. The positioning of gear boxes and upper arms shall be determined from the Accessible Gantry Sample Plans and this Volume II, Section 3, Attachment 2. The positioning is directly related to the number and width of lanes and shoulders in a traffic direction as described herein. The final positioning of each gearbox for each equipment j-arm will be provided by the Department on or before October 1, 2018.

11. One (1) spare upper arm and complete set of arm attachment hardware per gantry shall be provided to FTE and delivered to FTE’s Central Repair Depot at Turnpike Milepost 99. Concessionaire shall provide two (2) weeks advance notice prior to delivering the spare items to FTE. The spare upper arm and attachment hardware shall be delivered to FTE in the original manufacturer’s storage packaging. If the manufacturer does not use packaging for storage, the arms shall be wrapped in heavy duty industrial grade clear plastic and labeled. Hardware shall be boxed and labeled. See Appendix 20 hereto for additional details.

D. Toll Equipment Arms (J-Arms)

1. Concessionaire shall furnish and install j-arms in accordance with the requirements of this Volume II, Section 3, Attachment 2 and the Accessible Gantry Sample Plans. If a conflict exists between the requirements in this Volume II, Section 3, Attachment 2 and the Accessible Gantry Sample Plans, the requirements in this Volume II, Section 3, Attachment 2 shall supersede those of the Accessible Gantry Sample Plans.

2. All j-arms shall meet the criteria described herein and shall have identical dimensional properties, with the exception of the tolerances dictated herein.

4. The j-arms shall have an outside diameter of 2.875 inches with a tolerance of +/- 0.015 inches along the straight sections of the arm (ANSI H35.2) and +/- 0.057 inches along the curved arm section (Pipe Fabrication Institute Standard ES-24). This means that the diameters of the major and minor axes (x and y planes) shall be 2.875 inches +/- 0.015 inches (straight section) or +/- 0.057 inches (curved section).

5. J-arm roundness must be checked at the fabrication facility before shipping to the jobsite in accordance with the Producer’s Quality Control Plan. FDOT may check for J-arm roundness at any time. Concessionaire shall provide material testing reports (MTRs) that show the material meets ASTM B429, Alloy 6061-T6. There shall be traceability between the MTRs and the material actually used for the J-arms. FDOT may test the j-arms for Yield and Tensile strength at any time pursuant to Section 3, Attachment 4 of the Technical Requirements.

6. The j-arm fabricator shall be an approved fabricator of aluminum products pursuant to Volume III, Additional Mandatory Standards.

7. Each j-arm fabricator shall provide a letter to FDOT certifying that the fabricator is currently equipped and capable of fabricating the j-arms based on the criteria defined in this Volume II, Section 3, Attachment 2. This letter shall be provided at least one (1) month in advance of furnishing the sample arm. FDOT and/or its representatives reserve the right to visit and inspect the fabrication facility, methods, and materials at any time.

8. Concessionaire shall provide a sample j-arm from its j-arm fabricator at no cost to FDOT for review and approval prior to fabricating any j-arms for the Project. The entire fabrication process of the sample j-arm shall be observed by FDOT and/or its representatives. QAM shall confirm that the j-arms are in compliance with the Contract Documents. If the sample j-arm does not meet the requirements of the Contract Documents, FDOT will not accept the sample j-arms until the design and tolerance criteria are met for a sample arm j-arm. Acceptance of the sample j-arm by FDOT does not constitute acceptance of all j-arms provided subsequently for the Project. FDOT may measure all j-arms for conformance to design and tolerance criteria and reject any j-arms that do not meet the design and tolerance criteria. Sample j-arm(s) that meet criteria may be used as production j-arms.

9. Shop drawings from one fabricator shall not be used by another fabricator.

10. The point of attachment of the j-arm to the upper arms (accessible gantries) shall be in the longest straight section of the j-arm and as described herein. All j-arms shall be limited to 2 feet and 2 inches (26 inches) of vertical adjustability in each direction (13 inches up/down) from the midpoint of the longest linear section of the tolling equipment j-arm. Design Documents for the gantries shall depict at a minimum: the j-arms attached in their final positions to achieve vertical clearances defined in this Volume II, Section 3, Attachment 2 (elevation view), the j-arms attached in their final positions to achieve the lateral (plan view) positioning defined in this Volume II, Section 3, Attachment 2, the vertical adjustment of each j-arm above or below the line of optimal attachment point based on the critical roadway elevation reference.
line; the roadway cross slope at the gantry; and finally the roadway cross section at the gantry.

E. Toll Equipment J-Arm Attachment Hardware

1. Hardware shall be provided in accordance with Appendix 20 hereof.

2. The j-arms shall be mounted to the upper arms via u-bolts, saddle plates, self-locking nuts, mounting plates, etc. as shown in the Accessible Gantry Sample Plans.

3. Hardware materials shall be per the Accessible Gantry Sample Plans.

4. Hardware shall be designed to allow three-dimensional adjustments of the j-arms as defined in this Volume II, Section 3, Attachment 2.

5. Telescoping brackets or supports shall not be allowed.

6. Elements susceptible to galling shall be treated with anti-galling treatment.

7. Hardware presenting any signs of damage will not be accepted by FDOT.

8. Concessionaire must perform a dissimilar material analysis during design, construction, and operations and maintenance, and shall be resolved in a manner acceptable to FDOT. The analysis must take into account any interaction of dissimilar materials and clearly address the methodology employed to ensure no adverse effects associated with the contact of dissimilar metals. Concessionaire shall ensure that all dissimilar metals are separated with an inert, dielectric material.

9. All hardware connections shall be designed such that they do not loosen over time.

10. All hardware shall be furnished and installed without presenting any signs of rust or wear.

11. Refer to the Conceptual Accessible Gantry Site Plans located in Appendix 17 hereof and the Accessible Gantry Sample Plans located in Appendix 20 for additional details.

12. Spare hardware shall be provided as required in this Volume II, Section 3, Attachment 2.

F. Accessible Gantry Electrical

E6 enclosures and associated elements shall not be located on gantry facade, hand railings, or elements containing tolling equipment arm assemblies which are supporting existing or future lanes. See Appendix 7 for E6 and E6 Fiberglass NEMA 4X enclosure details.

Concessionaire shall coordinate with and obtain approval from FDOT on the final E6 mounting requirements during the gantry design. The TEC shall furnish and install the E6 Fiberglass NEMA 4X enclosures and the E6s.

Conduit, junction boxes, receptacles, and surge suppressors for gantry mounted CCTV and PTZ cameras shall be furnished and installed. There shall be eight conduits and
eight junction boxes for data wiring (video). There shall be one conduit, one junction box, one receptacle, and one surge suppressor for power wiring for the PTZ camera. Camera locations are preliminarily shown in the Accessible Gantry Sample Plans. Final location of CCTV conduit, junction boxes, etc. shall be approved by FDOT during design to ensure the CCTV and or PTZ camera angle of views shall not be obstructed. Refer to the Appendices to this Volume II, Section 3, Attachment 2, for additional details and requirements such as conduit types, routing and termination methods.

See Appendices hereof for required electrical infrastructure for the gantry, site and tolling equipment. Concessionaire shall be responsible for all adaptations to meet all site specific conditions and requirements defined in the Contract Documents.

G. **Cable Trays**

1. A minimum of two 24-inch wide cable trays for data and two six-inch wide cable trays for power mounted along the entire horizontal sections of the gantry shall be furnished and installed.

2. The data cable trays shall be used for the camera/VDAC/CCTV/PTZ data and antenna RF cables.

3. The power cable trays shall be used for VDAC and CCTV/PTZ camera power cabling, receptacles, and gantry walkway lighting.

H. **E6 Reader Mounting System**

1. Concessionaire shall furnish and install a galvanized unistrut mounting rail system on the accessible gantry maintenance walkway facade hand railing element for the TEC to mount each individual TEC-provided E6 (Automatic Vehicle Identification reader) Fiberglass NEMA 4X enclosure vertically to the accessible gantry structure as shown in the Accessible Gantry Sample Plans.

2. The positioning of each E6 enclosure in the accessible gantry, spatial relationship between E6 enclosures, conduit size and quantity, cable tray, wireway and wire trough sizes and quantities shall be as shown in the Accessible Gantry Sample Plans, except as follows:

   a. E6 enclosures, and associated elements, shall not be located on gantry facade hand railing elements containing tolling equipment arm assemblies supporting existing or future lanes. See Appendix 7 of this Volume II, Section 3, Attachment 2, for E6 and E6 Fiberglass NEMA 4X enclosure details.

   b. Concessionaire shall coordinate with and obtain approval from FDOT on the final E6 mounting requirements during the gantry design. The TEC shall furnish and install the E6 Fiberglass NEMA 4X enclosures and the E6s.

3. FDOT will provide one E6 Fiberglass NEMA 4X enclosure to Concessionaire for unistrut mounting system construction and dimensioning purposes. Concessionaire shall obtain the E6 Fiberglass NEMA 4X enclosure from FTE’s Central Repair Depot located at Turnpike Milepost 99. Concessionaire shall provide two weeks’ written notice prior to picking-up the E6 Fiberglass NEMA 4X enclosure.
I. **Wireway Transition and Wire Troughs**

1. The horizontal cable tray sections along the gantry truss shall terminate in a minimum of five (5) 6”x6” fiberglass wireways dual rated NEMA 3R and 12. The fiberglass wireways should run horizontally on the truss prior to descending vertically on the gantry column.

2. The wireways shall descend on the column located on the tolling equipment building side of the roadway and terminate in their respective NEMA 3R wire troughs.

3. For all wireways, furnish and install drain fittings at the vertical to horizontal transition prior to the wire trough termination. The drain fittings shall maintain the NEMA rating of the wireways.

4. The E6 wireways shall terminate in the E6 wire troughs.

5. The Data wireways shall terminate in the Data wire troughs.

6. The Power wireway shall terminate in the Power wire troughs.

7. All wire troughs shall be mounted as follows: 4 feet maximum from bottom of wire troughs to adjacent concrete slab finished floor surface.

8. There shall be a concrete pad encompassing all wireways and wire troughs to provide a stable and safe area for the maintenance technicians to deploy portable ladders for safe access. This concrete pad shall be combined with the pad that shall also be furnished and installed for the loop pullboxes.

9. All wireways shall be supported as shown in the Accessible Gantry Sample Plans.

10. Wire troughs shall be properly supported by independent supporting elements such as unistrut supports. Wire troughs shall not solely be supported by the incoming or outgoing wireways and rigid conduits.

11. At no time shall wire troughs be installed such that they cannot be properly accessed and/or block access to the E6 enclosure or to other wire troughs.

12. Wire troughs shall be NEMA 3R in accordance with Volume III.

13. All wire troughs and conduits originating from the wire troughs shall be labeled on the exterior side via a method of heavy-duty plastic tags designed for exterior applications and epoxy glued to the exterior surfaces. Final labeling method to be coordinated with and approved by FDOT.

J. **Lightning Protection**

1. The fabricator of the galvanized gantry columns shall furnish and install a grounding stud (lug) at the base of each accessible gantry column for connecting to the lightning protection system.
SECTION 4  GANTRY-BUILDING INFRASTRUCTURE CONNECTION

A. General Requirements

1. All tolling equipment cabling originating from the gantry, E6 enclosure, and loop pullboxes shall be routed to the tolling equipment cabinets in the new or existing equipment buildings via underground ductbanks, directional bores, pullboxes, splice vaults, wireways, conduits, wire troughs, conduit chases, and building penetrations.

2. Underground ductbanks shall be encased in concrete if the underground conduits are not routed underneath the site concrete sidewalk limits.

3. For each tolling movement, the following conduit shall terminate in the tolling equipment building:
   a. Two (2) 4” conduits from the E6 wire trough(s);
   b. Three (3) 4” conduits from the data wire trough(s);
   c. Four (4) 2” conduits from each power wire trough(s).

4. For each tolling equipment building, the following number of conduits shall terminate under the communications cabinet:
   a. Two (2) 2” conduits from the data wire trough(s).

5. The conduit routing necessary for toll collection shall be furnished and installed such that the cable distance between the originating and terminating devices at the gantry, roadside, and the building are kept within the cable distance limitations defined in the Contract Documents.

6. Concessionaire shall submit Shop Drawings showing in detail how all site conduits shall be routed from origin to termination point. The shop drawings shall also show in detail how the conduits shall stub-up in the building floor slab and how the conduits shall penetrate the exterior building wall and interior building walls (if applicable as defined elsewhere). These shop drawings shall be scaled ½ inch = 1 foot for the building floor slab or wall penetration detail and ¼ inch = 1 foot for the site conduit routing view or as coordinated with and approved by FDOT.

7. The final positioning of the conduit stub-up in the building floor slab and wall penetration point shall be field verified and approved by FDOT during building design or at a stage early enough in their construction that shall allow for corrections to be made if discrepancies are discovered during the inspection.

B. Connections to New Toll Equipment Buildings

1. For new tolling equipment buildings, all conduit incoming from the gantry and roadside shall terminate under the working space areas of the tolling cabinets (westbound and eastbound working spaces) and under the communications cabinet as described herein. References to “eastbound” herein include northbound and references to “westbound” herein include southbound.

2. The westbound working space is the area between the westbound and eastbound tolling cabinets. The eastbound working space is the area between the eastbound and the communications cabinet.
3. When a tolling movement requires multiple tolling cabinets, the eastbound and westbound working spaces sometimes are combined into a single working space in order to provide more floor space to accommodate the additional tolling cabinets. In this case, all incoming conduit terminates in the combined working space.

4. Please refer to other sections in this Volume II, Section 3, Attachment 2 for additional conduits.

5. All conduits shall be stubbed up through the building floor slab and cut to 1" above the finished building floor with a cable ground bushing installed at both ends or connected to the ground grid by other approved method.

The Toll Equipment Building Sample Plans contain information on how the incoming conduits stub-up in the building floor. These plans may not show the exact number of conduits, however the overall grouping and positioning of the different conduit types/sizes (data, E6, power, etc.) is approximately shown. Also note that these plans may show the conduits stubbed-up underneath the tolling cabinets while the conduits should be stubbed-up within the working spaces as previously described.

SECTION 5  BUILDING SITE AND ARCHITECTURAL

A. General Requirements

1. Concessionaire shall be responsible for all aspects of the buildings, building foundation, and associated infrastructure. This includes engineering design, shop drawings, fabrication, delivery, construction, and modifications of the buildings and associated infrastructure.

2. Except as otherwise noted, all new tolling equipment buildings shall comply with the general design intent requirements set forth in Appendix 21 of this Volume II, Section 3, Attachment 2. In case of discrepancy between Appendix 21 hereto and the provisions in the body of this Volume II, Section 3, Attachment 2, the latter shall govern to the extent of any such discrepancy.

3. Concessionaire shall furnish and install buildings and building sites in compliance with the Florida Building Code and other codes and standards having jurisdiction over the Project.

B. Building Site Requirements

1. Concessionaire shall coordinate civil site plans with all other drawings.

2. The new equipment building doors shall swing open 170 degrees minimum and shall be unobstructed to provide access for maintenance technicians and tolling equipment.

3. There shall be a continuous 5 feet wide, 4-inches thick concrete sidewalk from the maintenance pull-off area to the building door to allow for the transporting of the tolling equipment cabinets to the building.

4. Reference Appendix 17 Enlarged Conceptual Typical Toll Equipment Accessible Site for conceptual site dimensions. Should site conditions dictate the sidewalk opposite the door side of the building can be reduced from 5 feet to 2.5 feet. This reduction relieves none of the other site requirements and access criteria established herein.
5. The tolling equipment cabinets currently used are 36 inches deep x 32 inches wide x 83.5 inches high. Access from the parking area pavement to the interior of the building shall not contain any obstacles in its path such as curbs and shall take into account these cabinet dimensions plus 12 inches required for the dolly or other device used to transport the cabinets. Toll equipment cabinet sizes may change and Concessionaire shall coordinate with and obtain approval from FDOT on the final cabinet sizes to be used during the building design.

6. The building door opening and surrounding areas shall allow for the tolling equipment cabinets to be placed inside the building without going around the building or removing the door.

7. The maximum linear distance between the closest tolling equipment building wall and the gantry shall not exceed 12 feet.

8. Bollards shall be furnished and installed around any items exposed to motorized vehicles such as maintenance/passenger vehicles, lawn mowers, and etc. Bollards shall also be furnished and installed if required by code or agency (i.e. pad mounted transformers, etc.).

9. Bollards shall be galvanized, concrete filled, primed, painted yellow, 4 inches in diameter, 6 feet nine inches high (4 feet above finished grade), with properly sized concrete poured foundation. Furnish and install bollards for transformers, meters, and other items as required by code, municipality, authority having jurisdiction, or Utility Owner. Provide removable bollards as required.

10. In case bollards are needed, bollards shall be spaced at 4 feet (or less if code/agency required) apart around all generators, fuel tanks, HVAC units, E6 enclosures, and wire troughs.

11. Bollards shall be located to allow for full access and full operation (full door opening and accessing) of the E6 enclosure and wire troughs.

12. Furnish and install a condensate dry well for HVAC equipment. The dry well location is to be clearly identified in relation to the equipment building. The dry well shall not be located in the direct path of the conduits originating from the gantry and tolling loop pull boxes.

13. Furnish and install a fire extinguisher in the vicinity of the generator and fuel storage tank area. The fire extinguisher shall be located in an area hidden from general public view. Furnish and install enclosure, mounting hardware, and signing as required.

C. Building Permitting Requirements

1. Each Tolling Point as part of the Project shall have a separate building permit for each new tolling equipment building and site improvements.

2. Concessionaire shall submit all documents through FDOT to obtain all building permit approvals and State Fire Marshall approvals for tolling equipment buildings in compliance with all applicable codes, regulations, and/or standards, as well as other requirements as described in the Contract Documents.

3. Concessionaire shall be responsible for preparing any necessary permit estimates and all documents required thereby to obtain permits required for all work.
4. It is not anticipated that Concessionaire will be required to obtain any permits from any government agency for tolling infrastructure components external to FTE, except for the State Fire Marshall, since FTE is self-permitting for tolling infrastructure only.

5. As self-permitting, FTE utilizes an outside contractor to perform the functions associated with the permitting process for toll plaza work. All costs associated with use of this outside contractor shall be the responsibility of FDOT except for inspections that fail which shall require a fee for re-inspection and be paid by Concessionaire.

6. When a permit is required, Concessionaire shall submit the permit documents (plans, specifications, estimates, etc.) to FDOT for review and issuance of a building or demolition permit to Concessionaire.

7. Building permit applications shall be submitted to FDOT.

8. During construction, Concessionaire shall coordinate all required inspections with FDOT.

D. Tolling Equipment Building Architectural Requirements

The following provisions shall apply with respect to tolling equipment buildings:

1. Civil site plans shall include the following information: drainage, grading, geometry, parking, pavement, concrete pads, signing and sidewalks.

2. All new exterior equipment, roof, wall or grade mounted that are required to be kept operational for this Project shall be permanently secured with appropriate tie downs and anchors to prevent uplift by high velocity wind and shall be designed in compliance to the governing codes having jurisdiction.

3. All exposed concrete floors in interior spaces shall be coated with a clear coat sealer to reduce concrete dusting.

4. Prior to delivery/transport, all new prefabricated precast concrete buildings must undergo inspections at 50% of completion and 100% of completion by the QAM with FDOT representative(s) present. Inspections shall be inclusive of structural, architectural, electrical, mechanical, and tolls. No precast concrete building shall be transported until formally accepted by the QAM and in compliance with approved Shop Drawings, the Contract Documents, all applicable Laws, and any agencies having jurisdiction.

5. For each Tolling Point that requires a free standing building, furnish and install a building designed as follows:
   a. The building shall be a six sided precast concrete box structure that has been approved by FDOT.
   b. The building shall be designed for a wind speed of 150 mph, exposure C, and category IV regardless of the local requirements unless the local requirements require design for a higher wind speed.
   c. The minimum roof live load shall be 65 pounds per square foot (PSF) and the floor load shall be 125 PSF.
d. The foundation shall be a monolithic slab with a turned down edge designed for the allowable bearing conditions at each site and for the wind load criterion specified above.

e. The precast concrete building shall be set in a grout or mortar bed such that there is uniform bearing between the precast concrete slab and the foundation slab.

f. Where shims are required for leveling, they shall be galvanized steel.

g. Concessionaire shall submit Shop Drawings that are signed and sealed by a Professional Engineer registered in the State of Florida. The Shop Drawings shall include the documents and calculations that were submitted during the authority having jurisdiction’s approval process as well as lifting, setting, and anchorage for the building.

6. The side of the building closest to and parallel to the roadway shall be the high roof side of the building. The roof shall slope to the side of the building furthest from the roadway. The high roof side and the two ends of the building shall have parapets topped with a prefinished fluoropolymer coating metal coping system.

7. Louver penetrations for temporary A/C units shall not be provided.

8. Exterior elevations shall have vertical and horizontal reveals as indicated on Toll Equipment Building Sample Plans. Exterior finish on precast concrete surfaces shall be textured Class 5 finish.

9. Exterior doorframes and doors, louvers, SBS modified bitumen roof system, coping system, etc. shall have State of Florida product control Notice of Acceptance (NOA).

10. The new tolling equipment buildings shall have one door made of steel with a cast-in steel frame. All doors and conduit openings shall be suitably protected and sealed to prevent the ingress of water, moisture, dust and wind driven rain.

11. All doors shall fully swing open without being obstructed by any other items such as pull-boxes, wire troughs, conduits, etc. There shall be an unobstructed perimeter of at least 5 feet around all doors.

12. Interior walls and ceilings shall be surfaced with ¾” thick A/C non-fire rated plywood with paint finish. Resilient base shall be furnished and installed at base of plywood wall finish.

13. Concessionaire shall furnish and install new fire extinguishers and brackets in all new buildings in compliance with applicable Laws.

14. The mechanical design of the building shall not accommodate a temporary portable A/C unit.

15. Concessionaire shall refer to Volume III for additional requirements and information.

E. Maintenance Pull-Off Area Requirements

1. Maintenance pull-off areas (pull-off areas) shall be provided in accordance with the requirements set forth in the Contract Documents.

2. In general, the pull-off areas shall be a safe area to allow for maintenance technicians to access and maintain tolling equipment buildings and roadside tolling
infrastructure such as tolling equipment buildings, gantries, gantry-mounted wireways, E6 enclosures, gantry-mounted E6s, wire troughs, and signal boosters.

3. Pull-off areas shall be provided on the building side of the roadway for all Tolling Point locations. In addition to being provided on the building side of the roadway, pull-off areas shall be provided on the roadway side opposite the building if any ground-mounted tolling equipment (except loop pullboxes) is present on that roadway side.

4. Pull-off areas shall be accessible by maintenance vehicles such as box vans, lift trucks, bucket trucks, scissor lifts, and other types of maintenance vehicles during and after construction for tolling equipment mobilization, installation, testing, commissioning, and maintenance activities. The size of a typical tolls maintenance vehicle is 100 inches x 300 inches and the distance between the rear bumper and the rear wheel centerline is 90 inches. Refer to the Toll Equipment Installation Requirements section for more details.

5. For Tolling Points with accessible gantries, the pull-off areas shall allow for maintenance vehicles to park and deploy the vehicle anchoring outriggers immediately adjacent to the suspended accessible gantry stairwell to allow for a bucket or scissor lift truck platform to be raised up to the level of the suspended stairwell landing such that maintenance technicians can be safely transferred from the raised platform to the suspended stairwell lower landing. Refer to Appendix 20 hereof for additional information.

6. For Tolling Points with accessible gantries, the maintenance pull-off areas shall allow for maintenance vehicles to park and deploy the vehicle anchoring outriggers immediately adjacent to the suspended accessible gantry stairwell to allow for a bucket or scissor lift truck platform to be raised up to the level of the suspended stairwell landing such that maintenance technicians can be safely transferred from the raised platform to the suspended stairwell lower landing. As such, the gantry elevated platform and column design/positioning shall accommodate the vehicle dimensions previously described and in addition the following dimensions:

   a. The distance between the rear bumper and the truck rear wheel centerline is 90 inches.

   b. The distance between the exit door of the truck-mounted platform and the truck rear bumper is 6 feet and 3 inches.

   c. The distance between the ground elevation and the top of the truck-mounted platform is 11 feet and 7 inches.

   d. There shall be at least 3 feet between the truck rear bumper and any site elements (bollards, column pedestal, etc).

   e. There shall be a maximum of 4 inches between the exit door of the truck-mounted platform and the elevated gantry platform.

7. The pull-off areas shall allow for ingress and egress, parking, and staging of at least two maintenance vehicles.

8. The pull-off areas shall be stabilized and physically protected by barrier wall specified in the Design Standards. The access driveway and parking area shall be asphalt paved throughout its entire length (from the main road shoulder or lane
to/including the parking area) and match the shoulder pavement design of the adjacent shoulder in which the connection is made.

9. The slopes of the maintenance pull-off areas shall meet ADA requirements.

SECTION 6 BUILDING ELECTRICAL

A. General Requirements

1. Appendix 8 of this Volume II, Section 3, Attachment 2, contains the positioning requirements for the various electrical components in the tolling equipment building or room housing the TEC-provided Toll Collection System. Concessionaire shall locate the building electrical components as shown in Appendix 8.

2. If the top of any pullboxes that directly or indirectly connect to the building are located at a higher elevation than the building finished floor elevation, Concessionaire shall furnish and install intermediate pullbox(es) between said pullboxes and the building to eliminate the possibility of water intrusion due to water pressure head condition.

B. Underground Electrical Utility Power Service

1. New underground electrical power service (power service), meter, and all associated components shall be furnished and installed for each building.

2. Power services shall be 400 Amp, 120/240 Volt, single phase, 3 wire. If the existing electrical power service matches the requirements herein in their entirety, Concessionaire may re-use it.

3. Power services including the utility transformer shall be dedicated to the tolling equipment building and shall not be shared with non-tolling electrical loads such as ITS, roadway lighting, etc.

4. It is the responsibility of Concessionaire to coordinate with the Utility Owner and complete all work associated with electrical services prior to the first walk-through with FDOT. It is the responsibility of Concessionaire to obtain all new physical addresses that may be required for the initiation of new electric service and pay any required costs and fees.

5. Concessionaire shall coordinate with Utility Owner the plans and locations of the service points and pull boxes and pay all associated costs to provide electric power services to the proposed facilities included as part of this Project.

6. All service lines in FDOT right of way shall be underground.

7. The utility power service conduits shall be as specified by the utility company as required for the completion of electrical service to the site.

C. Electrical Power Panels

1. One new main distribution panel (MDP) for all buildings shall be furnished and installed. New MDPs shall be 400A and shall comply with the requirements in Volume III.

2. One new emergency distribution panel (EDP) and associated components for all buildings shall be furnished and installed. The access control and security system devices shall be fed by the emergency distribution panel (EDP).
3. The electrical loads used in load calculations shall be the rated full load of the equipment.

D. Critical Power Panels
   1. There shall be one critical power panel for buildings supporting a single tolling movement and two critical power panels for buildings supporting two tolling movements.
   2. Critical power panel shall be rated for 100A, 42 circuits, 120/240V, 1 phase, 3-wire. Concessionaire shall adjust the size of the main circuit breaker as required if the UPS size is larger than 16 KVA.
   3. The critical power panel shall only serve the following systems: tolling, communications, and Supervisory Control and Data Acquisition (SCADA).

E. SCADA Control Panels
   1. Concessionaire shall furnish and install one SCADA control panel for each building as described herein and in Appendices 1, 12 and 14 of this Volume II, Section 3, Attachment 2.
   2. The SCADA control panels shall be manufactured by CED Unit Number FDOTRR3402 when the building is equipped with two (2) UPS units and two (2) critical power panels, or FDOTM340SS when the building is equipped with one UPS unit and one critical power panel.
   3. The SCADA control panel shall be powered from the critical power panel.
   4. The SCADA control panel shall be connected to the building assets as shown in Appendices 1, 12 and 14 of this Volume II, Section 3, Attachment 2. Refer to such Appendices for complete requirements of a fully functional system such as all associated sensors, meters, raceways, conductors, contacts, etc. that shall be furnished and installed by Concessionaire.

F. Uninterruptible Power Supplies (UPS)
   1. Concessionaire shall furnish and install one (1) UPS for buildings supporting one (1) tolling movement and two (2) UPSs for buildings supporting two (2) or three (3) tolling movements.
   2. UPSs shall be 16 KVA at a minimum. Concessionaire shall be responsible for verifying the loads on the UPS system(s) to determine if larger units are required for each building within the Project.
   3. Furnish and install one ¾” conduit from each UPS communication port card area to the ceiling mounted cable tray. See Appendix 1 for a complete set of UPS requirements.

G. UPS Maintenance By-pass Switches (MBS)
   1. Concessionaire shall furnish and install an exterior manual maintenance by-pass switch (MBS) to each new UPS.
   2. The MBS shall be fed by two separate power sources (two (2) separate breakers, two (2) separate conductors, and two (2) separate conduits) from the appropriate power panel.
3. The feeders shall not be spliced nor go thru exterior disconnects prior to nor after terminating in the by-pass switch.

4. The exterior maintenance by-pass switch shall by itself by-pass the power away from the UPS when maintenance is required without going thru an off switch position and cutting the power to the equipment it is feeding.

5. The exterior by-pass switch shall not be located over other devices in the building and be located at an unobstructed location that can be easily accessed.

6. The by-pass switch shall not cause a power outage to the critical power panel when it is put in either by-pass mode and/or UPS mode. Refer to Appendix 10 for additional details and requirements.

H. Cable Trays

1. Concessionaire shall furnish and install ceiling mounted cable trays to accommodate data and power cables.

2. Cable trays shall be as follows: NEMA VE compliant (NEMA VE 1, 2, etc.), UL rated, “Cable Tray” ladder type with i-beam side rails (shall have a solid top flange inside and outside with added support material, solid bottom flange inside and outside with added support material, solid I-beam side rail), made of structural grade aluminum 6063-T6, ASTM B633 electrogalvanized zinc finish, 24” wide, 6” high side rail, 5” loading depth, 6” rung spacing, divided (2/3 reserved for data & 1/3 for power), with 6 drop-out fittings (to protect cables as they exit the tray).

3. The cable tray length shall depend on the room size it will be in. At a minimum, the “main core” of the cable tray shall run the entire length of the largest dimension (length or width) of the room size it will be installed in. The cable tray shall also run from the wall penetration points to the main core of the cable tray for any buildings requiring wall penetrations.

4. Conduit shall be furnished and installed from: critical power panels, SCADA panel, access control and security system, backbone lateral drops, generator, fuel tank, HVAC, temperature/humidity sensors, and any other building devices to the ceiling mounted cable tray over to all of the tolling equipment system cabinets and communication cabinets located in the new tolling equipment buildings. Refer to Appendix 1 for additional details.

5. Furnish and install transition fittings, attachments, and supports for all conduits terminating in the cable tray. Furnish and install six (6) ladder drop-out (waterfall) transition fittings for the transition of the cables from the cable tray to the building cabinets so that the cables are always supported as they enter or leave the cable tray.

I. Generators, Fuel Tanks and Automatic Transfer Switches

1. Concessionaire shall furnish and install diesel engine generator packages, automatic transfer switches and fuel tanks at all buildings.

2. The generators and fuel tanks shall be located within 30 feet of the building.

3. The fuel tanks shall be located to allow refueling with fuel trucks with up to 100 feet long hoses.
4. The building emergency power system serving the tolling equipment buildings shall not serve non-tolling related electrical loads such as ITS systems, roadway lighting, etc.

5. Refer to Appendices 1, 9 and 11 for additional requirements.

J. Surge Protection Devices
1. Concessionaire shall furnish and install surge protection devices (SPDs) for new items that are furnished and installed.
2. Refer to Volume III for additional requirements, particularly Appendices 1, 8, 9, 12, and 13.

K. Lightning Protection
1. Concessionaire shall furnish and install a lightning protection system for all new Tolling Points.
2. In addition, each tolling equipment building lightning protection system shall be electrically connected to the associated gantries at the base of each vertical support, the engine generator enclosure, and the fuel storage tank metal vent pipe by underground #2/0 AWG bare copper conductors.
3. The underground lightning protection system conductors shall not be installed within 36 inches of conduits that serve the tolling equipment (gantry-mounted, loops, communications, etc.).

L. Emergency Power-off Stations
1. Concessionaire shall furnish and install emergency power-off (EPO) stations as described in the Appendices of this Volume II, Section 3, Attachment 2.

M. Interior Lighting
1. Concessionaire shall furnish and install a lighting system consisting of a minimum of six (6) ceiling-mounted fluorescent light fixtures to maintain average lighting levels of 40-footcandles.

N. Critical Power Receptacles
1. Concessionaire shall furnish and install receptacles fed from each critical power panel as described in Appendices 1, 8, 14, and herein.
2. In addition to the breaker requirements in Appendix 1, furnish and install a minimum of two, 240 Volt, 20 Amp, 2 pole, remotely operated molded case circuit breakers. These breakers shall comply with all other requirements in Appendix 1.
3. Wiring at 20A breakers in the critical power panel(s) shall be connected and run to the power side of the cable tray. Terminate each of the 20A circuits in its own separate power receptacle. Receptacles shall be mounted to the power side of the cable tray in junction boxes and be located immediately above the tolling equipment cabinets for the connection of the tolling equipment cabinets as shown in Appendix 14. Wiring shall be cable tray rated wiring.
4. Wiring at 20A breakers in the critical power panel(s) shall be connected and run to the power side of the cable tray. Terminate each of the 20A circuits in its own
separate power receptacle. Receptacles shall be mounted to the power side of the cable tray in junction boxes and be located immediately above the communications cabinet for the connection of the communications cabinet power strip(s) and other communication cabinet devices as shown in Appendix 14. Wiring shall be cable tray rated wiring.

5. Concessionaire shall coordinate with and obtain approval from FDOT on the final tolling equipment and communications cabinet locations inside the building prior to approval of the Shop Drawings.

O. “Dirty” Power Receptacles

1. Concessionaire shall furnish and install one (1) duplex 20A receptacle in each interior building wall. Receptacles shall be flush mounted in new buildings and surface mounted in existing buildings.

2. Three (3) receptacles shall be powered from the Emergency Distribution Panel (EDP) and one (1) from the Main Distribution Panel (MDP).

3. Refer to Appendix 8 for additional requirements.

P. Access Control and Security System

1. The access control and security system devices shall be fed by the EDP.

2. All doors shall fully swing open without being obstructed by any other items such as pullboxes, wire troughs, conduits, etc. There shall be an unobstructed perimeter of at least five (5) feet around all doors.

3. Concessionaire shall furnish and install select access control and security system devices and wiring as described herein and in Appendices 5, 6 and 13. Concessionaire shall also furnish and install all necessary conduit, junction boxes, fittings, strain relief CGB fittings, connections, and miscellaneous hardware for power and data cabling of the access control and security system hardware and devices as described herein and as shown in Appendices 5 and 6. Refer to Appendices 5 and 6 for detailed information on the access control and security system items to be furnished and installed.

4. For each exterior building door, Concessionaire shall furnish and install the following access control and security system devices, door hardware, and infrastructure (conduit, pullboxes, etc.):
   a. Push-Bar with strike, Single Poll Double Throw (SPDT) switch, and Request to Exit (RX) option.
   b. Electrified lever trim with key way retraction of the latch on the outside trim (door handle shall not be fixed).
   c. Connect all door device wiring from the door device to the access control system cabinet via the power transfer device and raceway system (conduit, pullboxes, etc).
   d. Power Transfer Loop Security Door Controls (SDC) Model PT-3V. The pullbox for the power transfer loop shall be surface mounted, single gang, installed at the push-bar level and 6” away from the door frame on the door hinge side or as required to allow for the transfer of all push-bar wires from the door to the wall.
mounted pullbox/conduit system. There shall be conduit from the power transfer loop pullbox to the collector pullbox.

e. Door Position Switch with extra heavy duty aluminum bar stock, DPDT switch, and three foot stainless steel armored cable. The door position switch shall be mounted on the top of the door and door frame as shown in Appendix 5. There shall be conduit from the door position switch to the intermediate pullbox. Connect all door position switch wires to a conductor wire and run it from the door position switch to the access control system cabinet via the collector pullbox and conduit system.

f. Motion detector with high performance request-to-exit detectors mounted on top of the door and door frame as shown in Appendix 5.

g. The card reader pullbox shall be flush mounted (secure side/ exterior side), single gang, installed vertically 44”-48” above the finished floor, and 12” away from the door frame on the door handle (lever) side of the door frame. The exterior pullbox shall be connected to an interior pullbox surface mounted via conduit or as required. The interior pullbox shall be connected to the collector pullbox via conduit.

h. The collector pullbox surface shall be mounted NEMA 1 with screw cover. The intermediate pullbox shall be connected to the security system enclosure via conduit.

i. The access control system cabinet shall be connected to the ceiling mounted cable tray (data side) via conduit. The cabinet shall also be connected to a power distribution panel for obtaining 120 VAC power.

j. For quantity, type, and size of conduit, pullboxes, and wiring, the Contractor shall refer to Appendices 1, 5 and 6.

k. Furnish and install conduit/pullbox supports, wall penetrations/cuts, and associated infrastructure and hardware elements as required.

l. Furnish and install access control system door hardware compliant with UL, ANSI 156.3 Grade, and all applicable codes; fail-secure or non-fail safe hardware options such that the door remains secured/locked in the event of power outages; and hardware with key way retraction of the latch on the outside lever trim.

5. FDOT and the QAM shall inspect and approve all security door hardware, security system, and access control devices, and wiring type prior to installation. FDOT may request items to be disassembled and re-assembled by Concessionaire during this inspection to verify that items are in compliance. Items that are not in compliance with all requirements stated herein will be rejected by FDOT and shall be replaced with new items in compliance with the requirements herein. A minimum of seven (7) days’ notice is required to schedule the security door hardware, security system, and access control devices inspection.

6. Building rooms with only one exterior door are no longer required to be equipped with either a Master Magnum Vehicle Hasp Lock model number M736XKAD (master lock) or steel slide bolt locks with provisions for a pad lock. The dead lock is also no longer required. This is for clarification purposes due to the fact that Appendix 21 hereto depicts both the slide bolt and dead lock.
7. For each of the room(s) housing the new TEC provided Toll Collection System and fiber optic or telephone communications, Concessionaire shall furnish and install two (2) pullboxes and conduit to the data side of the ceiling mounted cable tray for two (2) interior FDOT-provided CCTV surveillance cameras. The pullboxes shall be mounted on opposite walls of the room to allow for coverage of the front and rear sides of the tolling equipment and communications cabinets. Concessionaire shall coordinate with and obtain approval from FDOT on the final location of the pullboxes during building design. Refer to Appendix 13 for additional details and requirements.

8. For each building, Concessionaire shall furnish and install three (3) pullboxes and conduit to the data side of the ceiling-mounted cable tray for three exterior FDOT-provided CCTV surveillance cameras. The pullboxes shall be mounted on select places on the exterior building walls. Concessionaire shall coordinate with and obtain approval from FDOT on the final location of the pullboxes during building design. Refer to Appendix 13 for additional details and requirements.

9. All cabinets (tolling equipment, communications, etc.) that are to be installed in new or existing tolling equipment buildings shall be installed over an aluminum cabinet support frame. The cabinet frame support shall be approximately 12 feet L x 3 feet W x 8 inches H and have eight 4-inch cross ribs made of the same material. The thickness of the aluminum plating shall be 0.290". Size the aluminum cabinet support frame as required allowing for the placement of new tolling and communications equipment cabinets. Notwithstanding the details contained in the Toll Equipment Building Sample Plans, it is Concessionaire’s responsibility to verify that the aluminum cabinet frame support can support the tolling and communications cabinet loads. Concessionaire shall use 600 pounds for each tolling equipment or communications cabinet when developing structural calculations for the support frame.

10. After the TEC has fully completed their activities at each Tolling Point, Concessionaire shall furnish and install diamond grating plates to cover the empty spaces of the cabinet support frames not covered by all cabinets (tolling and communications) in each building. The plates shall be physically secured to the cabinet support frames and properly designed to support all applicable loads.

SECTION 7 BUILDING MECHANICAL

A. HVAC Requirements

1. Concessionaire shall furnish and install two (2) wall-mounted heating-ventilation-air-conditioning (HVAC) units for each building.

2. The HVAC system shall be equipped with lead-lag control unit to periodically and automatically switch between the primary and secondary units as specified in Volume III.

3. The HVAC system shall be sized as required taking into account all design factors including at a minimum: tolling equipment building size, equipment normal operation, temperature and humidity requirements, etc.

4. HVAC systems shall be based on heat load calculations accounting for heat generated by all building equipment, building envelope, 100% redundancy to maintain 75 degrees F plus or minus 2 degrees F inside of the building at all times.
5. Roof and wall insulation shall comply with requirements of the current Florida Energy Efficiency Code for Building Construction.

6. Site specific heat load calculations to justify the cooling capacities of equipment selected shall be submitted to FDOT for review and approval. Preliminary calculations shall account for heat generated by tolling and communications equipment located in their respective cabinets at estimated KW rate previously established. Each cabinet (tolling equipment or communications) shall have a maximum heat dissipation of 2.5KW. There shall be one tolling equipment cabinet per tolling movement and one communications cabinet per building. Final heat load design for designated equipment shall be confirmed with FDOT during the design process.

7. The heat dissipation of the tolling and communication cabinets shall be as follows:
   a. There shall be one tolling equipment cabinet (TEC provided) for buildings supporting a single tolling movement, two (2) tolling equipment cabinets (TEC provided) for buildings supporting two (2) tolling movements, and three tolling equipment cabinets (TEC provided) for buildings supporting three (3) tolling movements.
   b. All buildings shall also have one (1) communications cabinet as described elsewhere in this Volume II, Section 3, Attachment 2 and in Appendix 14.
   c. Each cabinet (tolling equipment or communications) shall have a maximum heat dissipation of 2.5KW.

8. New dual HVAC system to be equipped with 2-stage compressors.

9. Concessionaire shall furnish and install a wall mounted dual unit lead-lag controller with integral thermostat for the HVAC units.

10. Concessionaire shall furnish a sequence of operation for A/C equipment.

11. The lead-lag control unit shall be connected to the SCADA system as specified in Appendices 1 and 12.

12. Refer to Volume III for additional HVAC requirements.

SECTION 8  TOLLING COMMUNICATIONS

A. General Requirements and Definitions

1. Concessionaire shall be responsible for the coordination and installation of all fiber optic cable communications and associated inside/outside plant infrastructure.

2. For the purposes of this Volume II, Section 3, Attachment 2, fiber optic backbone (backbone) shall be defined as the fiber optic cable(s) running along the Roadway in each or both directions.

3. ITS and toll networks shall be separate, physically and logically. A single cable may contain both networks.

4. Refer to Volume III, the Intelligent Transportation System Standard Specifications, and Contract Documents for additional requirements.
B. Tolls Lateral Fiber Drops and Interconnects

1. Concessionaire shall fully connect buildings to the backbone via tolls lateral fiber drops (fiber drops). Concessionaire shall connect all buildings to the backbone.

2. Each fiber drop connection to the backbone shall be made via a minimum of two (2) new 2” High Density Polyethylene (HDPE) conduits (one spare) from splice vaults (new or existing) and shall terminate in a rack mounted pre-terminated fiber optic distribution panel (patch panel) inside the communications cabinet located inside the building.

3. Each interconnect between buildings shall be made via a minimum of two (2) new 2” HDPE conduits (one spare) and shall terminate in a separate rack mounted pre-terminated fiber optic distribution panel (patch panel) inside the same communications cabinet located inside the building. The interconnect patch panel shall not be the same as the fiber drop patch panel.

4. Fiber drop and interconnect 2” conduits shall be routed to the buildings via new directional bores, underground ductbanks, and pullboxes as required and enter the buildings via pullboxes located immediately adjacent to the buildings (five to ten feet away maximum).

5. The fiber drop and interconnect 2” conduits shall terminate under the communications cabinet in specifically located positions and shall have plastic bushings (or comparable material) to prevent fiber cables from being damaged when pulled through or shifting during use.

6. Concessionaire shall provide new splice enclosures for all new fusion splices performed in the splice vaults.

C. Splicing and Termination of Drops and Interconnects

1. Each fiber drop connection between the building and the backbone shall be as follows and as shown in the Appendices:

   a. Each fiber drop connection shall be made via a single 48-strand, single mode fiber optic cable (two (2) 24-strand cables shall not be provided) composed of blue, orange, green, and brown buffer tubes.

   b. For each fiber drop connection, refer to Volume III, Appendix 15 for quantity and fiber strands that shall be fusion-spliced in the splice vault. All fibers that are not spliced shall be capped and coiled in the splice vault within the splice enclosure.

   c. All fiber drop fibers (spliced in the vault or not) shall be fully terminated/connectorized in the patch panel connector panels mounted in the communications cabinet located inside the buildings. All spliced and connectorized fibers shall be labeled and shall pass end to end testing as required by Section 783 of the Standard Specifications.

   d. There shall be one (1) patch panel (including all associated accessories) for the fiber drop connection and one patch panel (including all associated accessories) for the interconnect (if applicable).

   e. For each patch panel, cross-connect all terminated fibers with SC to SC single mode fiber optic jumpers so as not to interrupt data communications at the existing sites.
f. The interconnect shall be made via a single 24-strand single mode fiber optic cable (two (2) 12-strand cables shall not be provided) composed of blue and orange buffer tubes.

g. See Volume III, Appendix 15 Toll Equipment Building Fiber Optic Cable Splice Details for details on the fiber splicing and termination requirements.

2. There shall be 25 feet of slack fiber drop and interconnect cable allocated to each communications cabinet to allow for future cabinet relocation. This shall apply to all fiber drops and interconnects in the Project.

3. There shall be new splice enclosures for all new fusion splices performed in the splice vaults.

D. Tolls Communications Cabinets

1. Concessionaire shall furnish and install communications cabinets for the mounting of communications, security system, and electrical equipment as described in this Volume II, Section 3, Attachment 2.

2. Concessionaire shall furnish and install one communication cabinet for each building.

3. Concessionaire shall furnish and install communication cabinets, racks, patch panels, connector panels, and all associated accessories and hardware per the requirements of this Section.

E. Impacting Existing Tolls Communications

1. In the event that Concessionaire’s work impacts existing FDOT fiber optic infrastructure, the backbone shall be fusion spliced color to color in the existing splice enclosure and splice tray where that lateral fiber drop was removed from or where other FDOT owned fiber is impacted.

2. The existing interconnect fibers tied to such buildings shall also be removed in their entirety.

3. In order to minimize impacts to the existing FDOT’s tolls data communications system, all proposed planned work requiring communication outages (i.e., fusion splice, etc.) shall only be performed between 10:00 p.m. and 5:00 a.m. or as approved by FDOT.

4. An outage request shall be submitted to FDOT for approval for all planned outage work. FDOT shall have seven (7) days to review the outage request and respond to Concessionaire. The outage request shall contain the following information at a minimum:

   a. Outage Request Contact Name:
   b. Caller Call Back Name/Cell #:
   c. Project FPID:
   d. Planned Date:
   e. Planned Date #2:
   f. Planned Start Time:
   g. Planned Stop Time:
   h. Reason:
i. Prime Concessionaire/Cell #:

j. ITS SubConcessionaire/Cell #:

k. Splice SubConcessionaire/Cell #:

l. Location (MP and Facility):

m. Location #1:

n. Location #2:

F. Fiber Optic Communications Testing

1. Testing of fiber optic related work shall be performed by Concessionaire as described in the Intelligent Transportation Systems (ITS) section of the Contract Documents and Intelligent Transportation System Standard Specifications. In addition:

a. All testing shall be coordinated with and approved by FDOT.

b. Due to the nature of the connections between the buildings and the backbone and the ultimate data destination point, testing will require close coordination with FDOT to avoid extended communication outages and equipment damage throughout FDOT’s networks.

c. Concessionaire shall notify FDOT in writing, a minimum thirty (30) days prior to any testing activities. The notice shall include a testing plan containing detailed information on the testing, such as: Tolling Points, date, start time, end time, approximate outage duration (if any), Concessionaire’s Project Manager name/email/cell phone, testing crew name/email/cell phone, backbone side, splice vault number, fiber strands, detailed step-by-step testing procedure, impacted devices/infrastructure, testing plan sheets, associated ITS plan sheets (if any), etc.

d. If the testing will cause a communications outage, an outage request as previously described shall be approved prior to any testing activities.

e. FDOT shall have fourteen (14) days to review the testing plan and respond to Concessionaire in writing. FDOT reserves the right to reject the testing plan if it is deemed incomplete or not in compliance with the Contract Documents.

f. Testing shall also be required to be performed between master buildings and the Tolls Data Centers located near the Turnpike Mileposts 75 in Boca Raton and 263 in Orlando. Additional tests may be required between master buildings and master hub locations depending on the Project location. This will require close coordination with FDOT’s staff located at the Boca Raton and Orlando Tolls Data Centers.

SECTION 9 LOOP PAVEMENT AND ELECTRICAL

A. General Requirements

1. Concessionaire shall furnish and install special pavement at the gantries to accommodate the in-pavement tolling loops (loops).

2. Concessionaire shall also furnish and install the electrical infrastructure necessary to support the installation and operation of loops.
3. The TEC shall furnish and install the in-pavement tolling loop arrays (loops) after the final riding surface of the pavement with final striping in its final alignment is constructed at all lanes and shoulders and after the site is turned over to FDOT as defined elsewhere in this Volume II, Section 3, Attachment 2.

4. Concessionaire shall refer to the “Toll Equipment Installation Requirements and Pre-Requisites” section of this Volume II, Section 3, Attachment 2 for tolling equipment installation pre-requisites related to the loops.

**B. Loop Pavement Requirements**

1. Special “loop” or “gantry” pavement (loop pavement) shall be furnished and installed at the gantry areas for all tolled lanes and shoulders that will accommodate the TEC-provided loops.

2. The dimensions of the Tolling Pavement Area shall be as follows:
   a. Length: 100 feet centered on the tolling equipment centerline or gantry centerline.
   b. Width: The width encompassing all tolled lanes and shoulders at a particular tolling movement.
   c. The shoulder pavement requirements shall be the same as the roadway pavement requirements within the Tolling Pavement Area of the roadway.

3. The Tolling Pavement Area requirements are different than the pavement requirements of the remainder of the roadway:
   a. Flexible pavements are preferred for Tolling Pavement Areas.
   b. The minimum flexible pavement design for new construction shall consist of 12" stabilization, OBG 11 (7" Type B 12.5), 4" Type SP Structural Course (Traffic Level C or D, and PG 76-22 in top lift), and 1.5” FC 12.5 with PG 76-22, for mainline travel lanes and shoulders. The new construction minimum pavement design for ramp travel lanes and shoulders shall consist of 12” stabilization, OBG 6 (5” Type B 12.5), 3” Type SP Structural Course (Traffic Level C or D, and PG 76-22 in top lift), and 1.5” FC 12.5 with PG 76-22. If the resilient modulus of the soil is less than 10,000 psi, and/or the accumulative 20-year ESAL values exceed 25,000,000 for mainline traffic or 6,000,000 for ramp traffic, then pavement calculations shall be prepared and a greater pavement design may be required. If an optional base other than Type 12.5 is desired, then preapproval from FDOT shall be required.
   c. Rigid pavement is discouraged at electronic Tolling Points since metal reinforcement cannot be used. However, there may be situations, i.e. severe pavement shoving by high truck volumes and horizontal/vertical geometry, where concrete pavement will need to be considered. This condition will be Project and site specific and the pavement design requirements shall be coordinated with and approved by FDOT.
   d. glass-fiber-reinforced-polymer (GFRP) concrete pavement with special sub-grade requirements shall be required when utilizing rigid pavements in a gantry area.
   e. The longitudinal and transverse slab joint positioning is extremely critical to the loop performance and longevity for rigid pavements. The concrete slab joint
positioning shall be coordinated with and approved by FDOT after FDOT has selected the TEC for the Project.

f. Concessionaire has the option of using rigid or flexible pavement for Tolling Pavement Area where the upstream and downstream Express Lane driving surface is flexible pavement.

g. Concessionaire shall use rigid pavement for Tolling Pavement Area where the upstream and downstream Express Lane driving surface is rigid pavement.

4. For the full extent of the Tolling Pavement Area requirements for either flexible or rigid pavements, Concessionaire shall refer to the Contract Documents, in particular, FTE’s Pavement Design Guides (Flexible and Rigid) and Project-specific Pavement Requirements attachment(s).

C. Loop Pavement Placement Restrictions

1. The 100-foot long pavement section that will receive the loops shall not contain any electromagnetic field emitting wiring/cabling located below or near the pavement.

2. There shall be no low voltage (120/240V or 480V) AC power lines running under the area designated for the pavement loops. Low voltage AC power lines running under or adjacent to the Tolling Pavement Area shall be 35 feet away from the closest loop at a minimum. This applies to all loops part of future lanes/shoulders.

3. There shall not be any metal within 35 feet of, or underneath, the loop pavement. Metal examples include metal from buried steel reinforcement, metal casings, metal pipes, etc.

4. There shall not be any rumble strips within the loop pavement as the rumble strip installation and maintenance will damage the loop wires.

D. Loop Conduit Stub-Ups

1. Concessionaire shall furnish and install stub-ups, conduits, pullboxes, directional bores, and underground ductbanks for the routing of the TEC-provided loop wiring/cabling from the pavement to buildings as described herein.

2. There shall be 1” stub-up conduits for the loops and the quantity of stub-up conduits shall be as defined in Appendix 4 of this Volume II, Section 3, Attachment 2.

3. There shall also be one (1) 1” stub-up per loop for the nearest adjacent I-4 General Use Lane in each tolling movement.

4. For flexible loop pavements, loop conduits shall stub-up on the building-side shoulder pavement near the barrier wall areas and shall be precisely located to allow for the installation of the loops and wiring by the TEC. Concessionaire shall refer to Appendix 4 of this Volume II, Section 3, Attachment 2, for additional information.

5. The conduit locations for flexible loop pavements shall be marked by notching the barrier wall immediately above the location of each conduit. Notching of the barrier wall shall occur when the entire length of the loop conduits is still exposed (prior to the loop conduits being covered by structural course or any other pavement layer). Concessionaire shall notify FDOT no less than one (1) week prior to covering the loop conduits so that FDOT and the QAM can inspect and approve the placement of the conduit.
6. For rigid loop pavements, loop conduits shall stub-up as close to each loop as possible while maintaining the spacing requirements defined herein. Concessionaire shall refer to Appendix 4 of this Volume II, Section 3, Attachment 2, for additional information.

7. The longitudinal and lateral positioning of all conduit stub-ups shall not be changed.

8. The conduit at the pavement stub-up position shall be separated by 9" from each other as shown in Appendix 4 of this Volume II, Section 3, Attachment 2.

9. Each stub-up shall terminate in a roadside loop pullbox (loop pullbox). The conduit at the loop pullbox termination point shall be separated by 6" from each other as shown in Appendix 4 of this Volume II, Section 3, Attachment 2.

10. All 1" stub-up conduits shall penetrate the side wall of the loop pullboxes and be spaced laterally on the same longitudinal line along the side wall of the loop pullbox.

E. Loop Pullboxes

1. There shall be one (1) loop pullbox per transverse row of loops and there are seven (7) loop rows, resulting in seven (7) roadside loop pullboxes per tolling movement at a minimum.

2. The loop pullboxes shall be located behind concrete barrier wall and never behind guardrail as the guardrail posts can conflict with the loop conduits initially during construction or during future guardrail maintenance.

3. A concrete barrier shall be used as the roadside barrier on the roadway along the loop pavement.

4. The loop pullbox shall be positioned in relationship to the roadway and building as follows:

a. The loop pullboxes for one (1) tolling movement shall be located on the building side of the roadway, behind the outside shoulder concrete barrier wall. The loop pullboxes for the opposite tolling movement shall be located behind the outside shoulder concrete barrier wall in the opposite direction. Due to cable distance limitations, the loop pullbox for the tolling movement opposite the building may have to be placed in the median behind barrier wall.

b. In all cases, the loop pullbox locations shall always be located such that the loop wire cable distances do not exceed the cable distance limitations described elsewhere in this Attachment.

5. If the loop pullboxes are located at a higher elevation than the building finished floor elevation, Concessionaire shall furnish and install intermediate pullbox(es) between the loop pullboxes and the building to eliminate the possibility of water intrusion due to water pressure head.

6. The loop pullboxes for each tolling movement shall be encased in concrete and the concrete encasement shall encompass all loop pullboxes for that tolling movement. Individual loop pullbox concrete encasement shall not be allowed.

7. Loop pullboxes shall be sized such that the 6” lateral separation (along the longest pullbox wall or face) between all 1” conduits can be achieved.

8. Loop pullboxes shall comply with the specifications of “Quazite Below Ground Straight Enclosures Part No. PG3048BG24 (open bottom with gasket) pullbox and
Part No. PG3048HG00 (gasketed heavy duty with 2 bolts) covers“ or approved equal specifications. Approved equal units shall comply with all manufacturer characteristics/ratings/requirements and all requirements in this Attachment.

9. Minimum width and depth for all loop pullboxes shall be 30"Wx24"D. The length shall be determined based on the number of lanes and the requirements in this [Attachment].

10. If placed behind roadside barrier wall, the loop pullboxes shall be rated “ANSI/SCTE 77 ANSI Tier 15” and be UL Listed.

11. If placed on lanes, shoulders, driveways, maintenance pull-off areas exposed to lawn mowers or maintenance vehicles, or any other areas exposed to live traffic of any kind, the pullboxes shall be traffic rated AASHTO H-20, have gasketed cover, comply with the requirements in this Volume II, Section 3, Attachment 2 and the specifications of “Old Castle B1730BOX, B1730-51JH Cover, B1730X12 Extensions (as many as needed to achieve required height), and B36L Slab to prevent settlement” or approved equal specifications. Approved equal units shall comply with all manufacturer characteristics/ratings/requirements and all requirements in this Attachment.

12. All loop pullboxes shall have a 12” deep minimum bed of pear rock or crushed stone for drainage purposes.

F. Loop Homerun Conduits

1. There shall be 3” conduits between specific loop pullboxes as shown in Appendix 4 of this Volume II, Section 3, Attachment 2. The intent is to minimize the number of homerun conduits to the building.

2. There shall be four (4) 3” conduits from select loop pullboxes to the building. The four (4) 3” conduits shall be routed to building via underground ductbanks, directional bores, pullboxes, splice vaults, wireways, conduits, and building penetrations.

3. Underground ductbanks shall be encased in concrete if the underground conduits are not routed underneath the site concrete sidewalk limits.

SECTION 10 CABLE DISTANCE LIMITATIONS

A. Definitions and Measurement

1. For the purposes of this Volume II, Section 3, Attachment 2, cable distance shall be defined as the distance from the originating and terminating devices of a cable run including all bends, turns, elevation differences, etc.

2. During Design Work, once the cable distance is measured, a factor of safety shall be applied to the measurement. For cable runs that are not in directional bores/drills, a 10% factor shall be applied. For cable runs that are in directional bore/drill, a 15% factor shall be applied. For example, if the final cable distance measurement on paper was 200 feet and the cabling will not be run in directional bores/drills, then the final cable distance shall be 220 feet (200 + 0.1 x 200).

3. During Construction Work, the cable distance shall be measured by running a pull string from the furthest originating and terminating devices through all raceways, bends, turns, elevation differences, etc. This shall be performed to confirm that the
cable distances are in compliance with this Volume II, Section 3, Attachment 2. If the cable distances are not in compliance with this Volume II, Section 3, Attachment 2, Concessionaire shall perform all site modifications and corrections necessary to bring the cable distance to compliance with this Volume II, Section 3, Attachment 2 at Concessionaire’s expense.

B. Cable Distance Limitations

1. The cable distance between an antenna mounted to a tolling equipment arm (j-arm) and its corresponding gantry-mounted E6 reader shall not exceed 100 feet. The cable distance between the gantry-mounted E6 readers and the new TEC-provided tolling equipment cabinets in their final location inside of the building shall not exceed 250 feet.

2. The cable distance between any remaining tolling equipment mounted to the j-arms and the TEC-provided tolling equipment cabinets in their final location inside of the building shall not exceed 250 feet.

3. The cable distance between any tolling loop and the bottom of the TEC-provided tolling equipment cabinets in their final location inside of the building shall not exceed 250 feet.

C. Boosters and Amplifiers

1. The use of cable signal boosters or amplifiers (boosters) to increase the tolling equipment cable distance limitations above the limits specified above is prohibited.

SECTION 11 TOLLING POINTS ACCEPTANCE; TOLLING EQUIPMENT INSTALLATION AND TESTING

A. Tolling Point Acceptance Walk-Throughs

1. Prior to the commencement of Tolling Equipment installation/testing by the TEC, all Tolling Infrastructure, including gantries and gantry buildings, within the Tolling Pavement Area must be fully completed as described in this Volume II, Section 3, Attachment 2. At a minimum, two formal acceptance walk-throughs must be performed at each Tolling Point to ensure that the Tolling Point is fully completed prior to FDOT granting interim acceptance of the Tolling Point for Toll Equipment installation/testing purposes.

2. The first acceptance walk-through of a Tolling Point shall be scheduled only when all criteria applicable to the Tolling Point contained in the Contract Documents have been met. Appendix 16 contains a list of criteria that shall be fully completed at a minimum prior to the first walk-through. FDOT reserves the right to add to such list any additional requirements contained in this Section 3, Attachment 2, including Appendices hereof. The criteria within other QAM generated documents (such as work-lists based on Contract Documents) shall also be completed prior to the first walk-through.

3. The first walk-through shall be attended by FDOT, the QAF, and Concessionaire, and Concessionaire shall cause the Lead Contractor, the Lead Engineering Firm, and the Lead Operations and Maintenance Firm to attend such walk-through. The
Parties shall develop a punch list of any non-compliant items and Concessionaire shall promptly resolve any such items, and the Parties shall schedule and attend such further walk-throughs until FDOT and the QAM determine that Concessionaire has met the requirements of the Contract Documents applicable to the Tolling Points.

4. The second acceptance walk-through shall be performed as described in Section 260505 – OPERATIONAL TESTS AND PERFORMANCE VERIFICATION of Appendix 1 of the I-4 Tolling Appendices.

5. Walk-throughs shall be scheduled on days other than weekends, Holidays, Special Events, and work period shut downs prescribed by all applicable Contract Documents. Walk-throughs shall be scheduled so as not start earlier than 9:00 am and shall not finish later than 5:00 pm. Concessionaire shall provide FDOT with not less than thirty (30) days’ prior written notice of the scheduled date and time of the first acceptance walk-through for each Tolling Point. Concessionaire shall provide FDOT with not less than seven days’ prior written notice of its scheduled date and time of the second and any subsequent acceptance walk-throughs.

6. Interim acceptance of each Tolling Point will be granted when the second acceptance walk-through (or any subsequent walk-through, if necessary) is completed and a final Certificate of Occupancy (CO) and Fire Marshal approvals are provided to FDOT. Interim acceptance of a Tolling Point will be granted solely for the purposes of commencement of Tolling Equipment installation and testing activities by the TEC, and shall not constitute final acceptance of the Tolling Point. Final acceptance of a Tolling Point shall be determined in accordance with Section 4.9.4 of the Agreement.

7. Under no condition shall Concessionaire be granted access to a Tolling Point after the TEC has commenced installation of the Tolling Equipment at such Tolling Point, but Concessionaire may enter the Tolling Point after the TEC has completed its installation and testing activities.

8. Vehicles, equipment, and personnel, other than those belonging to FDOT and the TEC, shall not intrude within the designated zones during the Tolling Equipment installation and testing periods. The designated zones shall be the area within the roadway approach and departure for mainline and ramp toll plazas as follows:

   a. For Mainline Tolling Points, 1000 feet of roadway on the approach and departure sides of each gantry.

   b. For Ramp Tolling Points, a minimum of 500 feet of roadway on the approach and departure sides of each gantry.

9. Concessionaire shall comply with the requirements set forth in Appendix 16 to Volume III.

B. Tolling Equipment Installation Scheduling

1. Concessionaire shall provide the TEC with 30 consecutive days of exclusive access to each Tolling Point to install and successfully test the Tolling Equipment (each, a “Tolling Equipment Installation Period”). The Tolling Equipment Installation Periods
shall be scheduled back-to-back (i.e., without time gaps between such periods), and no more than two concurrent Tolling Equipment Installation Periods shall be permitted at any given time, except as otherwise agreed in writing by FDOT in its sole discretion.

2. With respect to each Tolling Equipment Installation Period, Concessionaire shall:
   a. provide written notice to FDOT 90 days prior to the anticipated commencement date of the Tolling Equipment Installation Period;
   b. provide a further written notice to FDOT 14 days prior to the commencement date of the Tolling Equipment Installation Period; and
   c. reflect each Tolling Equipment Installation Period in the Project Schedule.

C. **End to End Testing**

1. Concessionaire shall conduct and complete end to end testing of the ITS, the Toll Collection System and the Toll Pricing System on or prior to the Substantial Completion Date in accordance with this subsection 11.C (collectively, the “End to End Testing”). The purpose of the End to End Testing is to verify and document that the ITS, the Toll Collection System and the Toll Pricing System are fully integrated and functioning as a complete ITS, Toll Collection System and Toll Pricing System, setting prices based on travel levels, and collecting tolls successfully. Concessionaire shall be responsible for coordinating all end to end testing activities with FDOT. Prior to commencement of the End to End Testing, detailed testing procedures, passing standards, and scenarios shall be developed by Concessionaire and FDOT jointly and submitted to the Testing Experts for review and to FDOT for FDOT’s approval, in its sole discretion. Multiple scenarios, three at a minimum, shall be run to test a wide variety of conditions. All test vehicles and drivers shall be provided by Concessionaire. Each scenario shall provide for the following items to be tested:
   a. Verification that the Express Lanes software is receiving accurate and complete data (volume, speed, occupancy, DMS displayed toll amount feeds via CCTV, and time), recording in its database, calculating correct toll amounts, recommending new messages, and updating DMS messages accordingly.
   b. Verification that DMS posts the updated messages accurately and on time;
   c. Verification that DMS reports stuck messages and pixel outages through FDOT’s Express Lanes software;
   d. Verification of transponder information and identification, gantry identification, classification, and time stamp are accurately logged locally.
   e. Verification that transponder information is received and logged by FDOT’s tolling database.
   f. Verification that trip building software is building trips from tolling database accurately.
g. Verification that toll amount data and transported information are being received by the back office and combined to create transactions.

h. Verification that customer service representatives can view transaction information (i.e., toll amounts, gantry identification, time by gantry, and trip building information) and supporting field data (volume, speed, DMS displayed toll amount feeds via CCTV, toll amounts, gantry identification, and time by gantry).

2. Performance of the various tests comprising the End to End Testing shall be witnessed by FDOT and the Testing Experts. Concessionaire shall notify FDOT and the Testing Experts forty (40) days prior to commencement of the End to End Testing. Such notice must include the full names of all employees who will be performing such testing, and those employees will be subject to background checks by FDOT. All tests comprising the End to End Testing must be determined to be passed or failed, in the sole discretion of FDOT. Upon failure of any test, Concessionaire shall take all necessary corrective action(s) and repeat the test until all tests comprising the End to End Testing have passed. Testing shall take place after the TEC has completed its installation and commissioning of the Tolling Equipment for all Tolling Points.

3. Concessionaire shall fully cooperate and coordinate with FDOT, the Testing Experts and the TEC. Concessionaire shall troubleshoot, as necessary, to facilitate timely and successful completion of the End to End Testing, notwithstanding any entitlement that Concessionaire may have to relief under clause (k) of the definition of FDOT-Caused Delays. Without limiting the foregoing, such obligations shall include making all necessary modifications to the ITS, Tolling Point Infrastructure and Toll Pricing System, taking into consideration any recommendations made by the Testing Experts, and assisting FDOT and the TEC with troubleshooting its systems or subsystems, including FTE back office and Express Lanes software, as requested by FDOT to successfully complete the End to End Testing.

4. Within six months following issuance of NTP 2, Concessionaire shall: (a) at its sole cost and expense, retain an expert in ITS integration as its testing expert for the purposes of this subsection 11.C (the “Concessionaire Testing Expert”); and (b) provide written notice thereof to FDOT. Concessionaire shall cause the Concessionaire Testing Expert to comply with its obligations under this subsection 11.C. The Concessionaire Testing Expert shall: (i) review and provide comments on the End to End Testing plan; (ii) attend in person and observe all tests and re-tests comprising End to End Testing; (iii) provide written recommendations to FDOT of any corrective action(s) which, in its expert opinion, is required or recommended based on the testing and any re-testing conducted, within 5 days thereof; and (iv) generally assist with any troubleshooting efforts and re-testing required for successful completion of the End to End Testing.

5. The Concessionaire Testing Expert shall have a minimum of 5 years of experience in the integration of ITS, including experience in troubleshooting software interfaces on a minimum of two projects.
SECTION 12 TRAFFIC CONTROL AND TOLL LANE CLOSURE RESTRICTIONS

A. General Requirements

1. FDOT shall be notified regarding toll lane closures as per FDOT’s lane closure policy, and the Contract Documents. Toll lane closures other than those depicted in the Contract Documents shall not be allowed.

B. TTC Responsibilities

1. Concessionaire shall be responsible for the Temporary Traffic Control (TTC) for the FTE’s and TEC’s tolling equipment installation, testing, and removal as described in the Contract Documents. As such, the cost for implementation and removal for all TTC activities directly associated with TEC activities (equipment installation, testing, and removal) will be the responsibility of Concessionaire.

2. In addition, Concessionaire shall be responsible for the deployment, maintenance, and removal of detour TTC signage required for full ramp closures for the FTE’s and TEC’s tolling equipment installation and testing activities. Concessionaire shall also be responsible to uncover and cover Concessionaire’s detour TTC during the FTE’s and TEC’s tolling equipment installation and testing activities.

3. Should FDOT require TTC during operations to facilitate maintenance of the tolling equipment FDOT will be responsible for the TTC. The Concessionaire will not be responsible for the TTC directly related to toll equipment maintenance and will not be penalized as a result of these closures.

C. Temporary Traffic Control Design

1. The TTC plans shall allocate an exclusive traffic control phase to the TEC’s tolling equipment installation and testing activities.
I-4 Volume II - Technical Requirements

Section 3, Attachment 3
Quality Assurance Manager (QAM) and Quality Assurance Firm (QAF) Requirements

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

**SECTION 1** ITEMS FURNISHED BY CONCESSIONAIRE .............................................1

A. Office Automation: .................................................................................................1

B. Vehicles: .................................................................................................................1

C. Field Equipment: ....................................................................................................1

D. Licensing for Equipment Operations ......................................................................2

**SECTION 2** LIAISON ..............................................................................................2

**SECTION 3** REQUIREMENTS ..................................................................................3

A. QAM AND QAF .........................................................................................................3

B. QA/QC TESTING TECHNICIANS ..........................................................................4

**SECTION 4** PERSONNEL .......................................................................................4

A. General Requirements: ..........................................................................................4

B. Personnel Qualifications: .......................................................................................5

C. QAF Florida Pre-Qualifications: ..........................................................................5

D. Performance of Personnel ......................................................................................5

**SECTION 5** FINAL ESTIMATES .............................................................................6
SECTION 1 ITEMS FURNISHED BY CONCESSIONAIRE

A. Office Automation:

Concessionaire shall cause the QAF to provide all software and hardware necessary to efficiently and effectively carry out the responsibilities outlined in the Contract Documents.

Concessionaire shall cause the QAF to provide each inspection technician with a laptop or notebook computer capable of running computer programs necessary to complete the Work, using a mobile broadband connection provided at the jobsite.

Concessionaire shall cause the QAF’s personnel to enter all computer data using equipment furnished by the QAF.

Concessionaire shall cause ownership and possession of computer equipment and related software provided by the QAF to remain at all times with the QAF. Concessionaire shall cause the QAF to retain responsibility for risk of loss or damage to said equipment during performance of the Work. Concessionaire shall cause the QAF to keep field office equipment maintained and operational at all times.

Concessionaire shall comply with the office automation requirements in effect as of 30 days prior to the Proposal Due Date, which can be viewed at: [http://www.dot.state.fl.us/Construction/DesignBuild/ConsultantCEI/OfficeAutomation.shtml](http://www.dot.state.fl.us/Construction/DesignBuild/ConsultantCEI/OfficeAutomation.shtml). Within thirty (30) days after NTP 1, the QAF shall prepare and submit to the I-4 Ultimate Construction Program Manager for approval any required Computer Security Access Requests for use of FDOT Data Center Facilities and access to FDOT’s computer systems.

The QAF shall schedule with FDOT within thirty (30) days following NTP 1 a date to attend Site Manager/EDMS or FDOT approved data management system informational meeting with the District Construction Engineer.

B. Vehicles:

Vehicles used by the QAF shall be equipped with required safety equipment and shall be able to effectively carry out requirements of the D&C Work. Vehicles shall have the name and phone number of the QAF visibly displayed on both sides of the vehicle.

C. Field Equipment:

Concessionaire shall cause the QAF to supply survey, inspection and testing equipment necessary to perform required work activities. Such equipment includes non-consumable and non-expendable items. Concessionaire shall cause the QAF to retain responsibility for risk of loss or damage to said equipment during performance of the D&C Work.

Hard hats shall have the name of the QAF visibly displayed.
Equipment described herein and expendable materials shall remain the property of the QAF and Concessionaire shall cause such equipment to be removed upon completion of the D&C Work.

Concessionaire shall ensure that the QAF or the QAF designee’s handling of nuclear density gauges shall be in compliance with their license.

D. Licensing for Equipment Operations

The QAF shall be responsible for obtaining proper licenses for equipment and personnel operating equipment when licenses are required. Concessionaire shall make the license and supporting documents available to FDOT for verification, upon request.

A Radioactive Materials License for use of Surface Moisture Density Gauges shall be obtained through the State of Florida Department of Health.

SECTION 2 LIAISON

Concessionaire shall cause the QAF to provide the COS with notice, and keep the COS informed, of all significant activities, decisions, correspondence, reports, and other communications related to the QAF’s responsibilities in accordance with the QA/QC Plan. Significant activities include, at a minimum:

- Accidents with fatalities or with spills of contaminated or hazardous materials
- Intent to claim
- Traffic control shifts
- Lane closures
- Detours
- All drilled shaft activities
- All test pile activities
- All structural repairs
- All utility relocations
- Mass concrete pours
- All post tensioning and grouting activities, and bridge maintenance painting and blasting, or painting preparation activities
- Discovery of buried tanks and containers containing unknown materials
- Unanticipated contaminated or hazardous materials
- Discovery of unanticipated human remains
- Removal, handling, labeling, transportation and disposal of contaminated or hazardous materials
- Permit modifications
- Design changes and additional right of way needs that may require a NEPA re-evaluation
SECTION 3 REQUIREMENTS

A. QAM AND QAF

- The QAM shall be independent, with no affiliations or reporting lines to the Lead Contractor or the Lead Contractor’s Contractors, the Lead Designer or the Lead Designer’s Contractors, or the Lead Operations and Maintenance Firm or its Contractors. This shall not prevent the QAM from coordinating with the Lead Contractor, the Lead Designer, the Lead Engineering Firm and the Lead Operations and Maintenance Firm or any of their subcontractors to identify and organize the times, places and scope of planned services to be provided. The QAM shall be retained by Concessionaire, but shall not be affiliated with Concessionaire. The QAM may not be an employee of Concessionaire.

- The QAM is the individual responsible for overseeing the performance of the QAF.

- Concessionaire shall cause the QAM to administer and monitor the D&C Work such that the Project is constructed in conformity with the Contract Documents.

- Concessionaire shall cause the QAM to be responsible for the development of and adherence to the QA/QC Plan (both design and construction plans).

- Concessionaire shall cause the QAM to implement, monitor and, as necessary, adjust the processes contained in the QA/QC Plan to assure acceptable quality of the D&C Work and correct any deficiencies in the QA/QC Plan. Any such adjustment must be approved by FDOT prior to being implemented.

- The QAF shall be retained by the Lead Contractor, or by Concessionaire. If the QAF is retained by Concessionaire it shall be independent, with no affiliations or reporting lines to the Lead Contractor or the Lead Contractor’s Contractors, the Lead Designer or the Lead Designer’s Contractors, or the Lead Operations and Maintenance Firm or its Contractors. This shall not prevent the QAF from coordinating with the Lead Contractor, the Lead Designer, the Lead Engineering Firm and the Lead Operations and Maintenance Firm or any of their subcontractors to identify and organize the times, places and scope of planned services to be provided.

- The QAM may be an employee of the QAF if the QAF is retained by Concessionaire.

- If the QAF is retained by the Lead Contractor, the QAM may not be an employee of the QAF or have any affiliations with the QAF.

- Concessionaire shall cause the QAM and the QAF to monitor the D&C Work to determine the progress and quality, identify deficiencies, and to report significant discrepancies to FDOT and to correct such observed deficiencies.

- Concessionaire shall cause the QAM and the QAF to advise FDOT and the COS of any significant omissions, substitutions, defects, and deficiencies noted in the D&C Work and the corrective action to be performed.

- The QAM and the QAF shall have full authority to initiate a work stoppage and order defective Work to be corrected in accordance with the Contract Documents.
• QAF is responsible for supervising the performance of all field materials tests and inspection including, at a minimum, density, moisture, air content of concrete, slump, and other required materials field tests and inspection.

• The purpose of the QAF is to provide assurance of those quality characteristics and to inspect those activities that affect the production at a time when corrective action can be taken to substantially decrease the likelihood that appreciable non-conforming material is incorporated in the Project.

B. QA/QC TESTING TECHNICIANS

QA/QC testing technicians shall perform on-site materials testing in accordance with the Contract Documents. QA testing technicians shall report directly to the QAM and are not responsible for project production. QC testing technicians are to fulfill the requirements for materials testing for Quality Control and may be employed by the Lead Contractor or subcontractor to the Lead Contractor.

The QA/QC testing technicians shall hold current CTQP materials testing qualifications for the types of materials testing that they are assigned to perform. Prior to the start of each work activity, the QAM shall identify the QA testing technician(s) by name and provide a detailed qualification matrix for each type of testing required illustrating each technician’s qualifications and respective test(s) that is (are) to be performed. The QAM shall provide to FDOT prior to the start of each Work activity a detailed qualification matrix for each type of testing required. These qualification matrices shall be submitted to the I-4 Ultimate Construction Program Manager or designee for their record prior to the start of each Work activity. The QAM shall assure that QA/QC testing technicians maintain current qualifications for the period of the technician’s Project involvement. The QAM shall notify FDOT in writing of the steps that will be taken to address deficiency issues and the steps that shall be followed to ensure future compliance.

The materials testing laboratory utilized by Concessionaire must be an FDOT qualified laboratory listed on the following website:


The QAM and the QAF shall schedule and conduct a meeting with FDOT within ten (10) days after NTP 1 and another meeting at least one hundred and twenty (120) days prior to the scheduled date for Final Acceptance, as set forth in the Project Schedule, to discuss the required documentation, including the As-Built Record Plans, necessary for permit(s) compliance.

SECTION 4 PERSONNEL

A. General Requirements:

The QAM shall be responsible for developing, submitting and maintaining the QA/QC Plan.

The QAF shall staff the Project with the qualified personnel necessary to efficiently and effectively carry out its responsibilities in accordance with the Contract Documents.
The QAF shall establish and maintain staff sufficient to meet the applicable requirements of the Contract Documents and to efficiently implement the QA/QC Plan from the date of NTP to the Final Acceptance Date.

B. Personnel Qualifications:

The QAF personnel shall be fully qualified in accordance with the Construction Training and Qualification Manual (700-000-001) and as amended by Volume II, Section 3, Attachment 4 for the duties they will be performing.

The QAM shall meet the following minimum qualifications:

**Quality Assurance Manager (QAM)** – A Civil Engineer registered in the State of Florida. The QAM shall have fifteen (15) years’ experience as a licensed engineer, seven (7) years of which are in major road and bridge construction. The QAM shall have worked on at least one heavy civil project, as a Resident Engineer, Senior Project Engineer or equivalent, with a construction value in excess of $100 million.

A Master’s Degree in Engineering may be substituted for one year engineering experience.

Required qualifications include the ability to communicate effectively in English; direct an inspection program; plan and organize the work of subordinates and staff members; develop and/or review policies, methods, practices, and procedures; and review programs for conformance with the Contract Documents. The QAM must also have the following:

**FDOT Qualifications:**

- FDOT Advanced MOT;
- Attend the CTQP Quality Control Manager course and pass the examination.

**Certifications:**

- None.

C. QAF Florida Pre-Qualifications:

QAF shall be prequalified in the following FDOT consultant prequalification categories:

10.1 Roadway CEI
10.3 Construction Materials Inspection
10.4 Minor Bridge and Miscellaneous Structures CEI
10.5.1 Major Bridge CEI - Concrete
10.5.2 Major Bridge CEI – Steel

D. Performance of Personnel

From the date of NTP 1 to the Final Acceptance Date, FDOT will audit/review various phases of the QAM and the QAF’s operations, such as design reviews, construction inspection, materials sampling and testing, and administrative activities, to determine
compliance with the Contract Documents. The QAM and the QAF shall cooperate and assist FDOT representatives in conducting the audit/reviews. If deficiencies are noted, the QAM and the QAF shall implement remedial action immediately. Deficiencies and Concessionaire responses/actions are to be properly documented by the QAF in the material's database that is to be developed by Concessionaire. No additional compensation will be allowed for remedial action taken by the QAM or the QAF to correct deficiencies. Remedial actions and required response times may include the following:

- Further subdivide assigned inspection responsibilities, reassign inspection personnel, or assign additional inspection personnel, within one week of notification.
- Further subdivide assigned quality management responsibilities, reassign quality management personnel, or assign additional quality management within one week of notification.
- Revise the QA/QC Plan
- Replace personnel whose performance has been determined to be unsatisfactory. Personnel whose performance has been determined to be unsatisfactory shall be removed immediately.
- Immediately increase the frequency of monitoring and inspection activities in phases of work that are Concessionaire's responsibility.
- Increase the scope and frequency of training of the QAF personnel.

SECTION 5 FINAL ESTIMATES

Concessionaire shall cause the QAM to submit for FDOT’s approval a final estimates package for the D&C Work as a condition precedent to Final Acceptance. Concessionaire shall cause the QAM to adhere to the guidelines set forth in Contract Documents to develop the final estimates package. The final estimates package shall include the following:

a. As-Built Record Plans
b. Engineering reports (such as Load Rating, Foundation Construction Information, pile records, drill shafts records, etc.)
c. Shop Drawings
d. All field and lab test results
e. Materials certification by the QAM
f. Daily reports, unless they are entered in Site Manager or approved equivalent
g. Proof of assignment to FDOT of all manufacturer warranties for products installed outside of the Operating Period O&M Limits and copies of all other manufacturer warranties
h. Certificate of Occupancy
i. DRB invoices, DRB meeting minutes, where applicable
j. Design mixes
k. Straight-edge reports
l. Certification of pre-stressed items
m. Final commercial inspection report
n. Sign inspection report (if required)
o. Complete disposition of defective materials
p. Field book containing all survey data, alignment, and benchmark checks
q. Folder containing the following: NTP 1 and NTP 2, and copies of all documents which relate to each and every Relief Event Claim, together with all documents which support the amount of damages, time extension and/or other relief as to each Relief Event Claim granted under Article 10 of the Agreement.
I-4 Volume II - Technical Requirements

Section 3, Attachment 4 – QA/QC Requirements

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# Table of Contents

1 Section 1 – Introduction ................................................................. 1
   1.1 Purpose ............................................................................................................. 1

2 Section 2 – Description of QA/QC Plan Requirements ............. 1
   2.1 General ............................................................................................................. 1
   2.2 QA/QC Plan Submittal Requirements ............................................................... 3

3 Section 3 – Design QA/QC Requirements .............................. 3
   3.1 General ............................................................................................................. 3
   3.2 Design QA/QC Plan .......................................................................................... 5
   3.3 Design Quality Review ...................................................................................... 7
   3.4 FDOT Approvals and Review of Design Work .................................................. 8
   3.5 FDOT Review of Design QA/QC Procedures .................................................... 8
   3.6 Quality Assurance and Quality Control of Design and Field Changes .............. 8

4 Section 4 – Construction QA/QC Requirements .................. 9
   4.1 General ............................................................................................................. 9
   4.2 Construction QA/QC Plan ................................................................................. 9
   4.3 Concessionaire QA Inspections ..................................................................... 12
   4.4 Concessionaire QA/QC Sampling and Testing ............................................... 13
   4.5 Concessionaire’s QA/QC Laboratories .............................................................. 14
   4.6 Records ........................................................................................................... 15
   4.7 FDOT’s Independent Assurance (IA) and Owner Testing (OT) ....................... 15
   4.8 Resolution of Discrepancies in Test Results ................................................... 16
   4.9 Quality Assurance Auditing ............................................................................. 16
   4.10 Non-conformance Recovery Plan .................................................................. 17
   4.11 Public Safety ................................................................................................. 18
   4.12 Rejected Material .......................................................................................... 18
   4.13 Performance Verification of Project Geotechnical Elements/Features .......... 19
   4.14 Performance Verification of Utility Work ....................................................... 19
   4.15 Performance Verification of Stormwater Pollution Prevention Measures ....... 19
   4.16 Performance Verification of Contract Compliance ........................................ 19
   4.17 Plant Manufactured Materials Acceptance .................................................. 20
4.18 Inspection Documentation

4.19 Inspection Documentation and Reporting Process and Periodic Payment Certification

4.20 FDOT Inspection Validation and Administration Process

4.21 Construction Inspection Checklists

4.22 Project Communications and Submittals
Tables

Table 4-1: Guide Lists for Construction Inspection...................... 22

Appendices

1 Minimum Requirements for Concessionaire’s QA/QC Material Testing
2 Comparison Tolerances for Material Testing
3 Guide Lists for Construction Inspection
1 Section 1 – Introduction

1.1 Purpose

This document details FDOT’s minimum requirements for Quality Assurance (QA) and Quality Control (QC) on the Project. Concessionaire shall appoint a Quality Assurance Manager (QAM) to implement a QA/QC Plan that defines the organization, work processes, and systems necessary to provide confidence and objective evidence that the Work meets the requirements of the Contract Documents.

FDOT will utilize a Construction Oversight Services firm (COS) to act as their designee during the Construction Period for Independent Assurance (IA), Owner’s Testing (OT) and oversight responsibilities on the Project. COS will provide engineering support services for the administration of the Agreement and will monitor Concessionaire’s QA/QC Plan to assess the effectiveness of the QA/QC Plan and make recommendations for improvement. COS will periodically review the activities underway to verify that the Concessionaire’s QA/QC Plan is being followed, is effective, and the QAM is assuring that all Work and materials, testing and sampling are performed in conformance with the Contract Documents.

2 Section 2 – Description of QA/QC Plan Requirements

2.1 General

The QA/QC Plan shall define a uniform approach to design and construction quality management, quality procedures, record keeping and document management/control that Concessionaire shall adhere to throughout the duration of the D&C Work. The QA/QC Plan shall be developed based on and consistent with the Preliminary Quality Plan attached as Appendix 2-D to the Agreement, shall further describe the reporting and documentation processes and shall outline appropriate responsibilities of Concessionaire’s organization. The QA/QC Plan consists of the Design QA/QC Plan and the Construction QA/QC Plan.

The QA subset of the QA/QC Plan and the QC subset of the QA/QC Plan shall be separate sections of the unified QA/QC Plan for both design and construction efforts. The QA/QC Plan shall detail the following:

- How Concessionaire shall provide QA/QC for the D&C Work including, at a minimum, design review, sampling, testing, inspection, management control, Contract Document revision process, document control, communication requirements, and non-compliant Work corrective action plans to ensure that the Work conforms to the Contract Documents;
- How Concessionaire’s QA and QC programs for both the Design Work and Construction Work shall be adhered to by each subconsultant, subcontractor, supplier, vendor, agent, or other entity with contractual obligations to complete Design Work or Construction Work as part of the Project;
• How Concessionaire’s QA and QC organizations function, including the expected minimum number of full-time equivalent employees with specific QA or QC responsibilities with an organizational chart showing lines of authority and reporting responsibilities;

• Fully detailed resumes, with references, identifying all QA/QC staff and identify all QA/QC staff employed in a supervisory or management position, together with contact information for such staff which shall be kept current;

• The persons or organizations performing QA or QC have sufficient authority and organizational autonomy to identify quality problems, and to initiate, recommend, and verify implementation of solutions;

• That QAF shall be distinct and separate from the construction and design production staffs. ;

• That QA and QC shall be an integral part of the D&C Work. The QA and QC Plans shall detail all of the QAM’s certification obligations set forth in Section 4.19 of this Volume II, Section 3, Attachment 4, in respect of requests for Periodic Payments under Section 12.1.2 of the Agreement, as well as Concessionaire’s obligation to submit, as support for each request for Periodic Payment, verifiable evidence from the QA and QC reviews, including any checklists, summary data, high-level/outline calculations or design checks, and evaluations of the work and the qualifications of the responsible personnel that completed the work, that the relevant QA or QC reviewer relied on to make its determination the D&C Work is complete and conforms to the requirements of the Contract Documents;

• The integration of FDOT’s review process to include audit of the QAF function and provide notification of upcoming D&C Work and access and accommodation for Owner Testing;

• A procedure for resolving non-comparing test results, as further provided below;

• A procedure for resolving deficiencies discovered as part of Independent Assurance;

• Any additional QA and QC procedures required by FDOT for high-risk or unique elements of the Project. Such additional procedures may include, for example, peer reviews by an independent firm;

• A written statement from Concessionaire giving full authority to the QAM to initiate a work stoppage;

• A method to insure all materials and products that are incorporated into the Project are listed on FDOT’s Qualified Product List or produced at a FDOT Qualified Material/Producer. For materials and products that do not meet these pre-certification requirements, develop a method to insure these items meet current FDOT specifications;
• Inspection documentation meeting the requirements as set forth in Section 4.13 of this document and inspection of geotechnical elements that are to be certified by a qualified licensed Professional Engineer;

• Sample invoices for Periodic Payments which include example back-up documentation; and

• Description of the materials tracking system Concessionaire intends to use. At a minimum, the system must provide the features included in FDOT’s current system, Laboratory Information Management System (LIMS).

2.2 QA/QC Plan Submittal Requirements

Concessionaire shall submit to FDOT for review and approval, the Design QA/QC Plan as a condition precedent to issuance of NTP 1 and the Construction QA/QC Plan as a condition precedent to issuance of NTP 2. Along with the QA/QC Plan submittal, the Design Manager and the QAM shall provide a demonstration of how the QA/QC Plan is intended to operate for both design and construction, including the roles and responsibilities of the individuals involved in the QA/QC Plan. Such demonstration shall utilize Project related scenarios, including, at a minimum, situations requiring the issuance of a Non-conformance Report.

3 Section 3 – Design QA/QC Requirements

3.1 General

Concessionaire is responsible for design quality. The QAM shall be responsible for overall management of the QA/QC programs for the Design Work. The quality control function during design is provided by design staff independently checking each other's work and design production and design leads performing formal and documented coordination reviews at pre-determined times on each submittal and on all Plans. All design submittals and Plans shall have written approval by the Design Manager and QAM certifying that he/she has audited and approved the submittal in the form of certification statement. This certification statement shall be submitted with each design submittal. Any submittal without this certification statement will be rejected.

The design manager (the “Design Manager”) is the individual with responsibility for coordinating the individual design disciplines ensuring the overall Design Work is in conformance with the Contract Documents. The Design Manager is also responsible for ensuring all subconsultant Design Work is in conformance with the Contract Documents.

The Design Manager shall be responsible for establishing and overseeing a design QA/QC program, including review of the design, working plans, Shop Drawings, specifications, and constructability of the Project. This individual is responsible for all of the design, inclusive of QA/QC activities. This individual shall be responsible for implementing, monitoring and, as necessary, adjusting the processes to assure
acceptable quality of the Design Work and correcting any deficiencies in the QA/QC Plan.

The QA/QC procedures shall be organized by each type of engineering discipline (e.g., structural, civil and utilities) and encompasses all phases of the design development. These procedures shall specify measures to be taken by Concessionaire:

- To ensure that appropriate quality standards are specified and included in the drawings, specifications, and other design submittals and to control deviations from such standards;
- For the selection of suitability of materials, and elements of the Work that are included in the Project;
- To ensure the constructability of the Design Documents.

Design QA may be performed by the same design organization. If design QA responsibilities are retained by the design organization, the QA subset of the Design QA/QC Plan must show that the original designer is not responsible for the quality assurance of his/her own design work. All key personnel performing QA functions shall be exclusively designated to such and shall not be assigned to perform conflicting duties or production work.

In general, design QA shall evaluate whether the designer assessed the problem appropriately, applied the correct analyses, and assigned qualified personnel to the tasks, including:

- QA shall address whether the design solution meets requirements of the Contract Documents;
- QA also shall ensure that the Work required by the Contract Documents is completed applying appropriate skill and experience;
- The application of professional engineering judgment taking into consideration safety, operational requirements, level of service, life cycle costs and the current version of the specific standards, methods, and requirements set forth in the Contract Documents;
- Prudent industry practices, methods, techniques and standards and using the degree of care that would be expected to be exercised by a prudent, skilled and experienced designer professional engaged in the same kinds of undertakings as the Project under the same or similar conditions at the same time and locality of the Project.

Design QC shall include review of math and engineering computations; technical accuracy; conformance to contract requirements; review of form, content and spelling; and coordination with other disciplines including construction. The design QC review shall be carried out to a level commensurate with the complexity of the design approach.
and the criticality of the design element. Design QC may be performed at the office
where the Work was conducted.

### 3.2 Design QA/QC Plan

The Design QA/QC Plan shall be prepared such that the requirements for QA and the
requirements for QC are detailed in separate sections of the overall QA/QC Plan such
that they are capable of being read independently. The Design QA/QC Plan shall set
forth the following:

- Written documentation and definition of the Project’s design criteria,
  standards, and processes;
- All QA/QC procedures proposed by Concessionaire for the design process shall
  be included in the Design QA/QC Plan. Procedures shall be included for
  preparing and checking all drawings, specifications, and other design Submittals
to FDOT to ensure that they are independently checked by experienced and
  qualified professionals prior to submission;
- Procedures to correct errors and deficiencies in the design documents prior to
  submitting them to FDOT for review. At a minimum, the design QA/QC Plan shall
  identify design engineer, detailer, checker, quality assurance engineer, and
  engineer in responsible charge by organization, name and resume, including
  sub-consultants and interface among design consultants.
- Procedures to ensure that final drawings, specifications, and other design
  Submittals are to be signed, sealed and dated by the responsible Florida
  Professional Engineer as required by the Contract Documents or by applicable
  laws;
- The level, frequency and methods of review for the adequacy of the design of the
  Project, including the methods for independent review of the final drawings,
  specifications, and other design Submittals to ensure compliance with FDOT’s
  functional requirements for the Project as required in the Contract Documents;
- Procedures for coordinating Work performed by different Persons in the same or
  adjacent areas or in related tasks to ensure that conflicts, omissions or
  misalignments do not occur between drawings or between the drawings and the
  specifications and to coordinate the review, approval, release, distribution and
  revision of documents involving such Persons;
- Procedures to identify those elements of the Work, drawings, specifications, and
  other design Submittals, if any, requiring special construction QA and/or QC
  attention or emphasis, including applicable standards of quality or practice to be
  met, level of completeness and/or extent of detailing required;
- Procedures that include constructability reviews and, as applicable,
  maintainability reviews;
• Procedures that include at a minimum, monthly interactive workshops with FDOT and stakeholders to facilitate development and reviews of the design Submittals. Workshops include TTC, aesthetics, and signing;

• Identification by firm, discipline, name, qualifications, duties, responsibilities and authorities of all Persons responsible for design QA/QC activities, including sub-consultants;

• Design QA and QC functions, including scheduled activities for design QA/QC, identifying the drawings, specifications, and other design Submittals to be delivered to FDOT for its review at each stage of the Design Work. These Submittals and the review process shall be in accordance with the Volume II, Section 2.H.

• Address interim design Submittals; design review meetings/schedule; design review comment processing; publishing and distribution of design review meeting notes and design submission status; and other design services requirements as set forth in the Contract Documents; and

• Identification of other Submittals that may fall outside the Design Manager’s or QAM’s expertise.

A Table of Contents is provided below to set forth the minimum contents of the Design QA/QC Plan.

SECTION 1 - GENERAL AND ADMINISTRATION

1. Terms and Definitions
2. Quality Assurance Organization, Functions and Responsibilities
3. Documentation Control
4. Quality Records
5. Quality Control Coordinators Function and Responsibilities

SECTION 2 - PROJECT MANAGEMENT

1. Quality Program for Subconsultants
2. Quality Control and Verification of Computer Software
3. Preparation and Maintenance of the Project Procedures Manual
4. Contract Review and Coordination
5. Internal Quality Audits

SECTION 3 - PLANNING AND DESIGN

1. Checking of Calculations
2. Checking of Drawings
4. Checking of Input to Computer Programs
5. Review of Studies or Report-Type Documents
6. Review of Documents Prepared by Others
7. Quality Audits of Planning and Design Functions
8. Quality Control of CADD-Produced Documents
10. Documentation and Notice of Design Change
11. Field Design Services
12. Implementation of Corrective and Preventive Action
13. Quality Control of Utility Design
14. Training

3.3 Design Quality Review

Prior to the submittal of design Submittals to FDOT, the Design Manager shall complete a review by engineers experienced in the appropriate disciplines(s). Documentation of reviews shall be included with the Submittals as required in Vol. II, Section 2.H.

The criteria used in the Design Manager's review shall include, at a minimum, the following:

- Conformity of the final design Submittals with the requirements of the Contract Documents.
- Assurance that all materials, equipment and elements of the Work have been designed to perform satisfactorily for the purpose intended.
- The technical and grammatical accuracy, appearance, and organization of the design Submittals;
- Verification that the design Submittals have been checked and signed by the designer and reviewers;
- Where required by the Contract Documents, generally accepted engineering practices or applicable law, verification that the Plans have been stamped, signed and dated by the responsible Florida Professional Engineer; and
- Assurance that such documents fully provide suitable evidence for constructability, maintainability, compatibility of materials and conformity to
acceptance criteria for inspections and tests as provided in the Contract Documents.

During the design of the Project, each item of Work shall be reviewed to determine what significant characteristics of the item need to be monitored during construction in the field. This information shall be provided to the QAF prior to construction in the form of plan notes incorporated in the Plans.

3.4 FDOT Approvals and Review of Design Work

The Design Manager or QAM shall provide FDOT with design plans for review and comment in accordance with Volume II, Section 2.H before Concessionaire initiates construction activities of any elements covered in those plans. FDOT will provide review comments regarding the Design Work in accordance with Volume II, Section 2.H.

Concessionaire shall be responsible for conducting comment resolution meetings with FDOT to coordinate any unresolved issues.

3.5 FDOT Review of Design QA/QC Procedures

Audits will be performed by FDOT to verify conformance with the approved QA/QC Plan and to verify that the required checking and review functions are performed and to determine if calculations, drawings, reports, and specifications meet both professional and contractually required standards.

Concessionaire shall provide FDOT the necessary verification that the design submittals conform to the approved QA/QC Plan, including a form that is signed by the Design Manager or QAM certifying that the “construction items” shown on the Plans have been audited for and satisfy compliance with the design control plan, all requirements of the Contract Documents.

Concessionaire shall correct all deficiencies before Plans are re-submitted to FDOT. FDOT will provide copies of all audit reports to be retained in the Design Manager’s QA File.

3.6 Quality Assurance and Quality Control of Design and Field Changes

Changes, including field changes, in the design of the Project or any portion thereof as shown on the Construction Documents, shall be subject to design QA/QC measures and procedures commensurate with those applied to the original design of the portion of the Project being changed. Further, all changes shall be approved in writing by the organization that performed the original design, with the additional written acknowledgement and approval of the change by the Design Manager or QAM with recommendation for approval by FDOT. Documents containing design and/or field changes shall be distributed according to the requirements of Section 4 of this Volume II, Section 3, Attachment 4. Where required, revisions shall be signed and sealed by a Florida Professional Engineer.
4 Section 4 – Construction QA/QC Requirements

4.1 General

The QA/QC Plan shall insure that operational techniques and activities provide workmanship and materials of acceptable quality. Concessionaire’s inspection, sampling and testing shall be performed to control the processes and determine the degree of workmanship and materials compliance with the Contract Documents.

Concessionaire shall develop, implement and update as required a QA/QC Plan which shall detail how the requirements of this Volume II, Section 3, Attachment 4 will be achieved.

The Plans may result in FDOT requiring specific QA/QC measures for certain materials. When so required, Concessionaire shall provide all personnel, equipment, supplies, and facilities necessary to perform QA/QC functions, obtain samples, perform tests and inspections required in the Contract Documents.

The QAM shall certify quarterly and as part of each request for Periodic Payment, that all of the Work has been completed in conformance with the requirements of the QA/QC Plan and the Contract Documents.

4.2 Construction QA/QC Plan

The Construction QA/QC Plan shall detail how Concessionaire shall achieve the minimum requirements for construction QA/QC set forth in this Volume II, Section 3, Attachment 4. It is imperative that the Construction QA/QC Plan adequately distinguishes between the separate functions of QA and QC, as described in this document. The Construction QA/QC Plan shall therefore be prepared such that the requirements for QA and the requirements for QC are detailed in individual plans or in separate sections of the overall plan such that they are capable of being read independently.

The minimum requirements of the Construction QA/QC Plan are as follows:

- Describe Concessionaire’s QA organization and QC organization, including the minimum number of full-time equivalent employees with specific construction QA and QC responsibilities, including an organizational chart showing lines of authority, functional relationships and reporting responsibilities;

- Demonstrate that the Lead Contractor’s Project Manager shall have responsibility for managing the Construction Work, to include all QC activities, to ensure the materials used and Construction Work performed meet the requirements of the Contract Documents. This individual shall be responsible for implementing, monitoring and, as necessary, adjusting the processes to assure acceptable quality of the Construction Work.
• List by discipline the name, qualifications, duties, responsibilities and authorities for all Persons proposed to be responsible for construction QA/QC;

• List current qualifications for QA/QC technicians;

• Demonstrate how QA and QC activities shall be reflected in the Project Schedule logic for particular activities;

• Detail inspection requirements (the Inspection Plan), which shall include a detailed description of testing and inspection activities and frequencies that follow the FDOT Statewide Inspection Guidelist shown in Table 4-1 and attached as Appendix 3 to this Volume II, Section 3, Attachment 4;

• Provide QA/QC sampling, testing, and analysis plans with frequencies, location and methods that meet the minimum requirements outlined in the attached Appendix 1 to this Volume II, Section 3, Attachment 4, and include a description of how random locations for testing and sampling are determined;

• Describe procedures for instrumentation and survey monitoring for verification of the performance of the project geotechnical and pavement features;

• Describe procedures for load testing and integrity testing required to verify adequacy of the foundation capacity, soil reinforcement elements, or adequacy of ground stabilization or as otherwise set out in the Contract Documents;

• Identify FDOT qualified laboratory(ies) to be used for each type of testing;

• Provide current qualifications for each test the laboratory will perform. FDOT laboratory qualifications for each test method applicable to the Project shall be maintained for the Construction Period and confirmed by the QAM on a monthly basis and prior to submission of requests for Periodic Payments;

• Specify documentation for QA and QC activities;

• Demonstrate procedures to meet FDOT’s requirements for corrective action when Quality Assurance and/or Quality Control criteria are not met. For example, demonstrate how non-compliant material will be addressed at the construction site before placement; and

• In the event of repeated deficiencies discovered in the QA/QC Plan, FDOT may require the QAM to adjust the QA/QC Plan including modifications to the staffing levels and/or individuals to adequately address the deficiencies.

A Table of Contents is provided below to set forth the minimum contents of the Construction QA/QC Plan.
SECTION 1 - GENERAL AND ADMINISTRATION

1. Terms and Definitions
2. Quality Assurance Organization, Functions and Responsibilities
3. Documentation Control
4. Quality Records
5. Quality Control Coordinators Function and Responsibilities
6. Procedures for participating in FDOT's IA and OT programs
7. Procedures to be followed upon discovering noncompliant workmanship or materials including activities and actions to be taken by QA personnel and notification requirements
8. Demonstration of how QA activities will integrated into the construction process to ensure effectiveness, including the responsibilities of the contractor, QC activities, QA activities and provision permitting FDOT verification
9. Illustrate how QC, QA, and FDOT verification activities will be reflected in the schedule

SECTION 2 - PERSONNEL

1. Meet the requirements of Standard Specification 105-5.2

SECTION 3 – RAW MATERIALS

1. Meet the requirements of Standard Specification 105-5.3

SECTION 4 – STORAGE FACILITIES FOR RAW MATERIALS

1. Meet the requirements of Standard Specification 105-5.4

SECTION 5 – PRODUCTION EQUIPMENT

1. Meet the requirements of Standard Specification 105-5.5

SECTION 6 – PLANT REQUIREMENTS

1. Meet the requirements of Standard Specification 105-5.6

SECTION 7 – OTHER REQUIREMENTS

1. Meet the requirements of Standard Specification 105-5.7

SECTION 8 – FINAL MANUFACTURED PRODUCT (PLANT OPERATIONS)

1. Meet the requirements of Standard Specification 105-5.8
SECTION 9 – FINAL MANUFACTURED PRODUCT (FIELD OPERATIONS)
1. Meet the requirements of Standard Specification 105-5.9

SECTION 10 – TESTING LABORATORIES
1. Meet the requirements of Standard Specification 105-5.10

4.3 Concessionaire QA Inspections

Concessionaire shall cause the QAF to maintain an appropriate level of surveillance consistent with Concessionaire’s level of construction activities at any given time, maintain complete and accurate records of all activities and events relating to the Project, and properly document all significant Project changes.

Concessionaire shall provide QA inspections for all work activities for conformance with the construction requirements in the Contract Documents. The QA components of the Construction QA/QC Plan shall contain discrete inspection plans for each Construction Work item whether performed by Concessionaire or a Contractor. Construction Work items shall be definable features or items of work.


During the design of the Project, each item of work shall be reviewed to determine what significant characteristics of the item need to be monitored during construction in the field. This review is to ensure that the completed Project will function in accordance with the design intent over its expected lifetime. The inspection plans shall include the appropriate criteria, tests, and inspection requirements identified in the Contract Documents and requirements as set forth herein. The following elements shall be addressed within each item inspection plan:

- Identification – Construction Work items included in the item inspection plan.
- Characteristics – What characteristics of the item(s) will be inspected and to identify design team members that are required to be involved in the inspection.
- Acceptance Criteria – Directly or by reference, provide sufficient information for the inspector to use to determine if the item or activity is acceptable or not.

Use of FDOT’s Statewide Inspection Guide checklists, as modified herein, shall be an integral part of QA/QC inspection. Copies of the completed checklist shall be provided
to FDOT or its COS on a monthly basis and prior to requests for Periodic Payments. The plan should indicate the actions to be taken for items found to be non-conforming and all the steps necessary to determine the extent of the non-conformance.

Inspections shall be performed during all phases of the Project from NTP 1 to Final Acceptance in order to assure that the work meets, and is being performed in accordance with the Contract Documents.

Appropriate inspections of work shall be performed to satisfy the minimum requirements set forth in Appendix 3 and other Contract Documents to assure consistency in workmanship, compliance with the Contract Documents, and to assure satisfactory performance of the Work.

4.4 Concessionaire QA/QC Sampling and Testing

QAF shall provide daily surveillance of activities at the Project site and perform the sampling and testing of materials and completed work items per the requirements of the Contract Documents at frequencies specified in the minimum requirements outlined in Appendix 1 of this Volume II, Section 3, Attachment 4, or if not provided in such Appendix, shall comply with the Standard Specifications, FDOT’s Materials Manual and other documents as appropriate and accepted by FDOT or as otherwise specified in the Contract Documents. Sampling and testing shall be performed by qualified testing personnel as defined in Volume II, Section 3, Attachment 3.

The QAF shall be responsible for transporting all samples in accordance with the Contract Documents for testing in a FDOT qualified laboratory.

Concessionaire shall enter QA/QC test results into an approved data management system. Test samples and results shall be entered into the data management system within 24 hours or next business day of obtaining the sample and performance of the test. Concessionaire shall develop and provide to FDOT a job guide schedule outlining material testing methods and frequencies for each material type. The testing frequencies shall, at minimum, meet the minimum frequencies referenced above for separate QA and QC testing. A testing plan shall be developed using a random selection process such as ASTM D 3665 and shall reflect the proposed total project quantities as may be calculated in the design Submittals. The testing plan shall also include the estimated total number of QC and QA tests required based on the calculated quantities or placement operations. The testing plan, including quantity and testing estimates, shall be submitted and approved by the QAM with recommendation for acceptance by FDOT prior to the beginning of Construction Work or placement of the material.

The QAF shall submit documentation reports on sampling and testing to the COS within seven days of the construction work being performed.
Acceptability of all materials and completed work items shall be on the basis of either test results or verification of a certification, certified mill analysis, FDOT label, or FDOT stamp.

FDOT shall monitor the effectiveness of QAF’s testing procedures through surveillance and obtaining Owner’s Testing (OT) materials and independent assurance (IA) reviews.

4.5 Concessionaire’s QA/QC Laboratories

All laboratories participating in control and acceptance testing must be qualified through FDOT’s Laboratory Qualification Program as described in detail in Materials Manual Section 5.7. In addition, they must have one of the following:

- Current AASHTO (AAP) accreditation.
- Inspected on a regular basis per ASTM D 3740 for earthwork, ASTM D 3666 for asphalt and ASTM C 1077 for concrete for test methods used in the Acceptance Program, with all deficiencies corrected, and under the supervision of a Specialty Engineer.
- Current Construction Materials Engineering Council (CMEC) program accreditation or other independent inspection program accreditation acceptable to FDOT and equivalent to the first two bullets in this Section 4.5.

After meeting the criteria described above, a testing laboratory must submit a Laboratory Qualification Application to FDOT to grant qualification. The application is available from FDOT’s website. The laboratory shall obtain FDOT’s qualification prior to beginning testing. FDOT may inspect the laboratory for compliance with the accreditation requirements prior to issuing qualification.

The laboratory shall meet and maintain the qualification requirements at all times. Testing without FDOT’s qualification may result in a rejection of the test results. Qualification of a lab shall be subject to satisfactory results from FDOT evaluations, including Independent Assurance evaluations. In case of suspension or disqualification, prior to resumption of testing, the laboratory shall resolve the issues to FDOT’s satisfaction and obtain reinstatement of qualification. The following conditions may result in suspension of a laboratory’s qualified status:

- Failure to timely supply required information.
- Loss of accredited status.
- Failure to correct deficiencies in a timely manner.
- Unsatisfactory performance.
- Changing the laboratory’s physical location.
- Delays in reporting the test data in FDOT’s database.
- Incomplete or inaccurate reporting.
• Using unqualified technicians performing testing.

It is prohibited for a non-FDOT certified laboratory to perform Concessionaire QA/QC testing and any other acceptance testing. Separate certified laboratories shall be used for QA and QC testing.

4.6 Records

Concessionaire shall provide and utilize an FDOT-approved data management system similar to FDOT’s LIMS but shall not use LIMS. Concessionaire’s data management system shall be detailed in the QA/QC Plan and shall be accessible by FDOT, the COS and involved laboratories. The data management system shall assign separate and unique materials/testing identification for QA and QC activities. The QAM or QAF shall enter the materials record into an FDOT-approved data management system. All materials incorporated into the Project shall be reported in the approved materials database to be developed by Concessionaire. The producer, source, or supplier of the material shall also be tracked. The system shall track who has the authority to accept and approve samples. Monthly reports showing the disposition of any failing or non-conforming materials utilized on the Project shall be submitted by the QAM to the COS. Concessionaire shall prepare and submit to the COS installation certifications as required by the Contract Documents. Concessionaire shall also prepare and submit to the COS final materials certification in accordance with the requirements herein and FDOT’s Construction Manual and Materials Manual.

4.7 FDOT’s Independent Assurance (IA) and Owner Testing (OT)

FDOT’s IA and OT will be performed by the COS to validate Concessionaire’s QA/QC sampling, testing and inspection program.

Concessionaire shall participate in FDOT’s IA Program and the Project’s OT Program. Findings of all IA and OT observations and test results shall be entered into Concessionaire’s approved data management system by the COS. Non-comparing test results shall be communicated immediately by the QAM to the COS within four (4) hours and Concessionaire shall immediately take corrective action to resolve any noted deficiencies as outlined in the QA/QC Plan.

IA and OT observations, audits and materials testing shall be performed by the COS to satisfy FDOT and FHWA’s requirements for documenting that proper QA and QC management is being performed. This oversight provides an independent assessment of Concessionaire implementation of and compliance with the approved QA/QC Plan.

FDOT is not obligated to make an inspection of materials at the source of supply, manufacture, or fabrication. Concessionaire shall provide FDOT with unrestricted entry at all times to such parts of the facilities that concern the manufacture, fabrication, or production of the ordered materials.
The QAM shall determine the acceptance of materials and workmanship incorporated into the Project. In making such determination, the QAM shall consider:

- Results of Concessionaire’s QA/QC sampling and testing at frequencies and locations specified in this Volume II, Section 3, Attachment 4, Appendix 1;
- FDOT’s IA and OT at frequencies and locations specified in the FDOT IA Program and the Project’s OT Program, respectively;
- Inspection by FDOT and/or COS of the attributes and processes that may affect the quality of the finished product and;
- Any test results obtained to resolve discrepancies between the Project’s OT sampling and testing and Concessionaire’s sampling and testing.

4.8 Resolution of Discrepancies in Test Results

Concessionaire shall include procedures for addressing non-comparing test results between QA and QC in its non-conformance recovery plan. The QAM shall identify the cause of the non-comparison, including the following actions:

- Check of test data, calculations and results;
- Observation of the QA and QC sampling; and
- Check of the QA and QC test equipment by the COS.

When the source of test result discrepancies between Concessionaire and the COS laboratory cannot be resolved, a referee split sample will be obtained and tested by an independent laboratory provided by Concessionaire that is independent of the QA/QC laboratories; this process shall be outlined in detail in the QA/QC Plan.

Any material deemed unacceptable shall be dealt with in accordance with Section 4.12 of this Volume II, Section 3, Attachment 4.

4.9 Quality Assurance Auditing

As part of the QA/QC Plan, Concessionaire shall establish and maintain a Quality Assurance Auditing program that assures uniform reporting, controlling, correction and disposition and resolution of non-conformance (including disputed nonconforming items) issues that may arise on the Project.

The Quality Assurance Auditing program shall establish a uniform process for reviewing workmanship, materials, equipment or other construction and design elements of the Work including the design submittal process for compliance with the Contract Documents. Where Work items are found to be in non-compliance a control procedures shall provide for identification and notification to Concessionaire’s Project Manager, the COS and all personnel involved in the affected Work.
4.10 Non-conformance Recovery Plan

As part of the QA/QC Plan, Concessionaire shall establish and maintain a Non-conformance Recovery Plan that addresses items of Work found through the Quality Assurance Auditing program to be in non-compliance. The Non-conformance Recovery Plan shall clearly describe Concessionaire’s procedures for addressing construction and design deficiencies in the Work. Concessionaire’s deficient work, delays of submissions, and/or repetitively-revised submissions shall be addressed in such a manner so as not to cause additional oversight by FDOT or the COS.

Where deficiencies in the Work can be corrected, the QAM shall enforce performance of such corrective action as is appropriate. Re-tests or inspections shall be made by the QAM to determine the acceptability of the materials after corrective measures have been taken. The cost of removing, replacing or correcting defects in the materials shall be the sole responsibility of Concessionaire. The cost of repairing or replacing other materials or Work damaged by the removal, replacement or correction of defects in the workmanship and materials shall be the sole responsibility of Concessionaire.

Furthermore, the Non-conformance Recovery Plan shall specifically address a plan to increase QA and QC testing frequencies for tests that fail to meet comparison tolerances as set forth in Appendix 2 to this Volume II, Section 3, Attachment 4.

The responsibility for review and for the disposition of nonconforming material, equipment or other Work shall be as established by the Non-conformance Recovery Plan and, at a minimum, shall provide for the following:

- Non-conformance Procedures – Maintain and use procedures that define methods and responsibilities for identification, documentation, control, and processing of nonconforming items. A non-conformance exists when equipment, parts, materials or services exhibit deficiency in physical characteristics, functional performance, or documentation. Apply non-conformance procedures to all items, including actions associated with installation and construction which fail to conform as specified or to other product descriptions. Develop a Non-conformance Report (NCR) form to document and provide the following information:
  - Identification of non-conformances
  - Documentation
  - Evaluations/Recommendations
  - Separation/tagging
  - Recommendation for “removal”, “repair” or “use as is” dispositions
  - Cause of non-conformance
  - Proposed corrective action to prevent recurrence
  - Responsibility for accomplishing corrective action
• Schedule for resolution

  - Non-conformance Log – Develop and maintain a Non-conformance Log to enable tracking of non-conformances. Include necessary information to trace non-conformance back to initial documentation and to summarize status.

  - Reports and Disposition – Respond to the NCRs by date specified on NCR and include investigative actions, causes of non-conformances, how non-conformances were dispositioned, and corrective actions taken. Dispositions of “use as is” and “repair” for nonconforming items require review by FDOT/COS and concurrence by the Design Manager and the QAM.

  - Status Tags – Define procedures for controlling use, logging, installation, and authorized removal of status tags. Authorization for removal can be approved only by originator of NCR or that person’s supervisor and the QAM, and only when demonstrated that nonconforming item meets acceptance criteria and has been reviewed by the COS. Unauthorized removal of non-conformance status tags is prohibited.

  - Corrective and Recovery Action – The Construction QA/QC Plan shall establish and maintain written procedures for:

    o Investigating the cause of nonconforming material, equipment or other elements of the Work and the corrective action needed to prevent recurrence (such as increased sampling and testing frequencies, etc.)

    o Analyzing all processes, work operations, quality records, service reports, and audits to detect and eliminate potential causes of nonconforming material, equipment or other elements of the Work

    o Initiating preventive actions to deal with problems at a level corresponding to risks/deficiencies encountered

    o Applying controls to ensure that effective corrective actions are taken

    o Implementing and recording changes in procedures resulting from corrective action.

4.11 Public Safety

Any deficient condition found by, or disclosed to, the QAM and/or FDOT that affects public safety shall be promptly made to conform to the Contract Documents.

4.12 Rejected Material

Materials rejected by the QAM or QC shall be removed and replaced with new material at no additional cost to FDOT. Any such new material shall be sampled, tested and
4.13 Performance Verification of Project Geotechnical Elements/Features

The QA/QC Plan shall include inspection, QA/QC and verification tests to determine the integrity of foundation structures and to verify that their performance is as anticipated from the design and other geotechnical requirements as set forth in the specifications, special provisions, technical requirements, or as otherwise included in the Contract Documents.

Concessionaire’s Geotechnical Foundation Design Engineer of Record (GFDEOR) shall certify all foundations in accordance with the requirements set forth in the specifications and the Contract Documents. The QAM’s summary reports to FDOT shall include FRC’s signed and sealed letter stating he (she) has reviewed the Foundation Certification Package and concurs with it.

4.14 Performance Verification of Utility Work

Concessionaire shall cause the QAF to be responsible for inspection of Utility Adjustment Work per Volume II, Section 3.H. The QA/QC Plan shall include inspection, QA/QC and verification tests to determine the integrity of the utility work. The responsibilities of the QAF include monitoring, inspecting and documenting utility construction for conformance with Utility Agency Owner’s Water and Sewer Standards and the Utility Agency Owner’s Approved Materials List. Concessionaire shall cause QAF to facilitate coordination and communication between Utility Agency Owner’s representatives, FDOT’s staff and Concessionaire in execution of the D&C Work. In addition that QAF shall identify potential utility conflicts and assist in the resolution of utility issues.

4.15 Performance Verification of Stormwater Pollution Prevention Measures

Concessionaire shall cause the QAF to be responsible for verifying that Concessionaire has conducted inspections, prepared reports and monitored all storm water pollution prevention measures associated with the Project. Concessionaire shall cause the QAF to provide at least one inspector who has successfully completed the “Florida Stormwater, Erosion, and Sedimentation Control Training and Certification Program for Inspectors and Contractors.” QAF’s inspector shall be familiar with the requirements set forth in: 40 CFR Part 122; Section 403.0885, FS; Chapter 62-621, FAC; and guidelines developed by FDOT in the Contract Documents.

4.16 Performance Verification of Contract Compliance

The QAM shall provide a Resident Compliance Specialist for surveillance of Concessionaire’s and Contractors’ compliance with the labor-related provisions of the Contract Documents. The Resident Compliance Specialist is responsible for reviewing, monitoring, evaluating and acting upon documentation required by the Contract Documents, and maintaining the appropriate files thereof. Typical areas of compliance statistically evaluated for acceptance in accordance with Concessionaire construction QA/QC Plan.
responsibility include Equal Employment Opportunity (EEO) affirmative actions for Concessionaire, DBE affirmative action, Concessionaire formal training, payroll, and subcontracts. The Resident Compliance Specialist must keep all related documents and correspondence accurate and up to date; attend all compliance reviews and furnish the complete Project files for review; and assist FDOT as requested. Concessionaire shall cause the QAF to be responsible for monitoring Concessionaire’s compliance with the Contract Documents in regard to payment of prevailing determined wage rates.

Concessionaire shall cause the QAF to schedule a meeting with FDOT within 30 days following NTP 1. The Resident Compliance Specialist shall attend this meeting.

4.17 Plant Manufactured Materials Acceptance

Concessionaire shall identify to the COS any and all off-site fabricated materials and provide evidence that the producer is a FDOT Qualified Material/Producer or is listed on FDOT’s approved vendors list. A listing of Qualified Materials/Producers can be located at:


If Concessionaire proposes to use a non-qualified producer, it shall be incumbent on Concessionaire to schedule the producer’s qualification through FDOT’s qualification procedure. Any delays and/or costs associated with obtaining the producers qualification shall be Concessionaire’s responsibility.

Concessionaire shall provide all necessary inspection to assure effective QC of the operations related to acceptance of off-site manufactured materials. This includes sampling and testing, production, storage, delivery, construction and placement. Concessionaire shall ensure that the equipment used in the production and testing of the materials provides accurate and precise measurements in accordance with the applicable specifications. Concessionaire shall maintain a record of all inspections, including, at a minimum, date of inspection, results of inspection, and any subsequent corrective actions taken.

Prestressed Concrete Quality Assurance Program: Concessionaire shall ensure that prestressed concrete plants participating in FDOT’s Acceptance Program are qualified. Obtaining qualification shall require meeting Materials Manual, Chapter 8. Concessionaire shall utilize, under direction of the QAM, a certified Precast Prestressed Concrete Institute (PCI) Level III technician with a certificate of completion of the Section 450 specification examination for personnel performing plant manufacturing QA measures.

- Concessionaire shall ensure that the fabricators of steel and miscellaneous metal products are listed on the State Materials Office Qualified Materials/Producers List. All steel and miscellaneous metals producers shall meet the requirements of Sections 105, 460 and other pertinent sections of the Standard Specifications, and Chapter 11 of FDOT’s
Materials Manual. All producers/fabricators shall be listed on the Qualified Materials/Producers list prior to the commencement of work. For steel structures and components (beams, sign structures, etc.), Concessionaire, under direction of the QAM, shall utilize firms on the DOT’s prequalified list to perform plant manufacturing QA measures.

Concessionaire shall be responsible for fabrication and delivery of defective-free products and acceptance of materials at the time of delivery to the project site. Concessionaire shall be responsible to assure all materials are free from damage prior to use in the Work.

4.18 Inspection Documentation

Each QA/QC testing and inspection technician shall summarize their daily inspections, tests and material sampling activities in a daily report, substantially in the form of FDOT’s Inspectors Daily Work Report. Copies of the technician’s records shall be provided to the COS within 24 hours of completing the inspection. The report shall consist minimally of the following key points of record:

- Work performed by the firm, subcontractor, or material supplier, identified by work activity;
- Weather conditions;
- Inspections performed and their results (based on the Statewide Guidelist);
- Communications;
- Type, location, and results of all tests performed;
- Delays encountered;
- Identification of any safety-related problems and corrective action taken;
- Identification of all non-conforming work and the corrective action taken; and
- Signature of inspector.

4.19 Inspection Documentation and Reporting Process and Periodic Payment Certification

The objective of Table 4-1, Appendix 1 and Appendix 3 is to identify and summarize minimum inspection, sampling and testing coverage and frequencies, verification and observation schemes, and documentation and reporting requirements to be included in Concessionaire’s QA/QC Plan. The COS will review the D&C Work to ensure conformance with the QA/QC Plan.

The QAM shall maintain the Project’s materials records, recording materials used, source of material and method of verification used to demonstrate compliance with the Contract Documents and FDOT standards. The records will be reviewed on a monthly
basis by the COS. The monthly review will consist of spot checking at least five (5) materials and their source documentation. Minimally, the COS will review all components of the materials entries during the first two (2) months of commencement of Concessionaire planned or scheduled field operations to ensure all records are set up correctly. The QAM shall also maintain Project daily reports and shall be responsible for approval of all technicians’ daily reports.

The QAM shall approve all materials test reports.

The QAF shall be responsible for Project documentation, testing and inspection.

As part of each request for Periodic Payment under Section 12.1.2 of the Agreement, the QAM shall certify the percentage of D&C Work completed as of the date of such request, as compared to the Schedule of Values, and the corresponding dollar value of such work. The QAM shall also certify that all required QA and QC tests, inspections, measurements, permits and any other requirements of the Contract Documents for such completed D&C Work have been completed and all non-conformance reports relating to the respective work activity have been resolved.

4.20 FDOT Inspection Validation and Administration Process

As set forth in the Agreement, FDOT will have the right to audit, monitor, inspect and test the Work as it progresses and Concessionaire shall accommodate this process. This function will be performed by FDOT or the COS who shall perform IA and OT, observations and oversight and shall independently assess and validate work items.

4.21 Construction Inspection Checklists

The QA/QC Plan shall include inspection checklists for all anticipated construction operations and/or processes. These checklists shall be used by Concessionaire’s QA inspection personnel. The individual checklists will be reviewed by FDOT as part of the overall submittal of the QA/QC Plan. The checklist for each work activity shall include the construction requirements stated in the Standard Specifications or the Contract Documents. As a minimum each checklist shall address the following categories as shown in Table 4-1 and detailed in Appendix 3 of this Volume II, Section 3, Attachment 4:

<table>
<thead>
<tr>
<th>Checklist Item</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clearing and Grubbing</td>
</tr>
<tr>
<td>2</td>
<td>Temporary Traffic Control (TTC)</td>
</tr>
<tr>
<td>3</td>
<td>Environmental Compliance</td>
</tr>
<tr>
<td>Checklist Item</td>
<td>Item Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Earthwork</td>
</tr>
<tr>
<td>5</td>
<td>Drainage</td>
</tr>
<tr>
<td>6</td>
<td>Base</td>
</tr>
<tr>
<td>7A</td>
<td>Asphalt Plant/Lab</td>
</tr>
<tr>
<td>7B</td>
<td>Asphalt Milling &amp; Paving</td>
</tr>
<tr>
<td>8A</td>
<td>Concrete Pavement</td>
</tr>
<tr>
<td>8B</td>
<td>Concrete Materials</td>
</tr>
<tr>
<td>9</td>
<td>Structure Foundations</td>
</tr>
<tr>
<td>10A</td>
<td>Bridge Structures - General Concrete</td>
</tr>
<tr>
<td>10B</td>
<td>Bridge Structures - Bearings/Beams/Bolts</td>
</tr>
<tr>
<td>10C</td>
<td>Bridge Structures - Concrete Decks</td>
</tr>
<tr>
<td>10D</td>
<td>Bridge Structures - Post-tensioning</td>
</tr>
<tr>
<td>11</td>
<td>Mechanically Stabilized Earth Walls (MSE)</td>
</tr>
<tr>
<td>12A</td>
<td>Signalization</td>
</tr>
<tr>
<td>12B</td>
<td>Lighting</td>
</tr>
<tr>
<td>12C</td>
<td>Intelligent Traffic Systems</td>
</tr>
<tr>
<td>13</td>
<td>Traffic Control Aids</td>
</tr>
<tr>
<td>14A</td>
<td>Grassing</td>
</tr>
<tr>
<td>14B</td>
<td>Landscaping</td>
</tr>
<tr>
<td>15</td>
<td>Utilities</td>
</tr>
<tr>
<td>16</td>
<td>Public Information/Business Access</td>
</tr>
<tr>
<td>17</td>
<td>Maintenance Customer Concern</td>
</tr>
<tr>
<td>18</td>
<td>ADA Accessibility Issues</td>
</tr>
<tr>
<td>19</td>
<td>Noise and Vibration Abatement</td>
</tr>
</tbody>
</table>

### 4.22 Project Communications and Submittals

A timeline and process for making decisions and managing communications shall be established as part of the QA/QC Plan. These processes are to ensure that required information is provided in a timely and efficient manner and that decisions are made at the lowest appropriate level of authority. The processes shall include the guidelines for communications generated by Concessionaire’s team (designers, production forces, the QC personnel, and the QA personnel) to FDOT and the COS.
APPENDIX 1
Minimum Requirements for Concessionaire’s QA/QC Material Testing
Standard Specifications

<table>
<thead>
<tr>
<th>No.</th>
<th>Material Type</th>
<th>FDOT Material No.</th>
<th>Test Name</th>
<th>Spec. Section</th>
<th>Test Reference</th>
<th>Concessionaire QC Frequency</th>
<th>QAF QA Frequency</th>
<th>COS OT Frequency</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EMBANKMENT</td>
<td>004</td>
<td>PROCTOR (STANDARD)</td>
<td></td>
<td>AASHTO T99 C, Classification of Soil</td>
<td>1/type</td>
<td>1/type</td>
<td>1/8 types</td>
<td>2 BAGS, 3 PLASTIC BAGS ORGANICS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DENSITY IN PLACE</td>
<td>120</td>
<td>AASHTO M145, T88, T89, T90, FM1-T238 &amp; FM5-507 or ASTM D-4643</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*</td>
<td>1/64 Lots</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SUBGRADE-CEMENT TREATED</td>
<td>015</td>
<td>DENSITY IN PLACE</td>
<td>160</td>
<td>FM1-T238 &amp; FM5-507 or ASTM D-4643</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*</td>
<td>1/64 Lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SUBGRADE THICKNESS</td>
<td></td>
<td>SOIL 5-170</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1 test per 4 lots</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1/64 Lots</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4-IN HOLE</td>
</tr>
<tr>
<td>3</td>
<td>STAB SUBGRADE &amp; SHOULDERS</td>
<td>020</td>
<td>DENSITY IN PLACE</td>
<td>160 &amp; 914</td>
<td>SOIL FM1-T238 &amp; FM5-507</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1 test per 2 lots</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1/64 Lots</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CHECK UNIFORM MIX &amp; DEPTH - WITNESS</td>
<td></td>
<td>SOIL FM5-534</td>
<td>Initial: 3 tests per lot, Reduced frequency*</td>
<td>1 test per 2 lots</td>
<td>Initial: 1 test per lot, Reduced frequency*</td>
<td>1/64 Lots</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L.B.R.</td>
<td></td>
<td>SOIL FM5-515</td>
<td>1 test per 2 lot, No reduced frequency</td>
<td>1 test per 8 lots, No reduced frequency</td>
<td>1/64 Lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 BAGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PROCTOR (MODIFIED)</td>
<td></td>
<td>SOIL FM1-T180</td>
<td>1 test per 2 lot, No reduced frequency</td>
<td>1 test per 8 lots, No reduced frequency</td>
<td>1/64 Lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 BAGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LIQUID LIMIT, PLASTIC INDEX, ORGANIC CONTENT</td>
<td></td>
<td>SOIL AASHTO T-89, T-90, FM1-T287</td>
<td>Initial: 1 test per 2 lots, Reduced frequency*</td>
<td>1 test per 8 lots</td>
<td>Initial: 1 test per 8 lots, Reduced frequency*</td>
<td>1/128 Lots</td>
</tr>
</tbody>
</table>

* Minimum sampling and testing frequencies have been defined in this Appendix 1. The QC and QA frequencies may be reduced after 10 consecutive passing lots and favorable comparison between the QC and QA results that meet the thresholds set forth in Appendix 2. The reduced frequencies apply to individual operations with the same crew, equipment and materials. The reduced frequencies will revert back to initial frequencies if the QC and QA results do not compare favorably by meeting the thresholds set forth in Appendix 2.
<table>
<thead>
<tr>
<th>No.</th>
<th>Material Type</th>
<th>FDOT Material No.</th>
<th>Test Name</th>
<th>Spec. Section</th>
<th>Test Reference</th>
<th>Contractor QC Frequency</th>
<th>QAF QA Frequency</th>
<th>COS OT Frequency</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>BASE-LIMEROCK</td>
<td>032</td>
<td>PROCTOR (MODIFIED)</td>
<td>285 &amp; 911</td>
<td>SOIL FM1-T180</td>
<td>1 test per 8 lots, No reduced frequency</td>
<td>1 test per 16 lots, No reduced frequency</td>
<td>1/64 Lots</td>
<td>2 BAGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GRADATION FROM PROCTOR</td>
<td></td>
<td>Pass 3.5 in. sieve, Pass No. 4 Sieve</td>
<td>1 test per 8 lot, No reduced frequency</td>
<td>1 test per 16 lots, No reduced frequency</td>
<td>1/128 Lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DENSITY IN PLACE</td>
<td></td>
<td>SOIL FM1-T238 &amp; FM5-507</td>
<td>Initial: 1 test per lot, Reduced frequency*: 1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*: 1 test per 8 lots</td>
<td>1/64 Lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BASE THICKNESS</td>
<td></td>
<td>SOIL FM5-534</td>
<td>Initial: 3 tests per lot, Reduced frequency*: 1 test per lot</td>
<td>Witness: Initial: 3 test per 4 lots, Reduced frequency*: 1 test per 4 lots</td>
<td>1/64 Lots</td>
<td>3-IN CORE</td>
</tr>
<tr>
<td>5</td>
<td>BASE-RECLAIMED ASPH PAVEMENT</td>
<td>054</td>
<td>PROCTOR (MODIFIED)</td>
<td>283</td>
<td>SOIL FM1-T180</td>
<td>1 test per 8 lot, No reduced frequency</td>
<td>1 test per 16 lots, No reduced frequency</td>
<td>1/64 Lots</td>
<td>3 BAGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GRADATION FROM PROCTOR</td>
<td></td>
<td>Pass 3.5 in. sieve</td>
<td>1 test per 8 lot, No reduced frequency</td>
<td>1 test per 16 lots, No reduced frequency</td>
<td>1/128 Lots</td>
<td>2 BAGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DENSITY IN PLACE</td>
<td></td>
<td>SOIL FM1-T238 &amp; FM5-507</td>
<td>Initial: 1 test per lot, Reduced frequency*: 1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*: 1 test per 8 lots</td>
<td>1/64 Lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BASE THICKNESS</td>
<td></td>
<td>SOIL FM5-534</td>
<td>Density in place</td>
<td></td>
<td>1/64 Lots</td>
<td>3-IN CORE</td>
</tr>
<tr>
<td>6</td>
<td>BACKFILL-SELECT GRANULAR</td>
<td>092</td>
<td>PROCTOR (MODIFIED) &amp; CORROSION SERIES</td>
<td>145 &amp; 548</td>
<td>SOIL FM1-T180, AASHTO M145, T27, T89, T90 &amp; FM 5-550A, 5-550B, 5-551, 5-552, 5-553</td>
<td>1 per type, No reduced frequency</td>
<td>1 per type, No reduced frequency</td>
<td>1/8 types</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DENSITY IN PLACE</td>
<td></td>
<td>SOIL FM1-T238 &amp; FM5-507</td>
<td>Initial: 1 test per lot, Reduced frequency*: 1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*: 1 test per 8 lots</td>
<td>1/64 Lots</td>
<td></td>
</tr>
</tbody>
</table>

* Minimum sampling and testing frequencies have been defined in this Appendix 1. The QC and QA frequencies may be reduced after 10 consecutive passing lots and favorable comparison between the QA and QC results that meet the thresholds set forth in Appendix 2. The reduced frequencies apply to individual operations with the same crew, equipment and materials. The reduced frequencies will revert back to initial frequencies if the QA and QC results do not compare favorably by meeting the thresholds set forth in Appendix 2.
<table>
<thead>
<tr>
<th>No.</th>
<th>Material Type</th>
<th>FDOT Material No.</th>
<th>Test Name</th>
<th>Spec. Section</th>
<th>Test Reference</th>
<th>Contractor QC Frequency</th>
<th>QAF QA Frequency</th>
<th>COS OT Frequency</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>GROUT-AUGER CAST PILE/MICRO PILE</td>
<td>100</td>
<td>COMPRESSION 28-DAY</td>
<td>455</td>
<td>ASTM C39</td>
<td>1 test per 50 CY, No reduced frequency</td>
<td></td>
<td></td>
<td>4x8 CYLINDERS</td>
</tr>
<tr>
<td>8</td>
<td>MILL-EXISTING ASPHALT PVT</td>
<td>101</td>
<td>CONFIRMATION</td>
<td>327</td>
<td>BIT 5-327</td>
<td>Per Specification Confirmation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STRAIGHTEDGE</td>
<td></td>
<td>BIT 5-327-4</td>
<td>Finish Surface/Spec Confirmation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>BIT MIX-TYPE SP, FC, BASE ETC</td>
<td>123</td>
<td>TEMPERATURE</td>
<td></td>
<td>BIT 5-330-9</td>
<td>1/5 Trucks</td>
<td></td>
<td></td>
<td>1-35 POUND BOX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EXTRACTION/ VOLUMETRICS EXTRANCTION/ VOLUMETRICS</td>
<td>320, 330, 334 &amp; 916</td>
<td>BIT FM5-563</td>
<td>1 test per 2,500 T. sublot; no reduced frequency (10,000 T lot).</td>
<td>1 test per 10,000 T. lot; no reduced frequency.</td>
<td>1 test per 24-10,000 T. lots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CORE DENSITY</td>
<td></td>
<td>BIT FM1-T166</td>
<td>Initial: 5 cores/sublot, Reduced frequency 5 cores per lot</td>
<td>Initial 5 cores per 24 lots</td>
<td>Initial 1 test per 4,000 T, Reduced frequency*: 1 test per 10,000 T</td>
<td>6&quot; CORE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SURFACE IRREGULARITIES</td>
<td></td>
<td>BIT 5-330</td>
<td>N/A</td>
<td>Per Specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AS BUILT CONSTRUCTION</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>1/Project</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Minimum sampling and testing frequencies have been defined in this Appendix 1. The QC and QA frequencies may be reduced after 10 consecutive passing lots and favorable comparison between the QA and QC results that meet the thresholds set forth in Appendix 2. The reduced frequencies apply to individual operations with the same crew, equipment and materials. The reduced frequencies will revert back to initial frequencies if the QA and QC results do not compare favorably by meeting the thresholds set forth in Appendix 2.
<table>
<thead>
<tr>
<th>No.</th>
<th>Material Type</th>
<th>FDOT Material No.</th>
<th>Test Name</th>
<th>Spec. Section</th>
<th>Test Reference</th>
<th>Concessionaire Contractor QC Frequency</th>
<th>QAF QA Frequency</th>
<th>COS OT Frequency</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>CONCRETE PAVING</td>
<td>145</td>
<td>COMPRESSIVE STRENGTH</td>
<td>350 &amp; 352</td>
<td>ASTM C39</td>
<td>Initial: 1 test per lot, Reduced frequency*: 1 test per 4 lots</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*: 1 test per 8 lots</td>
<td>1 Test Per 64 Lots,</td>
<td>4x8 CYLINDERS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SLUMP</td>
<td></td>
<td>ASTM C143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>% AIR</td>
<td></td>
<td>ASTM C173 or C231</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TEMPERATURE</td>
<td></td>
<td>ASTM C1064</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WATER CEMENT RATIO</td>
<td></td>
<td>FM 5-501</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PAVEMENT THICKNESS</td>
<td></td>
<td>ASTM C174 or ASTM C1383</td>
<td>Initial: 1 per 2,500 SY, Reduced frequency*: 1 per 5,000 SY</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>EDGE DRAINCRETE</td>
<td>154</td>
<td>DRAINABILITY</td>
<td>446</td>
<td>FM 5-570</td>
<td>Initial: 1 test per lot, Reduced frequency*: 1 test per 4 lots</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>CONCRETE-STRUCTURAL</td>
<td>160</td>
<td>COMPRESSIVE STRENGTH</td>
<td>400</td>
<td>ASTM C39</td>
<td>Initial: 1 test per lot, No reduced frequency</td>
<td>Initial: 1 test per 4 lots, Reduced frequency*: 1 test per 8 lots</td>
<td>1 Test Per 64 Lots,</td>
<td>3 4x8 CYLINDERS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SLUMP</td>
<td></td>
<td>ASTM C143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>% AIR</td>
<td></td>
<td>ASTM C173 or C231</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TEMPERATURE</td>
<td></td>
<td>ASTM C1064</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WATER CEMENT RATIO</td>
<td></td>
<td>FM 5-501</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Minimum sampling and testing frequencies have been defined in this Appendix 1. The QC and QA frequencies may be reduced after 10 consecutive passing lots and favorable comparison between the QA and QC results that meet the thresholds set forth in Appendix 2. The reduced frequencies apply to individual operations with the same crew, equipment and materials. The reduced frequencies will revert back to initial frequencies if the QA and QC results do not compare favorably by meeting the thresholds set forth in Appendix 2.
<table>
<thead>
<tr>
<th>No.</th>
<th>Material Type</th>
<th>FDOT Material No.</th>
<th>Test Name</th>
<th>Spec. Section</th>
<th>Test Reference</th>
<th>Concessionaire QC Frequency</th>
<th>Concessionaire QA Frequency</th>
<th>COS OT Frequency</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>GEOGRID REINFORCEMENT</td>
<td>251</td>
<td>PROCTOR (MODIFIED) &amp; CORROSION SERIES</td>
<td>548</td>
<td>SOIL FM1-T180, AASHTO M145, T27, T89, T90 &amp; FM1-T267RAW/AVG FM 5-550A, 5-550B</td>
<td>Initial: 1 per type, No reduced frequency</td>
<td>Initial: 1 per type, No reduced frequency</td>
<td>Initial: 1 Per Type, No-Reduced Frequency</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>GROUT-POST TENSIONING</td>
<td>098B</td>
<td>COMPRESSIVE STRENGTH</td>
<td>938</td>
<td>FM 1-T106</td>
<td>1/each day’s grouting</td>
<td>N/A</td>
<td>N/A</td>
<td>6 Cube Set</td>
</tr>
</tbody>
</table>

* Minimum sampling and testing frequencies have been defined in this Appendix 1. The QC and QA frequencies may be reduced after 10 consecutive passing lots and favorable comparison between the QA and QC results that meet the thresholds set forth in Appendix 2. The reduced frequencies apply to individual operations with the same crew, equipment and materials. The reduced frequencies will revert back to initial frequencies if the QA and QC results do not compare favorably by meeting the thresholds set forth in Appendix 2.
# APPENDIX 2

<table>
<thead>
<tr>
<th>TEST</th>
<th>QA vs QC COMPARISON TOLERANCE</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Proctor</td>
<td>+/- 4.5 PCF</td>
<td>AASHTO T-99</td>
</tr>
<tr>
<td>Modified Proctor(4.54 kg @ 18&quot;)</td>
<td>+/- 4.5 PCF</td>
<td>AASTO T-180</td>
</tr>
<tr>
<td>Limerock Bearing Ratio</td>
<td>Both Tests Must Pass</td>
<td>FM 5-515</td>
</tr>
<tr>
<td>Soil Density</td>
<td>+/- 3 PCF</td>
<td>FM 1-T238</td>
</tr>
<tr>
<td>Soil Classification</td>
<td>Soil Types (Select, Plastic, High Plastic, Muck) Must Match</td>
<td>Standard Index 505</td>
</tr>
<tr>
<td>Concrete Slump</td>
<td>+/- 3/4&quot;</td>
<td>ASTM C143</td>
</tr>
<tr>
<td>Concrete Air (Pressure)</td>
<td>0.8%</td>
<td>ASTM C231</td>
</tr>
<tr>
<td>Concrete Air (Volumetric)</td>
<td>+/- 32%</td>
<td>ASTM C173</td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>+/- 2 degrees F</td>
<td>ASTM C1064</td>
</tr>
<tr>
<td>Water Cementitious Ratio</td>
<td>Must Match</td>
<td>FM 5-501</td>
</tr>
<tr>
<td>Concrete Strength</td>
<td>Specification 346</td>
<td>ASTM C39</td>
</tr>
<tr>
<td>Maximum specific gravity (Gmm)</td>
<td>Less than 0.016</td>
<td></td>
</tr>
<tr>
<td>Asphalt Bulk Specific Gravity (Gmb) (gyratory compacted samples)</td>
<td>Less than 0.022</td>
<td>AASHTO T 312-11 and FM 1-T 209.</td>
</tr>
<tr>
<td>Asphalt Bulk Specific Gravity (Gmb) (roadway cores – fine graded mixture)</td>
<td>Less than 0.015</td>
<td>FM1-T166</td>
</tr>
<tr>
<td>Asphalt Bulk Specific Gravity (Gmb) (roadway cores – coarse graded mixture)</td>
<td>Less than 0.018</td>
<td>FM1-T166</td>
</tr>
<tr>
<td>Asphalt Binder Content (Pb)</td>
<td>Less than 0.44%</td>
<td>FM 5-563</td>
</tr>
<tr>
<td>Asphalt Gradation (P-200)</td>
<td>FM 1-T 030 (Figure 2)</td>
<td>FM 1-T 030</td>
</tr>
<tr>
<td>Asphalt Gradation (P-8)</td>
<td>FM 1-T 030 (Figure 2)</td>
<td>FM 1-T 030</td>
</tr>
</tbody>
</table>
APPENDIX 3
INSPECTION GUIDELISTS

MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 1 Clearing and Grubbing

1. Clearing and grubbing limits are established according to the Plans. [Spec. 110-2]

2. Stumps and roots within the limits shown are removed and standard clearing and grubbing meets requirements shown in contract sections 110-2.1 through 110-2.2.

3. Check location of selective clearing and grubbing areas designated in the Plans. [Spec. 110-3]

4. Assure burning of debris must be in accordance with applicable laws, ordinances, permits and regulations. [Spec. 110-9.2]

5. Existing structures, including foundations are removed to accommodate new construction. [Spec. 110-6.1 to 110-6.4]

6. Ensure that, except as specified otherwise in the Contract Documents, Concessionaire takes ownership of, and disposes of all removed materials. [Spec. 110-9.1 to 110-9.5]

7. For miscellaneous operations such as plugging abandoned water wells, landscape areas, terrain leveling and mail box adjustment, ensure Concessionaire meets the requirements specified. [Spec. 110-10]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 2 Temporary Traffic Control (TTC)

1. Has a TTC has been developed and incorporated into the Plans? Has the TTC been signed and sealed by a Professional Engineer and approved by FDOT before being used. [Specs. 102-4, CPAM 9.1.5]

2. Concessionaire has provided the name and telephone number(s) of the Worksite Traffic Supervisor (WTS) in writing. [Section 8.4.3.2 of the Agreement]

3. The WTS has provided a valid certificate of successfully completing an approved Advanced TTC training course. [Specs. 105-8.3]

4. The WTS is on site during all set up and take down, and performs a drive through inspection immediately after set up. [Specs. 102-3.2]

5. The WTS does an initial inspection and evaluation of the work zone for each phase of construction and conducts daily daytime and weekly nighttime inspections within the limits of the project for projects with predominant daytime work activities and daily nighttime and weekly daytime inspections for projects with predominant nighttime work. The WTS notes any deficiencies in the TTC Review Report Form and provides a weekly report to the QAM using form number 700-010-08 or approved equal. [Specs. 102-3, CPAM 9.1.8]

6. The QAM has reviewed Concessionaire’s weekly TTC Review Report for reasonableness and accuracy by conducting a field project inspection of the work zone. [CPAM 9.1.8]

7. The WTS immediately corrects all safety deficiencies and does not allow minor deficiencies that are not immediate safety hazards to remain uncorrected for more than 24 hours. [Specs. 102-3, CPAM 9.1.8.2 and 9.1.9]

8. The QAM has completed a traffic evaluation at crash site, for crashes occurring within the project limits. [CPAM 9.1.10 and 9.3]

9. Concessionaire has provided access to all residences and businesses whenever construction interferes with the existing means of access, and material has been placed, as needed, for driveways and sidewalks to residences and businesses to continuously provide safe, stable and reasonable access for vehicles and pedestrians. [Specs. 102-1, 102-5.5, 102-8, and Index 660]

10. For sidewalk closures, Concessionaire has provided an alternate accessible path for pedestrian TTC around the closed section of sidewalks. [Specs. 102-1, 102-3 and, Index 660]

11. Concessionaire is controlling dust during construction operations. [Specs. 102-5.2]
12. Concessionaire has removed all existing pavement markings in conflict with the adjusted vehicle paths without damaging the surface texture and without the use of black paint. [Specs. 102-5.8, 2003 MUTCD 6F.71 and 2009 MUTCD 6F.77]

13. The QAM has verified that Concessionaire’s certified initial retroreflectivity readings meet the minimum requirements of 300 mcd/ lx·m2 and 250 mcd/ lx·m2 for white and yellow paint, respectively, and maintains 150 mcd/ lx·m2 throughout the work zone. Refer to other sections of the specifications for different pavement marking products. [Specs. 102-10, 709-4, 709-7, 710-4, 711-4, 711-7, 713-4, 713-7, 971]

14. Concessionaire has maintained Type A, C and D warning lights so as to be capable of being visible on a clear night from a distance of 3000 feet, and Type B warning lights so as to be capable of being visible on a sunny day when viewed without the sun directly on or behind the device from a distance of 1000 feet. [2003 MUTCD Section 6F.78 and 2009 MUTCD Section 6F.83]

15. Concessionaire has provided temporary traffic control devices that have been permanently marked with a valid QPL or APL number. [Specs. 102-9.1]

16. Concessionaire has maintained temporary traffic control devices in accordance with ATSSA’s Quality Guidelines for Temporary Traffic Control Devices and Features. [Specs. 102-9.1]

17. Concessionaire has correctly installed work zone sign supports (post-mounted and portable) that have been permanently marked with a valid QPL number. [Specs. 102-9.1, 102-9.2, 700-2.5, 990-8, Index 600 Sheets 6 and 7]

18. Concessionaire has placed business access signs as required by the Plans. [Specs. 102-9.3, Index 600 Sheet 11]

19. The QAM has verified that the crash cushions are installed in accordance with the Plans, Design Standards, and QPL vendor drawings. [Specs. 102-9.6]

20. The QAM has verified that Concessionaire is using a Traffic Control Officer when using Design Standard 619 on freeway facilities (interstates, toll roads, and expressways) at nighttime. [Specs. 102-7]

21. The QAM has verified that the temporary lane separator has been installed properly. [Specs. 102-9.17, Index 600]

22. Temporary signs on barrier or traffic railing are installed in accordance with Index 11871. [Index 11871]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 3 Environmental Compliance

1. Does Concessionaire have all environmental permits approved and posted as required by the permitting agency?

2. No construction activities can begin until the erosion control plan has been approved by the EOR and governing regulatory agency, if needed. Where an NPDES permit is required, under no circumstances can any earth be disturbed until Concessionaire installs, maintains or monitor erosion control devices to implement the Storm Water Pollution Prevention Plan (SWPPP) sign the certification statement (Form No. 650-040-07). [CPAM 8.2, Spec. 104-5]

3. Confirm Concessionaire has posted and is maintaining a copy of the notice of intent in a prominent location on the construction site for public viewing. [CPAM 8.2.7]

4. Limit the area in which clearing and grubbing, and excavation and filling operations, are being performed so that the capacity to prevent stormwater pollution is not exceeded. Do not expose more than 750,000 ft2 (70,000 m2) without specific approval. [Spec. 104-6]

5. The QAM shall monitor permit expiration dates and assure they do not expire before the permitted activity is complete. [CPAM 8.2.6]

6. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be kept on the construction site for the life of the project. [CPAM 8.2]

7. When an NPDES permit is required, the QAM shall make routine inspections every seven days or within 24 hours of a 0.50 inch or greater rainfall, of all erosion prevention and sediment control devices installed on the project and document all deficiencies in the daily work reports. Conduct inspections using qualified personnel who have successfully completed the Florida Department of Environmental Protection’s Florida Stormwater Erosion and Sediment Control Inspector training. [CPAM 8.2.7, Section 3.3.1 of the Agreement]

8. If deficiencies are noted in the daily work report, the QAM shall make sure Concessionaire begins to correct them immediately. [CPAM 8.2.7, Spec. 104-6, 104-7]

9. If Concessionaire fails to comply with any federal and state environmental regulations, including permit conditions, and does not promptly (within 24 hours)
identify and correct all deficiencies on the project site, the QAM shall document all environmental noncompliance.

10. QAM shall assure construction operations are conducted in a manner that prevents soil erosion runoff or siltation in any off site location. [Spec. 104-3]

11. The QAM shall survey surface water management systems, bridge clearances, and authorized work as directed by the permit conditions and Contract Documents and include the information on the As-Built Record Plans. [CPAM 8.2, Section 3.3.1 of the Agreement]

12. The QAM shall assist and assure all permits are satisfactorily closed at the completion of permitted activities. [CPAM 8.2]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 4 Excavation/Embankment

1. If borrow pit is used, the location must be approved. [Spec. 120-6]

2. No work can be performed at an off-site construction activity area prior to obtaining clearance from the Division of Archives and complying with the Federal Endangered Species Act specified in Section 7-1.4. [Spec. 120-6]

3. Material used for embankment shall not contain muck, Stumps, roots, brush, vegetable matter, rubbish or other material that does not compact into a suitable and enduring roadbed. [Spec. 120-7]

4. Maximum particle size cannot exceed the specified limits. [Spec.120-7].

5. Without thick lift approval, lift thickness for embankment soils that are not A-3 or A-2-4 with up to 15% fines must be 6 in. (150 mm) or less, compacted thickness, for the full embankment width. [Spec. 120-8]

6. Where thick lifts are demonstrated and approved, maximum lift thickness may not exceed 12 inches (300mm) compacted thickness. [Spec. 120-8]

7. Uniformly compact each layer, using equipment that shall achieve the required density. [Spec. 120-9]

8. Initial equipment comparison and valid calibrations for all equipment used on this project? [Spec. 120-10.1.1]

9. Is the QAM ensuring that all sampling and testing requirements are met and enforcing the requirement that all samples and test are taken randomly? Does the field test verify this? [Spec 120-10]

10. Does the QAM have an appropriate process to ensure that the correct proctor is used when density tests results are evaluated for material acceptance? Are the appropriate materials used in each portion of the roadway? [Spec 120-10, 120-7]

11. Has the QAM enforced the requirement that all required density test results are documented on current forms provided by FDOT in an understandable format? [Spec 120-10]

12. While construction is in progress, adequate drainage for the roadbed must be maintained at all times. [Spec120-11]
13. Maintenance and protection of earthwork construction must be in accordance with Specs. [Spec. 104, 120-11]

14. Construction tolerances for embankment must be adhered to during final shaping of the earthwork. [Spec. 120-12]

15. Grassing of shoulder areas must be completed prior to placing the final wearing course. [Spec. 120-12]

16. The manipulation of embankment material on a pavement surface is not permitted. [Spec. 120-12]

17. Separate samples are used for Limerock Bearing Ratio (LBR) and Proctor by the QAM. [Spec 160-4.3.2.1]

**STABILIZING:**

18. The stabilizing materials meet spec. requirements. [Spec. 914, 160-3.2.1]

19. Prior to beginning stabilizing operations, the roadbed grading must conform to the lines, grades and cross-sections shown in the Plans. [Spec. 160-3]

20. When additive stabilizing materials are required, spread material uniformly over the area to be stabilized. [Spec. 160-3]

21. Rotary tillers and/or approved equals must be used when thoroughly mixing the stabilized areas to full depth and width. [Spec. 160-3]

22. At the completion of the mixing the material must meet the specified gradation, plasticity index and liquid limit. [Spec. 160-3]

23. The completed stabilized subgrade must conform with the finished lines, grades and cross-sections indicated in the Plans. [Spec. 160-3]

24. The subgrade must be firm and substantially unyielding upon completing the stabilizing and compacting operations. [Spec. 160-3]

25. Maintenance and protection of stabilized subgrade until the placement of base and subbase in place, must be in accordance with specification. [Spec. 160-3]

26. For any area where the bearing value obtained after mixing is deficient, the reprocessing efforts must be as specified. [Spec 160-4]

27. Densities must comply with specifications. [Spec. 160-4]
MINIMUM QAM INSPECTION REQUIREMENTS  
Category No. 5 Drainage

GENERAL

1. All precast structures are accompanied with a QC signed or stamped delivery ticket providing the description and the list of the products. [Spec. 449-1].

2. Trench is de-watered as necessary. [Spec. 125-1, Spec 125-8]

3. For 15" or larger OD pipe, insure pipe trench backfill materials and compaction according to the 4 zones specified. [Spec. 125-8]

4. Trench is wide and deep enough for compactors. [Spec. 125-4]

5. Material not classified as suitable backfill material is removed. [Spec. 125-4]

6. Proper bedding is provided. [Spec. 125-8]

7. Trench box or shore protection is used when excavation is in excess of 5 ft. or more. [Spec. 125-1]

8. Sediment basins are constructed in accordance with Contract Documents. [Index 101]

9. Heavy construction equipment is not permitted to cross over culverts or pipes until the backfill material has been placed and compacted to the finished earthwork grade or 4 ft above the pipe or culvert. [Spec. 125-8]

10. Concessionaire backfills using granular material in accordance with the specifications and after approval by the QAM in writing. [Spec 125-8.3.4]

BOX CULVERTS

11. For box culverts over which pavement are to be constructed, compact around the structure to an elevation not less than 12" above the top of the structure. Compact to a density not less than 100% of the maximum density as determined by AASHTO T99, Method C. [Spec 125-8.2 and 125-9.2]

12. Cut back is achieved for tie in length on culvert extensions. [Index 289]

13. Form removal performed per Contract Documents. [Spec. 400-14]
14. Do not begin backfilling against any masonry until permission is given by the QAM or concrete has been in place 7 days. [Spec. 125-8]

15. Reinforcing Steel is tied and supported correctly. [Spec. 415-5]

16. Ensure proper curing on all concrete surfaces. [Spec. 400-16]

17. Cast bottom slab and set prior to forming walls. [Spec. 400-7]

18. With walls of at least 6 ft. high, let concrete set at least 12 hrs. prior to casting the top. [Spec. 400-7]

19. Any construction joints in the wing-walls to be horizontal and below ground level. [Spec. 400-7]

20. For All box culverts, have weep holes been installed. [Spec. 400-6]

**PIPE CULVERTS AND STORM SEWERS**

21. Excavate to bottom of pipe, allow sufficient width for working room. [Spec. 125-4]

22. Pipe is set to proper line and grade before backfilling. [Spec. 430-4]

23. Obtain a minimum quality control density. [Spec. 125-9]

24. Lots don’t exceed 500 ft. [Spec. 125-8]

25. Run QC and QA Proctor tests with a minimum frequency of one test per soil type. [Spec. 125-9]

26. If density tests fail, retest within a 5’ radius. [Spec. 125-10]

27. Cover height is in accordance with the minimum and maximum. [Index 205]

28. Concrete pipe joints meet the allowable gap requirements and gaskets are checked and lubricated. [Spec. 430-7.2]

29. Pipe joints are wrapped with a filter fabric jacket as required. Ensure that if the joint is less than 4.6 feet below the water table and is leaking, the joint is not soil tight. [Spec. 430-4 and Index 280]
30. Inspect bituminous coating on metal pipe to ensure proper coating. [Spec. 430-4]

31. Plastic and metal pipe larger than 36 in. in diameter are tested to verify that the nominal pipe deflection does not exceed 5% of diameter. [Spec. 430-9]

32. Side-drain mitered end section (M.E.S.) aprons are constructed per Index 273 and cross drain M.E.S. aprons are checked for steel in toe wall per Index 272. [Index 272 and 273]

33. When pipe is placed above the original ground line elevation, embankment is placed and compacted to at least 2 ft. above the top of proposed pipe and to a width of at least four pipe diameters prior to excavation of the trench. [Spec. 125-4]

34. Undercutting the trench is completed when required. [Spec. 125-8]

35. Suitable material is used to backfill to a point 12 in. above the top of the pipe in undercut sections. [Spec. 125-8.1.4]

36. A minimum of two pieces of gasket material for each joint. [Spec. 942-2]

37. The contact surfaces of the pipe joints are free from air holes, chips and spalled concrete. [Spec. 449-5.4]

38. There is a passing test on the first dry lift of the pipe, one on each side of the pipe. [Spec. 125-8]

39. Concessionaire compact pipes separately from the structure. Lift numbers are identified correctly.

40. Upon Completion of paving operations Concessionaire dewater pipe(s) and provides a video recording schedule, along with a video of high quality DVD’s showing the interior of all pipes less than 48” in diameter and provide those DVD’s to the QAM Staff to use in final pipe inspection. This requirement may be waived by the QAM only for side drains and cross drains which are short enough to fully inspect from each end of the pipe. [Spec. 430-4.8]

INLETS, MANHOLES, END WALLS

41. Inverts are properly constructed. [Index 201]

42. Hand built manholes are built round, using approved bricks and cemented properly. [Spec. 949 and Index 201]
43. Pipes entering the structure are properly sealed. [Spec. 430-4]

**UNDERDRAINS**

44. Install underdrains per plan and/or Index 286. [Spec. 440 and Index 286].

45. Construct underdrain inspection boxes in accord with the Contract Documents. [Spec. 440-4, Index 245]

46. The pipe is perforated with no open joints in the pipe system. [Spec. 440-1]

47. The filter material is placed and compacted around the pipe for the full width of the trench in layers not exceeding 6 in. [Spec. 440-5]

48. Install french drains in accord with spec. & design standards. [Spec. 443, Index 285]

49. Coarse aggregates used meet specified graduation requirements. [Spec. 901-1.4]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 6 Base/Limerock

1. Concessionaire provides material from approved sources and obtains the QAM's approval of the source of supply. [Spec. 200-2]

2. Equipment, transporting, and construction requirements are generally per Section 200 –Limerock Base [Spec. 200]

3. Limerock is spread uniformly. [Spec. 200-5]

4. Areas where the base has segregated are replaced. [Spec. 200-5]

5. Limerock is transported to the point where it is used. [Spec. 200-4]

6. Hauling is not permitted over the subgrade without the approval of the QAM. [Spec. 200-4]

7. Base course is constructed meeting the required number and thickness of courses. [Spec. 200-5]

8. Subgrade is not disturbed by base construction operation. [Spec. 200-5]

9. Limerock base for the shoulder is placed prior to the placing of the final course of pavement on the roadway. [Spec. 200-5]

10. Limerock for shoulder base is not dumped on the roadway pavement, if so, it must be swept off immediately. [Spec. 200-5]

11. The first course is bladed to a cross section parallel to the finished base. [Spec. 200-6]

12. Density tests for the lower course are taken and pass prior to spreading material for the top course. [Spec. 200-6]

13. The top course is finished to grade and cross section after compaction and is free of scabs and laminations. [Spec. 200-6]

14. When wetting or drying is required, the entire depth and width of the course involved is manipulated. [Spec. 200-6]
15. Base contaminated by the subgrade, is removed and replaced. [Spec. 200-6]

16. Base widening strips are compacted in lifts prior to spreading the overlying course. [Spec. 200-6]

17. Conduct QC and QA sampling and testing at the minimum frequency required. [Spec. 200-7]

18. Irregularities greater than 1/4 inch (6 mm), using a 15 foot (4.572m) straightedge, are corrected by scarifying, removing or adding rock. [Spec. 200-7, 285-7]

19. At the time of priming, base is firm and unyielding, meets the specified density requirement and the moisture content in the top half is not over the optimum moisture of the base material. [Spec. 200-8]

20. Thickness of the base is measured at a frequency of 3 per Lot or 3 per 1000 feet. [Spec.200-7, 285-6]

21. Base deficient areas of more than 1/2 inch (13 mm) are corrected by scarifying and adding rock. [Spec. 200-7, 285-6]

22. If cracks or checks appeared in the base, either before or after priming, which, in the opinion of the QAM, impaired the structural efficiency of the base, the cracks or checks are removed by rescarifying, reshaping, adding base material where necessary, and recompacting. [Spec. 200-6]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 7A  Asphalt Plant/Lab

GENERAL

1. Design mixes have been verified and approved. When using a PG 76-22 Asphalt binder, limit the amount of RAP to a maximum of 20?%. [Spec. 334-2 and 334-3].

2. Verify that viscosity samples have been obtained per 334-2.3.5 and submit the samples to the State Materials Lab in a timely manner. Insure that appropriate materials testing data has been entered. [Spec 334-2]

3. Plant scales are certified every six months and the required monthly weight comparison checks have been conducted and documented properly. Weight measurements should be documented on the “Asphalt Plant Monthly Truck Scale Check Worksheet,” Form 675-030-27. [Spec 320-3]

4. The haul trucks have asphalt tight beds coated with acceptable asphalt release agent (not petroleum-based products such as diesel oil). Truck bed shall have a tarpaulin that can cover the entire load and holes in the side of the bed for checking load temperatures. [Spec 320-6 and 320-7]

5. The stockpiles including RAP material are free from contamination, segregation and are separated and identified as shown on the mix design. [Spec 320-2]

6. When present at the plant, perform verification measurements of mix temperature to ensure that the temperature of the mix at the plant is checked and recorded in accordance with the procedures stated in the specifications. Reject a load or portion of the load of HMA, when a mix temperature exceeds the acceptance limits. [Spec. 320-6 and CPAM Sec. 5.10]

7. The maximum period that any mix may be kept in a hot storage or surge bin is 72 hours. For FC-5 the maximum storage time is one hour. [Spec. 320-6 and 337-7]

8. Do not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the paving operations. [Spec. 330-3]

9. Perform verification test to ensure Concessionaire’s QC operations for asphalt rubber binder are conducted in accordance with the requirements of 336-5. [Spec. 336-5]
10. Ensure that mix is correctly sampled, split, boxed, identified (project number, lot and sublot, date, mix type, sample type), sealed with tape (and signed by QA when present), and properly stored in a secure location.

11. Ensure the Asphalt Mix Design Summary Report, Form 675-030-24 is maintained up-to-date and monitor trends/variations of the critical material characteristics. [MM 3.1]

12. Maintain good communication between plant personnel and roadway personnel. QAM, personnel, and FDOT. Obtain samples when requested by FDOT.

13. Randomly (minimum once per project) check/verify Concessionaire’s QC process control operations using this Inspection Guidelist and CPAM Section 5.10. Ensure a copy of the approved Asphalt Producer’s Quality Control Plan is available at the Plant. [Good Practice]

14. The Asphalt Producer’s Quality Control Plan has been approved and the technicians performing Quality Control, Verification, and Resolution tests are CTQP qualified. All documents are adequately filed. [Spec. 105-4 and 330-2]

15. Testing Laboratory must be qualified under FDOT’s Laboratory Qualification Program. [Spec. 105-6 and 330-2]

16. The area of laboratory is a minimum of 180 square feet with a layout, which shall facilitate multiple tests being run simultaneously by two technicians. [Spec. 320-2]

17. The lighting, temperature control, ventilation, equipment and supplies, personal computer, communication system shall be equipped in accordance with the specification requirements. [Spec. 320-2]

18. Calibration of the Superpave Gyratory Compactor is performed in accordance with manufacturer’s recommendations at frequencies established in the Asphalt Producer’s Quality Control Plan and the records are documented in the lab file. [Spec. 320-2]

19. The laboratory is furnished with the necessary sampling and testing equipment and supplies for performing quality control, acceptance and verification sampling and testing. [Spec. 320-2]

20. The gradations of incoming aggregate (including RAP and each size fraction for fractionated RAP), aggregate moisture content from stockpiles and / or combined cold feed aggregate shall be tested by Concessionaire for process control at a...
minimum frequency specified in his QC Plan. The testing of RAP material shall include A/C content and gradation of extracted aggregate. [Spec. 320-2]

21. The A/C content, mix gradation and volumetric properties of HMA shall be determined by Concessionaire for daily process control at a frequency in accordance with the Asphalt Producer’s QC Plan. [Spec. 320-2]

22. All QC sampling and testing are completed and the Control Charts are updated daily in accordance with the Asphalt Producer’s QC Plan and the results are shown in a conspicuous place in the asphalt lab. The QC results shall be documented on the Asphalt Plant Worksheet, Form 675-030-25 and entered into the materials database daily. [Spec. 105 and 320-2]

23. Run the split sample verification testing in accordance with the requirements specified in 334-5.5.1 and the same sample verification testing as specified in 334-5.5.2 in order to determine the validity of Concessionaire’s QC test results for the LOT acceptance. Document the results in the Asphalt Plant Worksheet, Form 675-030-25. [Spec. 334-5]

24. In the event that an individual QC test result of a sublot for air voids, or the average sublot density for coarse graded mixes, do not meet the requirements of Table 334-5 (Master Production Range), the LOT shall be automatically terminated and the production of the mixture shall be stopped until the problem is adequately resolved to the satisfaction of the QC Manager(s) and/or the Asphalt Plant Level II Technician(s) responsible for the decision to resume production after a quality control failure. The material represented by the failing test result shall be evaluated in accordance with 334-5.9.5. [Spec. 334-5].

25. In the event that two consecutive QC tests for gradation (P-200 only), A/C content, or the average sublot density (for two consecutive sublots) for fine graded mixes do not meet the requirements of Table 334-5, or two individual core densities within a sublot are less than 91.00% of Gmm (for coarse mixes), the LOT shall be automatically terminated and production of the mixture stopped until the problem is adequately resolved to the satisfaction of the QC Manager(s) and/or the Asphalt Plant Level II Technician(s) responsible for the decision to resume production after a quality control failure as identified in 105.8.6.4. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it shall not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume the production until appropriate corrections have been made. Inform the QAM of the problem and corrections made to correct the problem. After resuming production, sample and test
the material to verify that changes have corrected the problem. Summarize this information and provide it to the QAM prior to the end of the work shift when production resumes. In the event that a QC failure is not addressed as defined above, the QAM’s approval shall be required prior to resuming production after any future QC failures. Address any material represented by a failing test result in accordance with 334-5.9.5. [Spec. 334-5]

26. Take necessary actions for the materials defective material in accordance with the requirements of 334-5.9. Concessionaire’s evaluation of the defective material shall be performed in accordance with 334-5.9.5. [Spec. 334-5].

27. For FC-5 friction course, when an individual QC test result of a sublot for gradation (P-3/8, P-4, and P-8) does not meet the requirements of Table 337-2, steps shall be taken to correct the situation and actions taken shall be reported to the QAM. In the event that two consecutive individual QC test results for gradation (P-3/8, P-4, and P-8) or an individual test result for A/C content do not meet the requirements of the Table 337-2, the LOT shall be automatically terminated and production of the mixture shall be stopped. The material represented by the failing test result shall be evaluated in accordance with 334-5.9.5. [Spec. 337-6].

28. Ensure that QC personnel are recording raw test data on FDOT approved forms or approved equal and that this data is transferred to the appropriate forms, database, and spreadsheet. Any corrections made to the raw data shall be made by striking through the incorrect data with a single line and writing the correct data above the struck through data. Erasing any data is prohibited.

29. When the total combined quantity of hot mix asphalt for the project, as indicated in the Plans for Type SP and Type FC mixtures only, is less than 2,000 tons, the QAM shall accept the mix on the basis of visual inspection. [Spec. 334-5.1.2].

30. Use a liquid anti-strip additive at a rate of 0.5% by weight of the asphalt binder for mixtures containing limestone aggregate. Other rates of anti-strip additive may be used upon approval of the QAM. [Spec 337-3.2.1.4].

31. For FC-5 mixtures containing granite, add lime at a dosage rate of 1.0% by weight of the total dry aggregate. [Spec. 337-3.2.1.3].
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 7B Asphalt Roadway

GENERAL PAVING

1. A pre-paving conference is held before the milling and paving operation and a written report is distributed. [CPAM Sec. 3.1]

2. A qualified CTQP Asphalt Paving Level II technician shall be on the roadway at all times when placing HMA at the job site (except when placing miscellaneous or temporary asphalt). All testing shall be performed by a CTQP Asphalt Paving Level 1 technician with the exception that cross-slope, temperature and spread rate can be performed by someone under the supervision of a CTQP Paving Level 2 technician. [Spec. 105-8.6.2]

3. A copy of the approved Concessionaire’s Construction QA/QC Plan shall be present on the project and the Concessionaire’s roadway QC technician is required to have a copy of the mix design for the HMA being placed at paving site. [CPAM 3.2.8.2]

4. The paving machine is equipped with automatic longitudinal and transverse screed controls with a min. length of 25 feet that are being used during paving operation. [330.5] Establish the forward speed of the asphalt paver based on the rate of delivery of the mix to the roadway to maintain a constant supply of mix (head of material) at the augers in front of the screed. [Spec. 330-6]

5. Do not place asphalt mixtures while rain is falling or when there is water on the surface to be paved. [Spec. 330-3]

6. Ensure trucks are not bumping the paver. After releasing the HMA material from the truck’s body to the paver, the remaining material in the truck shall not be dumped on the tacked surface in front of the paver. [Spec. 300-8]

7. A string line is being used for an accurate, uniform alignment of the pavement edge in areas where there is no curb and gutter. The deviation along the unsupported pavement edge shall be not more than +/- 1.5 inches from the string line. [Spec. 330-6]

8. Do not allow the mixture to adhere to the wheels or tires of any rollers and do not use fuel or other petroleum distillates to prevent adhesion. Scrapers, pads and moistening systems shall be function properly to avoid having HMA adhering to the wheels. [Spec. 330-5]
9. Pneumatic-tire rollers (traffic rollers) are using tires inflated 50 to 55 PSI or as specified by the manufacturer. [Spec. 330-5]

10. Pneumatic-tire roller (traffic roller) is used on first overbuild course and the traffic roller or vibratory roller is used on the first structural layer over an asphalt rubber membrane interlayer (ARMI) layer. [Spec. 330-7]

11. When using an extendable screed device to extend the screed’s width on the full width lane or shoulder by 24 inches or greater, an auger extension, paddle, or kicker device shall be equipped and used during paving unless Concessionaire provides written documentation from the manufacturer that these are not necessary. [Spec. 330-5]

12. Protect the last structural layer placed prior to the friction course and newly finished dense-graded friction course from traffic until the surface temperature of these layers has cooled below 160°F. [Spec. 330-10]

13. The lift thickness meets the specification requirements. [Spec. 334-1 or for FC-5 (Spec 337-8)]

14. When the design speed is 55 miles per hour or greater and intermediate layer or temporary pavement shall be opened to the traffic, the smoothness of the pavement shall be checked by 15 foot rolling straightedge, which is calibrated before each use and to ensure that no smoothness deficiency is in excess of 3/8 inch. [Spec. 330-9, CPAM Section 11.2]

15. Document the roadway density random numbers in the Asphalt Plant-Random Number Worksheet, Form 675-030-25 and ensure that the 5 cores are cut from each sublot. Do not obtain cores any closer than 12 inches from an unsupported edge. After coring, core holes are patched properly within three days of coring. [334-5]

16. Produce a finished surface of uniform texture and compaction with no pulled, torn, crushed, raveled, or loosened portions and free of segregation, bleeding, flushing, sand steaks, sand spots, or ripples. Address any pavement not meeting the requirements of this specification in accordance with 330-9.5. [Spec. 330-9.2]

17. Monitor the 15 foot rolling straightedge operations and corrective actions in accordance with CPAM Sec. 11.2. [Spec. 330-9]

18. The transverse joint, longitudinal joint and pavement approaches to the bridge joints are constructed properly and checked by 15-foot manual straightedge to achieve...
smooth and compacted surfaces. The 15-foot manual straightedge shall also be used to check the smoothness on crossovers, intersections, tapers, transitions at beginning and end of project, parking lots and similar areas. [Spec. 330-9, FM5-529]

19. For night paving, sufficient lighting shall be provided at the job site. [Section 3.N of these Technical Requirements]

20. Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid. [Spec 330-10]

21. Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement. [Spec.120-12.2 and 330-10]

22. Equip blade graders operating adjacent to the pavement during shoulder construction with a 2 by 8 inch or larger board, or other attachment providing essentially the same results, attached to their blades in such manner that it extends below the blade edge in order to protect the pavement surface from damage by the grader blade. [Spec 330-10]

23. Perform the verification measurements at a min. frequency of twice per day to ensure that the temperature of the mix at the paving site is checked and recorded in accordance with the procedures stated in the specifications. Reject a load or portion of a load of HMA, when a mix temperature exceeds the acceptance limits. Document the results in the Asphalt Roadway - Verification Report, Form 675-030-021. [Spec. 330-6, CPAM Sec. 5.10]

24. For process control, Concessionaire shall monitor the pavement temperature with an infrared temperature device. The roadway density shall be monitored by either 6-inch diameter roadway cores, a nuclear density gauge, or other density measuring device at a min. frequency of once per 1500 feet of pavement. [Spec. 330-2]

25. Perform the verification activities at a min. frequency of once per layer per day to ensure that the spread rate (yield) is in compliance with the Contract requirements. In case of verification with deficiencies, Concessionaire shall take corrective action immediately and a recheck shall be made afterward. If the recheck indicates that the operations are still out of control, the operation shall be stopped and the quality of the defective areas shall be evaluated separately. The results shall be documented in the Asphalt Road-Verification Report, Form 675-030-021. [Spec 330-6, CPAM Sec 5.10]
26. Perform the verification activities by randomly taking a minimum of ten measurements of the cross slope per mile in tangent sections, control points in transition sections, and a minimum of three cross slope measurements on fully superelevated sections over a day’s production to ensure that Concessionaire’s measurements are within the acceptable tolerances listed in Table 330-2 Acceptable Cross Slope Tolerance. (Individual Deviations: +/- 0.4 % for tangent and superelevated sections, +/- 0.5 % for shoulders, Average Deviations: +/- 0.2 % for tangent and superelevated sections, +/- 0.5 % for shoulders). [Spec. 330-9, CPAM 5.10]

**GENERAL MILLING**

27. The milled surface is swept with a power broom or other approved equipment. A street sweeper is used in urban and other sensitive areas. Any surface delamination or scaling pieces shall be removed. [Spec. 327-3, 327-4]

28. The milling surface has a uniform texture with no deviation in excess of ¼ inch. The depth of cut and the cross slope are checked periodically to ensure that the results are in compliance with the Contract Documents. [Spec. 327-3, 327-4]

29. Repave all milled surfaces no later than the day after the surface was milled or as specified in the Contract Documents. [Spec. 327-3]

30. Perform the cross slope verification measurements in accordance with 327-3 and CPAM Sec. 5.10 to ensure that Concessionaire checks the cross slopes at a frequency of one measurement every 100 feet during milling operations. [Spec. 327-3, CPAM Sec. 5.10]

**PRIME AND TACK COAT**

31. The asphalt distributor being used is in accordance with the specifications. [Spec. 300-3]

32. The roadway surface is cleaned prior to application of the tack coat. [Spec. 300-5]

33. Perform the verification measurements at a min. frequency of once per day to ensure that the tack coat is applied uniformly with proper spread rate (per Table 300-1 of Spec 330-8) checked by Concessionaire at least twice per day and the tack has broken prior to the placement of asphalt. Document the results in the Asphalt Roadway-Verification Report. [Spec. 300-8, CPAM 5.10]
ASPHALT RUBBER MEMBRANE INTERLAYER (ARMI)

34. Use ARB-20 for the binder and size No. 6 stone, slag or gravel for the cover material in ARMI. [Spec. 341-2]

35. Perform the verification measurements at a min. frequency of once per day to ensure that the application rate of the asphalt rubber binder and the cover material meets the specification requirements. Document the results in the Asphalt Roadway-Verification Report. [Spec. 341-6, CPAM Sec. 5.10]

36. The rolling operation of the ARMI layer conforms to the Contract Documents. Ensure that the entire width of the mat is covered immediately by traffic rollers. For the first coverage, provide a minimum of three traffic rollers in order to accomplish simultaneous rolling in echelon of the entire width of the spread. If necessary, see that additional coverages with traffic rollers are applied, as directed by the QAM. [Spec. 341-6]

37. The ARMI layer is covered with the first course of asphalt concrete prior to being opened to traffic. [Spec. 341-6]

FRICITION COURSE

38. During paving operations for friction course, the temperature of the mixture and the air temperature at lay down shall meet the specification requirements. [Spec. 337-7]

39. Perform the verification activities at a min. frequency of once per day to ensure that the spread rate of the friction course meets the specifications. Document the results in the Asphalt Roadway-Verification Report, Form 675-030-021. [Spec. 337-5, CPAM 5.10]

40. For FC-5, use two static steel-wheeled rollers with an effective weight in the range of 135 to 200 PLI and with an appropriate rolling pattern for the pavement compaction in order to seat the mixture without crushing the aggregate. In the event that the roller begins to crush the aggregate, reduce the number of coverages or the PLI of the rollers. [Spec. 337-7]

41. For FC-5, in the event that an individual QC test result of a subplot for A/C content or two consecutive test results for gradation on any of the sieve sizes do not meet the requirements of Table 337-2, step shall be taken to correct the situation and actions taken shall be reported to the QAM. The LOT shall be automatically terminated and production of the mixture shall be stopped. The material represented by the failing...
test result shall be evaluated in accordance with the specifications. [Spec. 337-6 & 334-5.9.5]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 8A Concrete Paving

1. A detailed sequence and schedule of concrete placement operations is provided in the Construction QA/QC Plan and the Construction QA/QC Plan is approved prior to paving operations. [Spec. 350-1]

2. Ensure the method of placement for reinforcing steel, tie bars and dowel bars included in the Construction QA/QC Plan is being used. [Spec. 350-1]

3. Ensure the electronic delivery ticket is furnished for each batch of concrete from an agitating truck mixer. [Spec 346-6]

4. The pavement is constructed by a slip-form paver or fixed form. [Spec 350-1]

5. Ensure the procedure for the protection of the fresh concrete pavement from inclement weather included in the Construction QA/QC Plan is being used. [Spec. 350-1]

6. Ensure the defined provisions for lighting during night work included in the Construction QA/QC Plan are being used. [Spec. 350-1]

7. Ensure if any uncontrolled cracks appear during the life of the Contract, the cracked concrete is removed and replaced and effective solutions are implemented immediately to eliminate further cracks. [Spec. 350-1]

8. The slip-form paver is self-propelled and equipped to spread, strike-off, consolidate screed, and float-finish the freshly placed concrete in one complete pass. [Spec. 350-3]

9. The slip-form paver uses automatic guidance and grade controls with the exceptions noted in the Spec. [Spec. 350-3]

10. The concrete is consolidated for the full width of the strip being placed with a correct surface pan type or internal type vibrator. [Spec. 350-3]

11. For surface vibrators, the frequency is at least 3500 impulses per minute. [Spec. 350-3.3]
12. If using internal type tube or spud vibrators, then for tube vibrators use a frequency of at least 5000 impulses per minute and for spud vibrators use a frequency of at least 7000 impulses per minute. [Spec. 350-3.3]

13. The device for application of membrane curing compound is self-propelled and capable of uniformly applying the curing compound at the specified rate. [Spec 350-3.4]

14. When using a hot-poured sealer, the heating kettle is of the indirect heating or double boiler type, using oil as a heat transfer medium. [Spec 350-12]

15. The subgrade is completed for a distance of at least 500 feet ahead of the paving operation. [Spec 350-4]

16. The subgrade is maintained in a smooth and compact condition and is within 2% of the optimum moisture content at the time concrete is placed. [Spec. 350-4]

17. The forms are set to line and grade and such that they rest firmly on grade, throughout their entire length. [Spec 350-5]

18. Forms are maintained 500 feet on each side of the roadway in advance of the concrete pavement being placed and are true to line and grade. [Spec. 350-5]

19. Forms are clean and a release agent is applied in accordance with the manufacturer’s recommendations after each use and prior to placing concrete against them. [Spec. 350-5]

20. Where the Plans call for reinforced concrete pavement (RCP), ensure the re-bars are free from any material which can impair bonding of the steel with the concrete such as dirt, oil, paint, grease, mill scale, and any loose or thick rust. [Spec. 350-7]

21. Ensure all the re-bars of RCP are placed in accordance with the Plans and the bars are securely wired together at the transverse and longitudinal intersections. Lap splices are not less than 20 times the nominal diameter of the bar and only in the longitudinal members. [Spec. 350-7]

22. All paving operations cease when rain is imminent and have all available personnel cover the surface of the unhardened concrete with a protective covering, to protect the finish. [Spec 350-6]

23. The pavement is constructed to the full width of the lane or slab in a single construction operation. [Spec. 350-8]
24. The concrete is thoroughly consolidated against and along the faces of all forms, and along the full length on both sides of all joint assemblies by means of hand-operated, spud-type vibrators. [Spec. 350-8]

25. The final finish is applied using a seamless length of damp burlap over the full width of the strip of constructed pavement as the water sheen disappears from the surface of the pavement and just before the concrete achieves its initial set. [Spec. 350-10]

26. Ensure all joints are checked with straightedge before concrete becomes non-plastic and make corrections if any smoothness deficiency is found. [Spec. 350-10]

27. Ensure the concrete is cured in accordance with the requirements of the Specifications. Do not leave the concrete exposed for a period in excess of 30 minutes between stages of curing or during the curing period. [Spec. 350-11]

28. Ensure the forms are not removed from freshly placed concrete for at least 12 hours after placement. After removing the forms, immediately apply curing compound to the sides of the slab. [Spec. 350-11.4]

29. Ensure the freshly placed concrete is continuously cured for a period of 72 hours, exclusive of any periods when the temperature of the surface of the concrete falls below 50 F. [Spec 350-11.1]

30. Ensure the longitudinal joints are constructed in accordance with the details shown in the Plans and the tie bars or tie bolt assemblies are placed correctly in depth, spacing, location and angles. [Spec. 350-12.2.3]

31. Transverse construction joints are placed at the end of all pours and other locations where paving operations are stopped for as long as 30 minutes. [Spec. 350-12.3.1]

32. Accomplish the transverse contraction joint sawing in two steps. Make the initial cut 1/8 inch wide by a depth at least 1/3 of the pavement thickness and as soon as possible in no case longer than 12 hours after placing the concrete, unless cutting the transverse joint would damage the surface by raveling or chipping. Should Concessionaire have to saw cut the concrete after the 12 hours allowed by specifications, obtain the QAM’s approval of the additional curing time prior to saw cutting. [Spec. 350-12.3.2]

33. Dowel load-transfer devices are placed in all transverse joints and the position of the devices shall be confirmed by suitable means acceptable to the QAM. [Spec. 350-12.4]
34. For sawed joints that shall receive sealant, ensure the joint is flushed with a jet of water to remove any remaining slurry. [Spec. 350-12.6.1.1]

35. Determine the thickness by one of the methods in Section 350-14.1 If the pavement is cored, the pavement removed by the borings shall be repaired properly. [Spec. 350-14]

36. After placement of the concrete, traffic is kept off the pavement for a minimum of 14 calendar days or for such period as otherwise provided in the Contract Documents. [Spec. 350-16]

37. Ensure the pavement surface is true to grade and uniform in appearance with a longitudinal line type texture by grinding operation and the smoothness is tested by the 10 foot straightedge, a 10 foot straightedge, or a California Type Profilograph for acceptance. All deficiencies shall be corrected and retested to ensure conformity. [Spec. 352-4, 5, 6]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.8B Concrete Materials

PRODUCTION LIMITS

1. Cold weather placements: mixing and not permitted if below 45°F. [Spec. 346-7]

2. Hot weather placements: approved hot weather mix required if concrete temperature is above 86°F. Concrete rejected if over 100°F. [Spec. 346-7]

3. Transit time: reject concrete in agitator trucks that exceeds 60 minutes (non-retarded) and 90 minutes (retarded) prior to discharge. [Spec. 346-7]

4. When concrete placement stops for 90 min. or more, perform initial plastic properties tests on the next batch. [Spec. 346-8]

MIXING AND DELIVERY OF CONCRETE

5. Concrete delivery ticket information is completely and accurately entered with required signatures prior to start of concrete placement. [Spec. 346-6]

6. Batch weights are within 1% (2% if load is 3 CY or less) of the design mix quantities and all cementitious materials are added together for the verification. Coarse and fine aggregate are verified separately. If any are out of tolerance, District Materials Office notified and Plant notified so corrective action can be taken. [MM 9.2 Volume II]

7. Mixer ID card must be in ready mix truck, if not, load rejected and truck out of service until ID card restored. [MM 9.2 Volume II, 346-8]

8. Drum revolution counter must be operating properly, if not, note on ID card. [MM 9.2 Volume II]

9. Water measuring device on truck must operate properly and calibration information must be in truck. [MM 9.2 Volume II]

10. Water must not be added at the jobsite prior to slump testing and if the test is within the tolerance slump range, water may be added. [Spec. 346-7]
11. If jobsite water is added, mix concrete an additional 30 revolutions at mixing speed per spec.; however, do not add water after the total number of drum revolutions exceeds 130. [Spec. 346-7]

12. If slump is within tolerance, the load can be placed but if slump is outside tolerance, reject the load. Concrete placement may proceed for the QC truck and the load after the QC truck while plastic properties tests are in progress. [Spec. 346-7, 346-8]

13. Concrete should be mixed for a maximum of 160 revolutions at mixing speed and a maximum of 300 revolutions is allowed before all concrete is discharged. [Spec. 346-7]

14. For high slump or self-consolidating concrete, a grate must be placed over conveyance equipment to capture lumps and balls. [Spec 346-6]

**SAMPLING AND TESTING**

15. Samples must be taken at the point of final placement: end of buckets, convey or belts, pump hoses or chutes except that when discharged directly from mixer into bucket within 20 minutes, samples may be taken directly from mixer. Samples must be the composite of two portions. [Spec. 346-7]

16. Maximum LOT size must be per spec. and acceptance samples must be randomly selected by load number then taken from center of load. [ASTM C-172, Spec 346-9]

17. Sampling and testing equipment in proper condition and calibration: thermometers, slump cones, pressure meters (PM)/rollameters (RM), cylinder molds. [ASTM C-1064, 143, 231, 173, 470, Spec 346-5, FM 5-501]

18. Concrete temperature must be measured correctly. [ASTM C-1064, Spec 346-5]

19. W/C ratio must be computed correctly. [FM 5-501, Spec 346-5]

20. Percent air test must be performed correctly. [ASTM C-173 (RM), C-231(PM), Spec 346-5]

21. Slump test must be performed correctly. [ASTM C-143, Spec 346-5]

22. Concrete sample cylinders must be prepared properly at the site, curing boxes and tanks at the site must be maintained according to specs and all cylinders shall be clearly identified as outlined in the Sample/Lot Numbering System instructions located on the State Materials Office website. [ASTM C-31, Spec. 346-9]
23. Cylinder transported from field to lab in proper manner and must be at the lab within 48 hours of placement in molds. [Spec. 346-5, ASTM C 31]

24. Provide Sample Transmittal Card (C-22) properly filled out. [Form 675-050-04]

MASS CONCRETE

25. Temperature control plan or revised temperature control plan approved by State Materials Office (SMO). [Spec. 346-3]

26. Mass concrete Specialty Engineer or his/her designated employee must be at the jobsite and personally inspect and approve monitoring devices for the 1st placement of each size and type of component. [Spec. 346-3]

27. If 35ºF differential or the maximum 180ºF core limit is exceeded, adjustments must be made immediately, as recommended by the Specialty Engineer, while heat is high, and subsequent mass placements must not proceed until SMO approves revised plan. [Spec. 346-3]

28. Temperature monitoring data must be recorded at intervals of 6 hours or less until there is certainty that the maximum temperature differential and maximum core temperature has peaked and is diminishing. Data must be transmitted to the QAM within 3 days. [Spec. 346-3]

29. A structural integrity and durability analysis must be performed to evaluate the component condition if the 35º (20ºC) differential is exceeded. [Spec. 346-3]
MINIMUM FRC/GFDEOR INSPECTION REQUIREMENTS
Category No. 9 Structures Foundations

PILE PRE-DRIVING

1. When pre-forming pile holes, verify that Concessionaire complies with hole sizes and depths covered in the Contract Documents. The void between pile and hole must be filled with approved sand or grout. [Spec. 455-5]

2. For concrete piles, verify that the proper number of lifting points is used. Piles must also be stored properly. [Spec. 455-7 & Standard Index 20600]

3. Prestressed concrete piles must be inspected for defects as soon as possible upon delivery to the project site. Defects must be reported to the QAM and GFDEOR as soon as possible, but in any case, prior to use. [Good Practice, CPAM 10.2.5]

4. Verify jetting operations. Jetting requirements include: no jetting in completed embankments, jetting and driving with external jets requires 2 jets, specific jet nozzle placement; all piles in a group must be jetted prior to driving where practical; and pumps, supply lines and jet pipes per Pile Installation Plan (PIP). [Spec. 455-5]

5. Verify that Pre-drilling of holes through compacted fill or as starter holes complies with the specifications. [Spec. 455-5]

6. For proprietary mechanical pile splices - threaded rebars must penetrate into the splice plate at least the distance specified in the shop drawings - verify by measuring the distance from plate top to bar end. (Good practice). Verify that the splice is listed on the QPL. Verify Buy America provisions are met, if applicable.

PILE DRIVING

7. Comply with the pile driving criteria as established by GFDEOR. [Spec. 455-5], making sure of not exceeding the maximum strokes defined in the driving criteria letter. Do not drive under refusal conditions.

8. Verify that Concessionaire maintains proper alignment of leads and pile within tolerances. [Spec. 455-5]

9. Fill out pile driving log, keeping special driving procedures and precautions in mind. For open-end diesel hammers, a device to determine ram stroke is required. [Spec. 455-5] Detailed bearing and penetration requirements are covered in the specifications. [Spec. 455-5] Detailed set check and redrive procedures are covered
in the Specifications related to blow count interval, same pile cushion, and hammer warm up. [Spec. 455-5]

10. Splices and Buildups for concrete and steel piles must be performed properly. [Spec. 455-7 and 455-8]

11. Final pile top elevation and alignment must be within tolerance, (strands and reinforcement must be severed prior to breaking of piles that require cut off and pile must be visually checked for deficiencies after driving is complete). [Index 20601 Spec. 455-5 (pile splices) & 455-5 (pile cut-offs)]

ALL DRILLED SHAFTS INCLUDING SHAFTS UNDER MISCELLANEOUS STRUCTURES AND TOLL GANTRIES

12. Drilled Shaft Installation Plan: Have an approved copy of the drilled shaft installation plan on site. [Spec. 455-15]

13. When drilled shaft concrete is placed in any wet shaft, the Geotechnical Foundation Inspector shall provide slump loss test results before drilled shaft concrete operations begin. The tests shall demonstrate that the drilled shaft concrete maintains a slump of at least 5 inches throughout the concrete elapsed time. Inform the FRC and GFDEOR at least 48 hours before performing such tests in order to allow proper Verification of the results. Concessionaire shall perform slump loss testing of the drilled shaft mix using a laboratory acceptable to the QAM.

14. Drilled Shaft Test Hole (method shaft) and Production Shafts: document activities in the Drilled Shaft log forms and note problems in the Daily Report of Construction, test shafts must be removed to 2 ft. [0.6 m] below ground line. [Spec. 455-18]

15. Slurry properties: Verify Concessionaire performs properly slurry testing at both premix conditions and prior to placement concrete. Density, pH, viscosity and sand content must be within acceptable limits [Spec. 455-15.8].

16. Verify Concessionaire uses proper sample tool to sample and test the slurry prior to placing concrete. Verify that samples are taken at the correct depths. [Spec. 455-15.8.3]

17. Shaft inspection: when using a shaft inspection device, assist the GFDEOR as needed; when shaft inspection device is not used, the shaft bottom must be probed with a solid bar, if possible, or with a weighted line to check for sediments, unevenness and firmness. [Spec. 455-15]
18. Temporary casing in drilled shafts supporting miscellaneous structures must be provided with at least one foot above the ground surface to at least five feet below the ground surface. [Spec. 455-15]

19. Verify that the proper reinforcement cage is assembled according to the Plans, indexes or specifications with the proper number and dimension of bars, with the proper number, type and size of spacers, and that the number, length, top and bottom of the CSL tubes are according to the specifications? [Spec. 455-16]. [Spec. 455-16, 415]

20. Drilled shaft concrete placement must conform to all applicable Specs, including 346, 400 and 455 including method of placement, pump line requirements, duration of placement, and slump. Concrete must be over-poured until good quality concrete is evident at the top of the shaft. [Spec. 455-17]

21. Curing of the top surface of the shaft shall be as specified in Spec. 400-16 and shafts exposed to a body of water shall be protected from the action of the water by leaving the forms or casings in place for a minimum of 7 days unless the concrete has attained a compressive strength of 2500 psi or greater. [Spec. 455-17]

22. Reinforcement bars, dimensions, length, spacing and number, must be in accordance with the Contract Documents. Spacers, with the size, frequency and spacing meeting the specifications, must be installed in the cage. CSL access tubes must be installed in all shafts in required numbers and configuration. [Spec. 455-16]

23. Verify that Concessionaire inserts simulated or mock probes in each cross-hole-sonic access tube prior to concreting to ensure the serviceability of the tube. Verify that Concessionaire fills access tubes with clean potable water and recap prior to concreting. Concessionaire must repair or replace any leaking, misaligned or unserviceable tube prior to concreting [Section 455-16.4].

24. CSL testing performed as required. [Spec 455-17]

25. If the time of excavation exceeds the limits specified in the specifications, overreaming must be performed. [Spec. 455-15.11.5]

**AUGER CAST PILES**

26. Auger Cast Pile Installation Plan (ACPIP): Have an approved copy of the ACPIP on site. [Spec. 455-47]. Verify the auger flights are of the proper diameter and length, continuous and without breaks and gaps. [Spec 455-44]
27. Ensure the demonstration pile is performed successfully prior to the start of production piles [Spec. 455-39]. Document demonstration pile and production pile activities in the Auger Cast-in-Place Pile Installation Record (Form 700-011-03) and note problems in the Daily Report of Construction.

28. Verify the flow cone test is performed in accordance with the specifications. [Spec. 455-42]. [ASTM C939]

29. Verify cylinders are cast in accordance with the specifications. [Spec. 455-43]

30. Ensure the pump is properly calibrated [455-42] and an accurate calibration factor in units of volume/stroke is obtained. Pump calibration must be performed prior to the installation of the demonstration pile, immediately after any significant pump maintenance or repair is performed or at any time the inspector suspects the pump is operating differently from the last calibration.

31. Verify that the soft or unsuitable material is removed and replaced in accordance with the specifications [455-44, item 2]. If more than 5 ft of unsuitable material is encountered a pile redesign is required. A review and acceptance of the redesign shall be required prior to continue with the pile construction.

32. Verify the auger is advanced in a continuous rate to the required depths [Spec. 455-44, item 7].

33. Verify the bottom of the auger is plugged [Spec. 455-44, item 9].

34. Ensure that at least 5 ft of head is established before withdrawing the auger [Spec. 455-44, item 10].

35. Make sure Concessionaire complies with the minimum over pour percentage defined by the specifications [Spec. 455-44, item 11].

36. Make sure Concessionaire re-drills and re-grouts in accordance with the specifications, when the return depth is less than 5 ft [Spec. 455-44, item 11], when grouting is interrupted by any reason [Spec. 455-44, item 11], or when the minimum over pour requirements are not met [section 455-44, item 12] in any segment of the pile.

37. Verify the reinforcement is of the correct bar size and lengths. Ensure the reinforcement is without kinks, without unspecified bends clean [Spec. 455-44, item 14].
38. Ensure pile installation plan details the method used to center the reinforcement in the hole. [455-47, Item 4]

39. Ensure Concessionaire does not use mechanical equipment or tool to push or impact the cage to force the reinforcement cage into the grout. [455-47, Item 4]

40. Verify that the pile has been constructed within the tolerances required by the specifications [Spec. 455-45]. Verify the sound barrier wall shall be within tolerance in accordance with section 534-5, item J.
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.10A Bridge Structures

Bridge Structures - General Concrete

FORMING

1. The ground on which concrete or formwork shall be supported for pile and drilled shaft footings must be prepared and compacted properly, prior to form setting. [Spec. 455-1]

2. Form material must be approved and must have the proper dimensions, chamfers, positioning, bracing, friction collars, release agent, and be free of dirt or any other debris. QAM must approve forms, including Stay-In-Place (SIP), prior to concrete placement. Check for coating defects on all surfaces of polymer coated SIP form elements prior to their installation. [Spec. 400-5]

3. Traffic barrier removable form alignment is particularly critical since public visibility of barriers is very high. [Spec. 521-4]

4. Slip formed traffic barrier concerns: guide string alignment, adequate slip forming machine operation and vibrators, clean deck surface, and rebar cover adjustments made just before the slip former passes. [Spec. 521-4 and Good Practice]

5. Falsework should be reviewed by the QAM prior to any concrete placements. Falsework and shoring requiring shop drawings must be inspected and certified by the Specialty Engineer prior to concrete placement. [Spec. 5-1, 400-4, and Good Practice]

PLACING AND TYING REBARS

6. Storing, placing, and tying rebar must be done properly. [Spec. 415-3 thru 5]

7. Rebar placing, tying and support concerns: placement tolerances, securing and lapping of splices, mortar block composition and fastening. If form bottom is 12 feet or less above mean high water and environment is extremely aggressive, use of metal chairs or bolsters in contact with forms is not permitted. In slightly aggressive environments, continuous rails of steel bolsters are permitted to be in direct contact with removable forms. Molded plastic rails may not be in contact with removable forms. [Spec. 415-5]
8. Footing rebars: use double strand single tie at all perimeter intersections and at alternating interior intersections. [Spec. 415-5]

9. Column hoops shall be tied to the vertical bars at every intersection by a cross or figure 8 tie. [Spec. 415-5]

**Bridge Structures**

10. Wall rebars shall be tied with a cross or figure 8 tie at all perimeter intersections and at a minimum, every third interior intersection. [Spec. 415-5]

11. Beam and cap rebars: Heavy beam bolsters must be used for bottom and top mats of rebars and spacing and positioning is critical. Tying shall be double strand single ties at all intersections. [Spec. 415-5]

12. Traffic barrier rebars must be free of hardened concrete, curing compound and other foreign matter; utility conduits and embedments separated from rebar, and utility conduit slip joints and junction boxes properly installed. [Spec. 415-3 and Good Practice]

**PLACING CONCRETE**

13. Monitor surface moisture evaporation rate during placement and do not exceed 0.1 lb/ft2/hr unless countermeasures such as application of evaporation retarder or fogging are employed. [Spec. 400-16]

14. There are temperature restrictions for mixing and placing concrete when very hot or very cold, requirements for keeping concrete warm when cold and for retarding when hot, and for monitoring mass concrete temperature gradient. Do not remove the temperature control mechanisms until the core temperature is within 50 degrees F of the ambient temperature. [Spec. 346-3, 346-7, 400-7]

15. Concrete shall not be placed until foundations, forms, falsework and rebars have been inspected and approved. [Spec. 400-7]

16. Placement concerns: placement in the final position and in level layers, no movement with a vibrator, no displacement of rebars, no aggregate segregation or separation, and vibrations from adjacent equipment or operations must be controlled. [Spec. 346-6, 400-7]

17. Belt conveyors for concrete placement must be approved. [Spec. 400-7]
18. If concrete is pumped, the spec. requirements must be met. [Spec. 400-7]

19. Special requirements for placement in successive layers. Ensure vibrator penetration into underlying layer. [Spec. 400-7]

20. Number, type and size of vibrators must be approved and they shall be inserted and withdrawn as near to plumb as possible in a slow and steady manner. Circles of vibrator influence shall overlap to ensure that the entire placement is adequately vibrated. Proper vibration is particularly critical in areas where concrete flow is restricted by dense reinforcement or where concrete shall not readily flow since these areas have a high probability of forming voids or honeycomb. [Spec. 400-7]

Bridge Structures

21. Columns shall be placed in one continuous operation unless construction joints are shown in the Plans. [Spec. 400-7]

22. For slabs, screeding system must be demonstrated and approved prior to placement and concrete must be placed in continuous strips (transverse or longitudinal) with no time for initial set between strips except at planned joints. [Spec. 400-7 and Good Practice]

23. Unhardened concrete must be completely protected from rain and runoff by an approved system. Do not place concrete during rain. [Spec. 400-7.13.8]

CURING

24. No further curing is required if forms are kept in place, without loosening, for a least 72 hours but if before 72 hours, an approved curing method must be used. [Spec. 400-16]

25. Proper application of an approved membrane curing compound at 1 gallon/150 square feet (.06gal/Sq. Yd) of surface area. [Spec. 400-16]

26. Covers for continuous moisture curing shall be kept continuously wet for at least 72 hours for other than decks: 7 days for decks. Burlap-polyethylene sheeting is required to have a minimum weight of 9 ounces/square yard. [Spec. 925-3, 400-16]

27. Curing compound for slip formed barrier walls must be applied at the proper spread rate within 30 minutes or before loss of water sheen and must remain in place for at least 7 days. [Spec. 400-16]
28. Construction joints must be cured using either continuous moisture or curing blankets method. [Spec. 400-16]

FORM REMOVAL

29. Time of removal of forms shall be per Plans, determined from compressive strength tests, developed from a time versus strength curve or as per specs. [Spec. 400-14]

30. Concrete in cofferdams must not be exposed to the action of water prior to final set and must not be exposed to salt or brackish water for 7 days after placement. [Spec. 400-7]

FINAL FINISHING

31. Remove form tie ends and irregular projections and patch void, honeycomb and form tie voids with mortar material and use methods that comply with specs. [Spec. 400-15]

32. Class 5 Coating (textured paint) must be on the QPL and meet material specs and must have surfaces prepared and coatings applied in accordance with manufacturer's specs at a spread rate of 50 ± 10 ft2/gal. Coating thickness shall be checked if the spread rate is uncertain. [Spec. 400-15, Good Practice]

CRACK INSPECTION

33. Inspect concrete surfaces as soon as surfaces are fully visible after casting, between 7 and 31 days after the component has been burdened with full dead load, and a minimum of 7 days after the bridge has been opened to full unrestricted traffic. [Spec. 400-21]

34. Measure the width, length, depth (coring may be needed), termination points and precise location of all cracks and display, to scale, the results on a drawing referred to as a crack map. After initial inspection determine the cause of the cracks, monitor the cracks and document the growth of individual cracks. Use a pocket microscope to measure crack widths of 25 mils or less. Determine if cracks are structural or nonstructural and determine the repair of nonstructural cracks in accordance with CPAM 10.3.5. [Spec. 400-21]

35. Inspect underwater components in accordance with CPAM 10.6. [CPAM 10.6]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 10B Bridge Structures/Bearing/Beams/Bolts

BEARINGS

1. Beam seat/pedestal concerns: proper elevation, concrete bearing surface planeness and levelness, surface free of irregularities, proper placement of bearings relative to survey marks. [Spec. 400-11 & Good Practice]

2. Anchor bolt and bearing plate concerns: location, tolerances and installation of anchor bolts and bearing plates, bolt material per spec., expansion plate adjustments for temperature, proper setting method, bolt holes not through rebars. [Spec. 460-7]

3. Neoprene pads shall meet material specs including tolerances, pot/disc bearings shall be manufacturer certified and conform to specs and be protected from the elements prior to placement, manufacturer's representative on site during installation, installation by manufacturer's recommendations and the shop drawings. [Spec. 932-2 & 461]

BEAMS

4. Concerns for all beams: damage or flaws such as kinks, warps, bends, cracks, plates out of plumbness or squareness; pickup points in proper location; producer acceptance stamp, certification and beam identification; proper storage; correct beam lengths prior to shipment; erect beams at fixed bearings first; and do not place the weight of the superstructure or of beams on the caps until the cap concrete has reached the age of ten days. [Spec. 400-17, 460-4, 450 & Good Practice]

5. Store concrete beams in an upright position on proper dunnage, support at the proper locations under the beam and report excess camber or sweep. Prestressed beams and slabs must be inspected for defects upon delivery to the project site and defects must be reported to the QAM immediately. [Spec. 450-16]

6. Concrete beams shall be handled carefully and lifted only at pickup points identified in the Contract Documents. [Spec. 450-16]

7. Concrete and steel beams should be erected according to the framing plan and the centerline of beam bearing point must coincide with the centerline of the bearing area, longitudinally and transversely. For construction affecting public safety, beam stability calculations must be submitted for QAM review as well as an erection plan.
by a Specialty Engineer who must personally inspect the initially erected structure in the field. Daily Contactor inspections of erected members are required until diaphragms and cross frames or decks are in place. For all steel, Concessionaire’s erection plan must be reviewed by the QAM prior to the start of erection. [Section 2.T of these Technical Requirements, Spec. 450-16, 460-7, Good Practice]

8. Store steel beams according to item 5 above, and surfaces should be kept free of dirt, oil or any other foreign matter. Shear studs must be installed in the field only and results of shear stud bend tests must be recorded. [Spec. 460-4, 502-5]

9. Field assembly of steel beam component parts shall be done by the use of methods and devices unlikely to produce damage by twisting, bending or otherwise deforming the metal and if weathering steel, meet special requirements. For all beams, assembly and disassembly of falsework that temporarily supports any permanent structural component must be in compliance with Concessionaire’s erection plan and approved shop drawings. Immediately report violations of the erection plan, or falsework systems that seem to be inadequate, to the QAM. [Spec. 460-7 & Good Practice]

10. During steel beam erection, before bolting, beams shall be adjusted to correct grade and alignment and field connections shall be securely drift-pinned before bolting – at least 50% of bolts should be in place at major connections prior to release. Conduct a substructure survey prior to erection and report discrepancies to the QAM for resolution. Correction of significant beam misalignments must be approved by the EOR before implementation. [Spec. 460-7, Good Practice]

BOLTS

11. Fastener assemblies shall comply with all materials specs including all required certifications, bolt material test reports, rotational-capacity test reports done by the manufacturer or distributor and be sampled and tested properly. [Spec. 460-4 & 5]

12. A bolt LOT tracking and enforcement system shall be maintained during every operation until complete. [Spec. 460-4]

13. Approved bolt lubricants shall be used and proper procedures shall be used for lubricating the required fastener components. [Spec. 460-4]

14. Fastener assembly components shall be packaged, handled and stored properly. [Spec. 460-4]
15. A bolt rotational-capacity (RC) test [Florida Method FM5-581 (for long bolts) or FM5-582 (for short bolts)] shall be performed at the project site on a minimum of two units of each combination of high strength fastener assemblies prior to their installation. [Spec. 460-5]

16. For general bolt installation, each fastener assembly shall be tightened to at least the tension shown in the specs and there are strict procedures for performing tightening. [Spec. 460-5]

17. Detailed procedures must be followed to establish the correct snug tight torque. [Spec. 460-5]

18. Before bolting begins, connection plate surfaces must be in the proper condition, unless otherwise shown in the Plans, the bolt holes must meet the bolt hole geometry specified in the specification. The plate and hole alignment methods must be done properly. [Spec. 460-4]

19. For snugging bolts in the connection, if an impact wrench is used, the wrench must be set at or above the daily snug tight torque - the inspector should witness the snugging of each bolt. The order in which bolts should be tightened is critical as are the spec. requirements for snugging: refer to FDOT Structures Inspection Training Manual, Part Two, for a detailed example of exactly how this is done. [Spec. 460-5 and Good Practice]

20. For final tightening of the connection, the Turn-Of-Nut or DTI (twist-off bolts are not permitted) method requires very detailed procedures. An inspector must witness the turning of every nut and a washer must be under the element that is turned. Bolts shall not be tensioned to more than 115% of the required minimum bolt tension. [Spec. 460-5 & Good Practice]

21. Detailed procedures must be followed for mating and final tightening of bolts for highway sign, traffic signal and lighting structures. [Spec. 700-2]

22. Detailed procedures must be followed for setting, mating and final tightening of nuts on anchor bolts for beam bearings, steel poles, steel mast arms, monotube assemblies and highway sign structures. [Spec. 460-7, 649-5 & 700-2]

**BUY AMERICA**

23. Except for steel with a cost of less than 0.1% of total contract amount or $2,500.00, whichever is greater, steel and iron must be produced in the U.S. for federally funded projects. [Section 2.T.13 of these Technical Requirements]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 10C Bridge Structures Concrete Decks

FORMING

1. Removable form concerns: form material and dimensions, accurate positioning, and adequate capacity to support the load of plastic concrete. [Spec. 400-5]

2. Stay-in-place (SIP) metal form systems have numerous spec. requirements. Check for coating defects on all surfaces of polymer coated SIP form elements prior to their installation. [Spec. 400-5]

3. For prestressed concrete beam superstructures, check beam cambers and adjust forms for deviations in camber from those shown in the Plans. Discuss this issue at the preconstruction conference. [Spec. 400-5, 450-16, Good Practice]

4. Expansion joints may be placed before or after grinding but must be within strict tolerances in either case. [Spec. 400-10]

PLACING AND TYING REBAR

5. Rebars shall be stored properly and be free of foreign matter. Hot bending, welding or flame cutting are not allowed. [Spec. 415-3 and 415-4]

6. Each rebar shall be tied within 1" of plan position and splices shall be securely clamped or tied. [Spec. 415-5]

7. Tying for each mat: a double strand single tie used at every intersection on the periphery and for all other intersections, every third location. [Spec. 415-5]

8. Mortar block and bolster materials and placement have numerous spec. requirements. If form bottom is 12 feet or less above mean high water and environment is extremely aggressive, use of metal chairs or bolsters in contact with forms is not permitted. In slightly aggressive environments, continuous rails of steel bolsters are permitted to be in direct contact with removable forms. Molded plastic rails may not be in contact with removable forms. [Spec. 415-5]

SCREED DRY RUN

9. Performed after rebars have been placed and screed rails and headers are set. Thickness and clearances should be checked in every bay at longitudinal intervals not greater than 10 ft. [Spec. 400-7 & Good Practice]
10. Deck thickness and rebar clearance measurements should be taken from the bottom of the screed rollers and the screed rollers should be directly over the point where the measurement is to be taken. No deck concrete placement shall be allowed if the deck thickness measurement during the dry run is less than the required plan thickness. [CPAM 10.3 and Good Practice]

**Bridge Structures - Concrete Decks**

**PLACING DECK CONCRETE**

11. Do not place bridge deck concrete if during placement the average wind velocity forecast exceeds 15 mph as reported by the National Weather Service. [Spec. 400-7]

12. Monitor surface moisture evaporation rates during placement and do not exceed 0.1 lb/ft²/hr unless countermeasures for retaining moisture such as application of evaporation retarder or fogging are employed. [Spec. 400-16]

13. Approvals required for screed or strike off device and concrete placed in continuous strips (transverse or longitudinal) with no time for initial set between strips except at planned joints. [Spec. 400-7 and Good Practice]

14. Continuous beam decks must be placed according to the pouring sequence in the Plans. For continuous slabs placed in accordance with a pouring sequence, locate transverse construction joints at the bottom of a stay-in-place form flute. [Good Practice]

15. Minimum concrete placement rate 20 yd³/hr for placements 50 yd³ or less and 30 yd³/hr for greater than 50 yd³. All deck concrete between construction joints must be in place before initial set of any of the concrete begins. [Spec. 400-7]

16. Temporary erection supports must be released for steel beams before deck placement. Intermediate diaphragms must be poured at least 48 hours before deck placement. [Spec. 400-7]

17. Unhardened concrete must be completely protected from rain and runoff by a system that does not make contact with the concrete. Do not place concrete during rain. [Spec. 400-7]

18. Forms and rebar shall be sprayed with fresh cool water just prior to placement of concrete for decks in hot weather. If re-spraying of forms and rebars is required after
concrete placement starts, never spray onto the fresh concrete unless specifically authorized by the QAM. [Spec. 400-7]

SCREEDING AND FINISHING

19. Prior to all concrete placements, all bulkheads and rails must be set to proper grade and the screed must adjust for all variances. [Spec. 400-7]

20. Intermediate screed rails are not permitted and the screed must comply with the specification. [Spec. 400-7]

21. For short and miscellaneous bridges, the deck must be longitudinally straight edged with a 10 ft straightedge, half lapped, 5 ft transversely. [Spec. 400-15]

Bridge Structures - Concrete Decks

22. For long bridges, the deck must be planed to a minimum of 1/4 inch depth and also meet or exceed the profilograph smoothness criteria. [Spec. 400-15]

23. For short and miscellaneous bridges after water sheen and before initial set, the deck surface must be finished with burlap drag, fine broom or float. No blemishes, marks, or scratches are allowed greater than 1/16" in depth. [Spec. 400-15]

24. For concrete surfaces to be planed, correct all flaws such as cavities, blemishes, marks, or scratches that shall not be removed by 1/4" planing. [Spec. 400-15]

25. Required crack control must be installed by tooled “V” groove prior to initial set or by early entry dry cut saw. [Spec. 400-9]

CURING

26. For Bridge decks, application of Type 2 (white) curing compound to the deck surface must be complete within 2 hours from the initial placement of concrete and when the surface is damp with a minimum spread rate of 0.06 gal/yd² or 1 gal/150 square feet. The spread rate must be reported to the QAM. [Spec. 400-16]

27. Curing compound for barrier walls must be applied at the proper spread rate within 30 minutes or before loss of water sheen and must remain in place for at least 7 days. [Spec. 400-16]

28. Saturated, properly sealed curing blankets must be placed as soon as possible without affecting surface texture for a minimum of 7 days, blanket materials must
meet specifications and burlap-polyethylene sheeting is required to have a minimum weight of 9 ounces/square yard. [Spec. 925-3, 400-16]

29. Heavy loads must not be applied unless approved by the QAM, based on beam or cylinder breaks, for 14 days after concrete placement. [Spec. 400-17]

FORM REMOVAL

30. Time of removal for forms shall be determined from minimum time requirement, compressive strength tests, developed from a time versus strength curve, per specification, or as directed. Detailed specifications for cylinder testing and strength determination are required in order to remove forms. [Spec. 400-14]

GROOVING

31. Grooving shall take place only after the concrete has cured properly, after planing and before opening to traffic. [Spec. 400-15]

Bridge Structures - Concrete Decks

32. Prior to grooving, a detailed smoothness evaluation must be performed and the bridge requires at least ¼ inch depth of longitudinal planing unless it is a short bridge in order to achieve acceptable ride quality. [Spec. 400-15]

33. Grooves must be continuous from gutter to gutter, within 18” of gutter; and must be per specifications at joints, for skews, and for spacing and depth. [Spec. 400-15]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No. 10D Bridge Structures Post-Tensioning (PT)

GENERAL

1. The PT foreman (Level II) and PT crew members (Level I) must successfully complete a Post-Tensioning Institute (PTI) course and be qualified by CTQP. The PT crew must have at least two CTQP qualified members one of which may be the foreman. The grouting foreman must successfully complete an American Segmental Bridge Institute (ASBI) course and be qualified by CTQP as Level II and grouting crew members must successfully complete an ASBI or PTI course and be qualified by CTQP as Level I. The grouting crew must have at least two CTQP qualified members one of which may be the foreman. Conduct all stressing and grouting operations in the presence of the Engineer. [Spec. 105-8 & 462-4]

1. The vacuum grouting foreman must have experience and training in the use of vacuum grouting equipment and procedures. [Spec. 105-8 & 462-4]

MATERIALS

3. All materials must be stored in weatherproof buildings, sheds or containers. [Spec. 462-6]

4. The following material specs. must be met: 926-Epoxy Grout, 930-Magnesium Ammonium Phosphate Concrete, 938-Grout, 960-Post-Tensioning components, 975–Elastomeric Coating Systems. [Spec. 462-2]

5. Prestressing materials that must be approved, be in compliance and be undamaged are: prestressing steel including strands and bars, and PT systems including anchorage assemblies, bearing plates, couplers, grout caps, vent tubes, valves, inlets/outlets, ducts, wedge plates & wedges. [Spec. 462-2, 933]

6. Ducts must be protected from a variety of damaging elements at all times, be sealed at ends with caps/plugs, and be stored properly. [Spec. 462-6]

7. Inlets/outlets must have mechanical shut offs, be the correct diameter, extend sufficiently, and be properly bonded to the duct. [Spec. 462-7]

8. Grouts must be on the QPL and be mixed with the specified water; fluidity must be maintained per manufacturer’s limits; wick induced bleed tests must be performed; and on-site grout must be properly stored for not more than one month. Grouts that are more than 6 months old must be retested and certified or removed from the project. [Spec. 462-6, 923, 938]

9. PT Systems must be approved by the State Structures Design Office and required test reports must come from a certified independent lab. [Spec. 462-2, 960]
10. Certain materials must be sampled and tested, others must be certified, and some require LOT number identification at all times. [Spec. 462-6]

11. These tests may be required: Tendon Modulus of Elasticity Test (optional), In Place Friction Test (required for tendons longer than 100'). [Spec. 462-8]

PROTECTION OF PT STEEL

12. PT steel must be clean, bright, uniformly colored; have no corrosion pitting; and be rejected if damaged or deteriorated. [Spec. 462-6]

13. PT strands must be low relaxation (stabilized) per the requirements of ASTM A 416 and be in shipping containers with special corrosion inhibitor and in packaging that must be marked with specified information. [Spec. 462-6]

14. All PT superstructure steel must be stressed and grouted within 14 calendar days after placement in its final position. Substructure PT bars must be stressed and grouted within 21 days of placement. [Spec. 462-7]

FABRICATION

16. Duct splices must be minimized. [Spec. 462-7]

17. Internal ducts must be secured at not more than 30” intervals for steel pipes, 24” intervals for round plastic ducts, and 12” intervals for flat plastic ducts. Ducts, joints, tendons, rebar and anchorages must be within specified position tolerances. [Spec. 462-7]

18. External tendon duct must be straight between connections to internal locations. [Spec. 462-7]

19. Ducts, anchorage connections, splices, inlets and outlets must be sealed at all times before grouting except that low point outlets must be left open. [Spec. 462-7]

20. Duct tape is not permitted for repairing or sealing splices, joints, couplings or connections. [Spec. 462-7]

21. Grout inlets and outlets must be located per the Contract Documents, or per Engineer if conflicting with reinforcement. [Spec. 462-7]

22. When required by the Engineer, the duct system must be pressure tested before placement of concrete at 1.5 psi for 1 minute and have pressure loss of not more than 0.15 psi. [Spec. 462-8]

23. After concrete is placed and cured, a torpedo, ¼ inch smaller all around than the duct, must be passed through all ducts to detect blockages without excessive effort or mechanical assistance. Correction of blockages requires approval of the
Engineer. Flat, 4-strand transverse tendon ducts in segmental box girders may be proved by moving the tendons freely by hand within the duct. [Spec. 462-8]

POST-TENSIONING OPERATIONS

24. Tendons must be pulled or pushed through ducts without snagging and during the insertion of a post-tensioning strand into a duct; the strand shall not be intentionally rotated to facilitate insertion by any mechanical device. [Spec. 462-7]

25. PT forces must not be applied until concrete has minimum strength required by Contract Documents. [Spec. 462-7]

26. Initial, permanent and maximum tendon stresses must be within specified limits and single or double end stressing must be per the Contract Documents or Engineer. [Spec. 462-7]

27. Stressing equipment must be provided by the PT system supplier and stressing jacks must be calibrated, and a master gauge may be used. [Spec. 462-7]

28. Tendon elongations must be measured to the nearest 1/16-inch and observed elongation shall be within 7% of theoretical. Tendons must not be over stressed to achieve the required elongation. [Spec. 462-7]

29. A tendon force diagram reflecting the PT system actually used must be submitted and if friction is too high a lubricant may be used per spec. [Spec. 462-7]

30. Tendon wires may break or slip as allowed by the spec. but failed wires must never exceed 5% of the tendon cross sectional area. [Spec. 462-7]

31. Cut PT steel by an abrasive saw or plasma torch not less than 3/4 to 1-1/2 inches from the anchoring device. Flame cutting of PT steel is not allowed. Do not cut tendon to final length prior to acceptance. [Spec. 462-7]

32. Records of the tendon stressing operation are required and must contain 17 items required by the specification as well as any other relevant information. [Spec. 462-7]

33. For internal and external ducts, after stressing and prior to grouting, the system must be pressure tested at 50 psi for 1 minute with pressure loss of not more than 25 psi for tendons equal to or less than 150 ft. and a pressure loss not more than 15 psi for tendons longer than 150 ft. and corrections must be made with approval of the Engineer. [Spec. 462-8]

34. Within 4 hours after stressing, grout and anchorage caps must be installed and all other tendon openings must be sealed. If tendon contamination occurs, the tendon is to be removed and replaced. [Spec. 462-7]
GROUTING OPERATIONS

35. A Grouting Plan must be submitted and approved 6 weeks before the start of grouting operations. Grouting must be performed according to the approved Grouting Plan and modifications to the Plan must be approved before they are used. [Spec. 462-7]

36. A pre-grouting meeting must be conducted with Concessionaire, and should include all individuals involved in managing, performing and inspecting the grouting operation. [Spec. 462-7]

37. Grouting equipment must be per spec. and shall include a colloidal mixer, storage hopper, water meter, positive displacement pump, pump pressure gage, vacuum grouting equipment, and standby equipment. [Spec. 462-7]

38. Maximum grout temperature must not exceed 90°F and grouting operations are prohibited when the ambient temperature is below 40°F or is expected to fall below 40°F within one day after grouting. [Spec. 462-7]

39. Efflux or Wet Density testing must be performed on the pumped grout initially and at the anchorage outlet when discharge begins and a bleed test is required at the start of each days grouting. A failing test requires adjustments to the grout mix before the resumption of grouting. [Spec. 462-7, 938]

40. Normal pumping pressure must range from 10 psi to 50 psi measured at the grout inlet. The maximum pumping pressure of 145 psi for round ducts and 75 psi for flat ducts at the grout inlet must not be exceeded. [Spec. 462-7]

41. The discharge from outlets must follow the order in the Grouting Plan and once the anchorage outlet is closed, discharge a minimum of 2 gallons of grout from the anchorage cap outlet into a clean receptacle to ensure that free air and water are completely expelled. [Spec. 462-7]

42. After initial grouting is complete and the system is sealed, the pressure must be increased to the equivalent realized grout pumping pressure for 2 minutes to check for leaks. If no leaks, reduce pressure to 5 psi for a minimum of 10 min. then bleed each outlet and leave 30 psi residual pressure. [Spec. 462-7]

43. If grouting pressure exceeds the maximum allowed, move pumping to the next outlet and resume as per spec. If grouting cannot be completed, resume after 48 hours. [Spec. 462-7]

44. Grouting of vertical tendons requires the use of a standpipe that keeps the grout level above the anchorage at all times. [Spec. 462-7]

45. Grout inlets and outlets shall not be opened for at least 24 hours after grouting. [Spec. 462-8]
46. After grout is cured, all high points along the tendons as well as the inlets and outlets located at the anchorages must be drilled and inspected with an endoscope or probe per spec. and within 4 hours of drilling, seal the drilled void. Any significant deficiency voids that are found must be filled using the vacuum grouting method within 48 hours. [Spec. 462-8]

47. When grouting is incomplete, an endoscope must be used to establish the limits of sound grout. Probing is not allowed. The remaining unfilled duct must be vacuum grouted per specification. [Spec. 462-8]

48. A grouting report is required within 5 days of grouting completion. [Spec. 462-7]

**FINAL FINISHING AND PROTECTION**

49. Lifting and access holes must be patched with Magnesium Ammonium Phosphate Concrete or Type Q Epoxy and before patching. Surfaces must be cleaned with grit or water blasting methods at 10,000 psi pressure. [Spec. 462-7, 930, 926]

50. After deck grooving, patched areas must be coated with Methyl Methacrylate extending 6" beyond the perimeter of the patched area; however, Methacrylate is not required if Type Q Epoxy is used to patch. [Spec. 462-7]

51. Grout inlets/outlets must be sealed with a plastic cap and be patched with epoxy grout. [Spec. 462-7, 926]

52. Anchorages must be protected within 7 days of grouting completion and epoxy grout pourbacks must be placed in properly prepared forms using specified placement methods. Surfaces in contact with pourback material must be cleaned with grit or water at 10,000 psi. [Spec. 462-7, 926]

53. Pour backs or anchorage caps must be coated with elastomeric material 30 to 45 mils thick over a properly cleaned surface and only after concrete to be coated is 28 days old and within 90 days of grouting. The coating material must be applied to a test block per spec. and applicators must have 3 yrs. of experience with similar materials. [Spec. 462-7, 975]

**CRACK AND DUCT INSPECTION**

54. Inspect all post-tensioned concrete box girder top slab, bottom slab and web wall interior and exterior surfaces for cracks immediately after all post-tensioning of a span is complete. If the segmental cantilever erection method is used, inspect all surfaces of web walls of all previously placed segments after each new segment is placed. Since these cracks can be very narrow and hard to see, use of a magnifying device, high intensity white light and spraying with water to increase their visibility may be beneficial during inspection. The width, length, depth, termination points, and precise location of any cracks must be properly documented to scale (crack map). Report all cracks to the Project Administrator so that their status can be addressed immediately. [Spec. 400-21, CPAM 10.7]
55. Monitor and document growth of individual cracks to determine if cracks are active or dormant. [Spec. 400-21, CPAM 10.7]

56. Inspect external tendon ducts and couplers for grout voids, fractured grout, delamination, as well as duct and coupler material punctures, splits or other damage by sounding them and by visual inspection of all visible duct and coupler surfaces. Sound each duct and coupler a minimum of seven days after grouting is complete by tapping the surface using a 16 ounce hammer with a steel head. Use a tapping force that will not cause the duct or coupler material to split, dent, crush or incur any other damage and that will not cause fracturing, chipping or damage to the grout within the duct or coupler. Sound each duct and coupler at 12 inch intervals along their length and at each interval, as a minimum, tap them on the top sides and bottom. [CPAM 10.7]

57. Mark the limits of any defect on the surface of the duct or coupler with a high visibility permanent marker and when it can be determined for sounding or observation alone, label the defect type as one or more of the following: void, fracture, delamination, split, other. [CPAM 10.7]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.11 Mechanically Stabilized Earth (MSE) Walls

1. Review Mechanically Stabilized Earth (MSE) Wall Inspector’s Handbook. [Good Practice]

2. Materials – Confirm receipt of Certificate of Compliance for all materials including fill, panels, soil reinforcement, filter fabric etc. Ensure all components (panels, reinforcement) are handled, stored and shipped in a manner that prevents, chipping, cracks, fractures, excessive bending stresses. Ensure geosynthetics are covered and protected from sunlight prior to placement and is properly stored to prevent damage. [Specs. 548-2, 548-5.]

3. Ensure all piles in the reinforced fill are wrapped with two independent layers of 6 mil plastic with lubricating oil between the layers. [Spec 459, Index 6020, Note 11]

4. Backfill - Select backfill certification has been submitted and fill material has been tested and approved prior to placement. Signed and sealed certification for MSE wall select backfill must be submitted prior to placement [Spec. 548-2] Inspect the fill for proper placement and test the compaction of the fill in accordance with the Contract Documents. [Spec. 548-9].

5. Check that water used for soil compaction is in compliance with section 923 (No salt or brackish water). [Spec. 548-8] Do not allow thick lift compaction as lifts thicker than 6" (150 mm) require more energy to compact and may move the panels out of alignment. [Spec.548-8] DO NOT allow excavations in close proximity in front of the wall once the wall construction has started without the EOR's approval. Also, excavations in front of the wall should not be allowed without protection to the wall (i.e. sheet piles, etc.). Good Practice]

6. Foundation - Confirm foundation has been prepared and compacted properly and that a leveling pad is provided per Contract Documents. [Spec. 548-8]

7. Panels - Inspect precast panels for acceptance [Spec. 548-4]. Make sure that no panels with bent connector tabs are used. Review the installation of the panels including tolerances in accord with Contract Documents. [Spec. 548-6]

8. Corner panels shall be used at all corners. If corner panels are not indicated on the Plans, contact the Wall Design Engineer immediately. Measure the batter of the panels often. The vertical alignment of the panels below the panels being installed may be affected by the compaction of the soil behind the panels being installed.
Measure the overall batter regularly. [Spec. 548-8] Wooden wedges should be removed as soon as the panel above the wedged panel is completely erected and backfilled. [Spec. 548-8].

9. Soil Reinforcement - Inspect soil reinforcement for compliance with design drawings and shop drawings i.e. size, length, type of material. [Spec. 548-2] Inspect the proper placement of soil reinforcement. [Spec. 548-8] Soil reinforcement should not be skewed more than 15 degrees from normal. If reinforcement needs to be skewed more than 15 degrees, notify the Wall Design Engineer. [Indexes 6020-6130]

10. Soil reinforcement near the top of the wall shall be parallel to the lifts of fill, unless a slight bending (within 15 degrees) is indicated in the shop drawings to accommodate a structure. Soil reinforcement shall not extend into subgrade that may require mechanical mixing. [Indexes 6020-6130] Soil reinforcement shall not be cut unless shown in the Contract Documents or approved by the EOR. [Index 6020]

11. Joints - Review that the filter fabric and the joint materials are acceptable. When attaching filter fabric to the back of the panels, the adhesive shall be applied to the panel not the filter fabric. [Spec. 548-2]

12. Coping - If precast coping is used, ensure top panels have dowels that shall extend into the cast-in-place Buildup concrete. [Indexes 6100 to 6130]. Ensure the placement of one-half inch minimum preformed expansion material between wall panels and cast-in-place concrete. [Spec. 548-2, Indexes 6100-6200].

13. Flowable Fill - Make sure any metallic components of the wall are not in partial contact with the flowable fill. Metallic components must be completely encapsulated by the flowable fill.

14. At the end of each day's operation, Concessionaire shall shape the last level of backfill to permit runoff of rainwater away from the wall face or provide a positive means of controlling run off away from the wall such as temporary pipe, etc. [Spec. 548-6.5]

Use these guidelines above for both temporary and permanent walls.
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.12A Signalization

GENERAL

1. Use FDOT Minimum Specifications for Traffic Control Signals and Devices (MSTCSD), FDOT’s Submittal Data – Traffic Control Equipment form (750-010-02) and the approved shop drawings to confirm items installed are listed on the Approved Product List (APL), or when APL listing is not required (i.e., A620, A630, A632, A639, etc.) meet the MSTCSD and Specs. [Spec. 603-3, 603-7]

2. A pre-installation meeting should be conducted with Concessionaire, maintaining agency, etc. to discuss signalization issues. [CPAM 3.1]

MAST ARMS

3. Mast arm shop drawings submitted in accordance with approved schedule well in advance of installation due to long lead time (3-6 months). [Good Practice]

4. Confirm Drilled Shaft Installation Plan is submitted and approved. [Spec. 455-15]

5. Mast arm foundations constructed in accordance with the Contract Documents. [Spec. 455-15]

6. Upon delivery, verify mast arm dimensions match the shop drawings and Plans. [Good Practice]

7. Wire the signal cable in the mast arms in accordance with the Contract Documents and/or the maintaining agency’s color code. [Plans, Spec. 632]

ACCEPTANCE PROCEDURES (SECTION 611)

8. Witness completion of all field testing with Concessionaire’s representative and, with a representative from the maintaining Agency, if required. [Spec. 611-4]

9. Warranty Period: Meet with Concessionaire and the maintaining agency to discuss method of handling warranty period. Record model and serial numbers of electronic equipment. Establish a method to track all trouble calls during the warranty period. Notify Concessionaire of equipment malfunctions during the life of the contract and document Concessionaire’s response times. Record and track all equipment malfunctions and repairs during the life of the contract. Provide a letter to the
maintaining agency and Concessionaire documenting the beginning and anticipated end of the warranty period. [Spec. 611-5, Good Practice]

**SIGNAL INSTALLATION GROUNDING (SECTION 620)**

10. Installation of the required number and length of ground rods to be observed. [Spec. 620-3]

11. The resistance of each ground rod is to be measured and recorded (if required by contract Specifications) and the buried location of each ground rod is to be staked. [Spec. 620-3]

12. Ensure that all separately grounded elements at an intersection are bonded to form an intersection grounding network. [Spec. 620-3, Index 17736]

**CONDUIT AND SIGNAL AND INTERCONNECT CABLE (SECTIONS 630 AND 632)**

13. Conduit used is the proper type for the type of installation being performed. The conduit is installed at the proper depth. [MSTCSD Section A630, Index 17721]

14. The proper number of conduit stub-out s, including spares, is provided through the cabinet base. [Plans and Index 17841]

15. All conduit trenches are appropriately backfilled. [Index 17721, Spec. 630-3.]

16. Seal conduit ends in a controller base, pole, pull box, junction box, or pedestal with approved moisture resistant material such as Appleton Duct Seal, Permagum Duct Seal or GB Duct Seal. [Spec. 630-3.5, Index 17721]

17. Signal and interconnect cables meet standard requirements. [MSTCSD Section A632]

18. Continuous lengths of cable between the controller cabinets, disconnect hangers (or signal heads for non-span wire installations), pedestrian signal heads, and pedestrian detectors shall be provided. [Spec 632-3.3]

19. The interconnect cable is to be installed in continuous lengths to and between controller cabinets and junction boxes. [Spec. 632-5]

20. The signal cable is to be properly attached to the messenger wire. [Index 17727]

21. Pull wire or cord is installed per [Spec 630-3.1].
PULL and FIBER OPTIC BOXES

22. Verify that box is listed on Approved Product List (APL) and is marked with the APL certification number. [Spec. 635-2, 783-3.1, MSTCSD A635-2.1]

23. All pull and fiber optic boxes shall have a 1'-0" wide and 6" deep concrete aprons sloped away from box. [Index 17700]

24. For fiber optic pull boxes, install ground rods and tone wire as required and shown in the Plans. Tone wire is to be terminated at the first and last pull boxes in the conduit run or as shown in the Plans. [Spec. 630-3.1.2, 783-3.3.2; Index 17700]

25. Store a total of 200 feet of fiber optic cable in fiber optic splice boxes, with 100 feet of cable on each side of the cable splice point or as shown in the Plans. [Spec. 783-1.3.1.3, Index 17700]

26. Store 50 feet of spare fiber optic cable in fiber optic pull boxes. [Spec. 783-1.3.1.3, Index 17700]

27. Do not place the pull or fiber optic boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. [Spec. 635-3, 783-3.3.1]

28. Ensure that all pull box covers include words describing the application for which it is to be used, such as “FDOT TRAFFIC SIGNAL” (signalized intersection applications), “FDOT FIBER OPTIC CABLE” (fiber optic cable applications), FDOT ELECTRICAL (other electrical applications), FDOT LIGHTING (highway lighting applications), FDOT TRAFFIC MONITORING (traffic monitoring applications), or text as shown in the Plans permanently cast into their top surface. [MSTCSD A635-2.1, 635-2.2]

29. Never place expansion material around pull boxes in sidewalk. The pull box must bond to the sidewalk to avoid differential settlement. [Good Practice.]

SPAN WIRE ASSEMBLY (SECTION 634)

30. Span wire, fiberglass insulators, and associated hardware comply with spec. and installation requirements. [Spec. 634-2, 634-3, Index 17727, Plans]

31. Span wires to be of one continuous length with no splices except where an insulator is required. [Spec. 634-3.3]
PRESTRESSED CONCRETE POLES (SECTION 641)

32. The poles are set to the depth specified in the [Plans.]

33. The oval eye bolts are located in accordance with the pole guide schedule [Plans, Shop Drawings] Signalization.

34. FDOT approved material is used for the footing. [Spec. 641-4]

35. The area around the pole is properly backfilled and tamped. [Spec. 641-4, 125-4, 125-8]

36. The pole is installed out of plumb at the correct angle of rake. [Mfgr’s Rec.]

SIGNAL HEAD ASSEMBLIES (SECTION 650)

37. Verify that the Light Emitting Diodes (LEDs) modules are listed on the APL.[Spec. 650-2]

38. Two each ¼” diameter weep holes are drilled in the bottoms of each signal head assembly. [Spec. 650-3.9, Index 17727]

39. Traffic signal heads are installed in the proper location, aimed properly, and set with the proper horizontal and vertical clearances. [Spec. 650-3]

40. For vertically mounted 5-section clusters, construct the signal assembly so that door hinges are located along the outside edges of the complete signal assembly and each section opens away from the horizontally adjacent section. [MSTCSD Section A650-1]

PEDESTRIAN SIGNALS (SECTIONS 653 AND 665)

41. Pedestrian signs match the type of visual signal on the pole, i.e., international visual signal with international type signs. [Index 17784]

42. Install pedestrian detector controls with the center line of the push button 42” above finished walking surface immediately below the control, except where 2 push buttons installed on the same pole conflict. Then set the center line of one at 42” and the other as close as practical above it within the range of 42 to 48”. [Spec. 665-4, Index 17784]
43. Use only an ADA (Americans With Disabilities Act) compliant pedestrian detector push button assemblies listed on FDOT APL and marked according to spec. [Spec. 603-2, 665-2, MSTSCD Section A665-2]

**INDUCTIVE LOOP DETECTORS (SECTION 660)**

44. Use inductive loop detectors, preformed loop assemblies and loop sealant on FDOT’s Approved Products List. [Spec. 660-2]

45. Confirm that loop wire, lead-in cable, and splicing materials meet the standard requirements. [MSTCSD Section A660]

46. The required number and type of inductive loop assemblies is installed in accordance with the Plans.

47. All loop assemblies are installed at the proper distance from the stop bars. [Plans, Index 17781]

48. All loop assemblies to be installed in accordance with [Index 17781, Spec. 660].

49. All loop wires are held down to the bottom of the saw cut with proper hold down material and then properly sealed. [Spec. 660-3, Index 17781]

50. All wires are megged out for correct resistance values. [Spec. 611-4, 660]

51. Loop wires are spliced as detailed in index and spec. [Spec. 660-3, 660-4, Index 17781]

**CONTROLLER CABINETS (SECTION 676)**

52. Controller cabinet is on the Approved Products List. [Spec. 676-2]

53. Controller cabinet is sealed at its contact to the concrete base and all field wiring is neatly bundled and labeled. [Spec. 676-3]

54. Make sure that Concessionaire is connecting all fork or ring terminals to the cable conductor ends (signal cable, interconnect cable, loop wires) using a calibrated ratchet crimping tool. [Spec. 632-3, 660-4, 676-3]

**ELECTRICAL POWER SERVICE (SECTION 639)**

55. For the service disconnect (main circuit breaker) between the meter and the controller cabinet (usually located on a power service pole) use a manually re-
settable circuit breaker which has a larger amperage rating than the amperage rating of the equipment circuit breaker to which electrical power is being provided. Note the minimum allowable size for this main circuit breaker is 40 amps where the rating of the equipment circuit breaker to which electrical power is being provided is less than 40 Amps. Use a surge lighting arrester rated for a maximum permissible line to ground voltage of 175 VAC. [MSTCSD Section A639-2.6] [Spec. 639-3.5.2]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.12B Lighting

1. All of the materials used comply with the approved shop drawings and Plans. [Spec. 715-2]

2. Test all components of the installation in accordance with the Contract Documents, and manufacturer’s recommendations. [Spec. 715-14]

3. A pre-installation meeting is conducted by QAM with Concessionaire, maintaining agency, etc. to discuss highway lighting issues. [CPAM 3.1]

4. Obtain from Concessionaire a certification from the producer of steel or iron, or any product containing steel or iron as a component, stating that all steel or iron furnished or incorporated into the furnished product was manufactured in the United States in accordance with the requirements of this specification and the Buy America provisions of 23 CFR 635.410, as amended, for the appropriate items. [Section 2.T.13 of these Technical Requirements]

5. Conduit and/or cable trenches are in straight lines at the proper depth and in accord with the layout shown in the Plans. [Plans, Spec. 715-5, 715-7, Index 17721]

6. Installation of all lighting is done in accord with [Indexes 17500 to 17515].

7. Trench backfill is done per Spec. and Index. [Spec. 715-5, Index 17721]

8. Ground rods for poles installed per Spec. & Index. [Spec. 715-11, Index 17502]

9. Provide an approved copy of all applicable shop drawings and 2 copies of the As-Built Record Plans to the maintaining agency before Final Acceptance. [Index 17501, Note 6]

10. Ensure the surge protection devices used are approved and installed properly. [Index 17500, 17501]

11. Where the location of the electrical service pole requires an extension of the power company’s lines, ensure Concessionaire bears all line-extension costs. [Spec. 715-4]

12. All wiring shall be color coded. [Spec. 992-1.3, Index 17501 Note 12]
13. Make all necessary splices or connections with solderless connectors or compression sleeves. Do not use twist-on connectors if any of the conductors involved are larger than No.10. All splices shall be made in a pull box or pole base with compressive sleeves or split bolt connectors properly taped and weatherproofed. [Spec. 715-8]

14. Ground rods and wires are connected properly. [Index 17500 Sheet 1, 17501, 17502 Sheet 6, 17504, 17505 Sheet 1]

15. When placing slabs around the pull boxes and light poles, make provisions to remove forms without injury to concrete surfaces. Also do not leave any portion of the forms in the concrete. [Spec 400-5.1, Index 17500 Sheets 2 & 3, Index 17700]
MINIMUM QAM INSPECTION REQUIREMENTS  
Category No.12C Intelligent Transportation Systems

CONDUIT

1. Conduit used is the proper type for the type of installation being performed. The conduit is installed at the proper depth. [Index 18102, Spec. 785]

2. All conduit trenches are appropriately backfilled. [Spec. 630-3]

3. Seal conduit ends in a controller base, pole, pull box, junction box, or pedestal with approved moisture resistant material such as Permagum duct seal or GB Duct Seal. [Spec. 630-3]

4. Pull wire or cord is installed per [Spec 630-3.1]

PULL and FIBER OPTIC BOXES

5. Verify that box is listed on Approved Product List (APL) and is permanently marked with the APL certification number. [Spec. 635-2, 783-3.1, MSTCSD A635-2.1]

6. All pull and fiber optic boxes shall have a 1'-0" wide and 6" deep concrete aprons sloped away from box. [Index 17700]

7. For fiber optic pull boxes, install ground rods and tone wire as required and shown in the Plans. Tone wire is to be terminated at the first and last pull boxes in the conduit run or as shown in the Plans. [Spec. 630-3.9; Index 17700]

8. Store a total of 200 feet of fiber optic cable in fiber optic splice boxes, with 100 feet of cable on each side of the cable splice point or as shown in the Plans. [Spec. 633-3.1.4, Index 17700]

9. Store 50 feet of spare fiber optic cable in fiber optic pull boxes. [Spec. 633-3.1.4, Index 17700]

10. Do not place the pull or fiber optic boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. [Spec. 635-3]

11. Ensure that all pull box covers include words describing the application for which it is to be used, such as "FDOT TRAFFIC SIGNAL" (signalized intersection applications), FDOT FIBER OPTIC CABLE (fiber optic cable applications), FDOT ELECTRICAL (other electrical applications), FDOT LIGHTING (highway lighting applications),
FDOT TRAFFIC MONITORING (traffic monitoring applications), or text as shown in the Plans permanently cast into their top surface. [MSTCSD A635-2.1, 635-2.2.2]

FIBER OPTIC CABLE

12. Ensure no point discontinuities greater than 0.1 decibel per reel. [Spec. 633-2.1.5.3]

13. Mark the jacket with the cable manufacturer’s name, fiber type, fiber count, date of manufacture, the words “FDOT FIBER OPTIC CABLE,” and the sequential cable lengths marked in feet. [Spec. 633-2.1.5.3]

14. Present the results of the OTDR testing (i.e., traces for each fiber) and a loss table showing details for each splice or termination tested to the QAM in an approved electronic format. [Spec. 633-3.1.8.2]

15. Ensure that the splice loss for a SMF fusion splice does not exceed a maximum bidirectional average of 0.1 decibel per splice. [Spec. 633-3.1.8.3]

16. Ensure that the attenuation in the connector at each termination panel and its associated splice does not exceed 0.5 decibel. [Spec. 633-3.1.8.4]

LOCATE SYSTEM

17. Ensure that the locate system includes aboveground route markers, warning tape, tone wire, and electronics. [Spec. 630-2]

18. Install locate wire grounding units (WGUs) in pull boxes and splice boxes as shown in the Plans or directed by the QAM. [Spec. 630-2.3]

LABELING

19. Ensure all patch panel connectors are clearly and permanently labeled. [Spec. 633-3.1.7]

20. Ensure that the cable tags are permanent labels suitable for outside plant applications and are affixed to all fiber optic cables. [Spec. 633-3.1.1]

21. Ensure that each SRM is labeled and identified as an FDOT fiber optic cable marker as shown in the Plans and approved by the QAM. [Spec. 630-2.5]
DMS, RWIS, and HAR

22. Verify DMS and HAR are listed on the APL. [Spec. 700-4]

23. Pre-Installation Field Testing on all DMS is to be conducted at a Concessionaire provided facility. Notify the QAM a minimum of 10 calendar days before the start of any tests. [Spec. 700-4.18]

24. After the DMS system installation and system testing are successfully completed, conduct one continuous 72-hour, full-operating test prior to conducting the 60-day test period. [Spec. 700-4.20, 700-4.21]

CCTV

25. Verify CCTV camera is listed on the APL. [Spec. 682-1.2]

26. Ensure that the installed equipment provides unobstructed video images of the roadway, traffic, and other current conditions around a roadside CCTV field site; that it responds to camera control signals from the operator; and that the video images can be transmitted to remote locations for observation. [Spec. 682-1.1]

27. Develop and submit a test plan for field acceptance tests (FATs) to the QAM and FDOT for review and approval. [Spec. 682-1.4.1]

NETWORK HARDWARE-ETHERNET SWITCHES, TERMINAL SERVERS, ENCODERS, AND DECODERS

28. Verify switches, terminal servers, encoders, and decoders are listed on the APL. [Spec. 684-1.1]

29. Develop and submit a test plan for FATs to the QAM and FDOT for consideration and approval. [Spec. 684-1.4.1, 684-2.4, 684-3.4]

30. Perform local field operational tests at field sites according to test procedure requirements. [Spec. 684-1.4.1, 684-2.4, 684-3.4]

31. Perform local field operational tests at the device field site and end-to-end video streaming tests as required by the QAM and FDOT in order to demonstrate compliance with FDOT specifications. [Spec. 684-3.4.2]
GROUNDING AND SURGE PROTECTIVE DEVICES (SPDs)

32. Verify that SPDs are listed on the APL. [Spec. 785-2.2]

33. Verify that SPDs are installed on all power, data, video and any other conductive circuit. The goal of FDOT requirements is to provide protection at demarcation points where conductive cables enter or exit cabinets or other protected equipment locations. [Spec. 785-2.2]

34. A single point grounding system is required. Each ground rod must have a minimum length of 20 feet (rods can be constructed of minimum 8-foot sections). No. 2 AWG solid bare tinned copper wire and exothermic welds must be used when bonding multiple rods together. [Spec. 785-2.3.1]

35. The grounding system must be bonded to a main ground bar within the site equipment cabinet. [Spec. 785-2.3.1]

36. An ideal grounding system would have a resistance of 5 ohms or less. However, this resistance measurement may not be practically achievable depending upon site conditions (soil resistivity, etc.). If a resistance to ground measurement of 5 ohms or less cannot be achieved, then a grounding system consisting of four 20-foot rods (configured to create multiple arrays per the specifications and standards) is acceptable, regardless of the ground resistance measurement. Ground resistance measurements for the constructed system must be provided to the QAM. [Spec. 785-2.3.1]

37. Require and verify that ground resistance measurements are performed correctly by qualified personnel using the Fall-of-Potential method. The Fall-of-Potential test method and testing procedures are commonly described in detail within the user manuals of the “earth ground electrode testers” that should be used to conduct such tests. [785-2.3.3]

VDS (MVDS, VVDS, MTDS, AVDS)

38. Verify that vehicle detection system is listed on the APL. [Spec. 660-1]

39. Develop and submit a test plan for field acceptance tests (FATs) to the QAM and FDOT for review and approval. [Spec. 684-1.4.1]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.13 Traffic Control Aids

CRASH CUSHIONS

1. The crash cushion is installed in accordance with the QPL. [Specs. 102 and 544]

PAVEMENT MARKINGS

2. Width and spacing of marking is per Indexes. [Indexes 17344, 17345, 17346, 17347]

3. The retroreflectivity is in accordance with Specs. [Specs. 102-10, 709-4, 709-7, 710-4, 711-4, 711-7, 713-4, 713-7, 971, FM 5-541]

4. Raised Pavement Markers (RPM’s) are installed per Spec. and Indexes. [Specs. 102-10, 706-4, Indexes 600 Sheet 13, 17345, 17352 and 17359]

5. Pavement markings which do not appear to meet the initial retroreflectivity are tested by FDOT within 3 days of receipt of Concessionaire’s certification. [Specs. 710-4]

DELINEATORS

6. Delineators are installed correctly. [Specs. 705-3, Indexes 17345, 17346, and 17359]

7. The color of delineators corresponds with the color of the traffic stripe. [Index 17345 Sheet 4, 17346 Sheet 6, MUTCD Section 3F]

GUARDRAIL

8. Guardrail is installed at the proper height of 1’-9” to the center of the beam, without rubrail, or 2’ to the center of the beam with rub rail. [Index 400 Sheet 1 General Note 4, and Sheets 13, 15, 16, 18, 22, 23, 24, 25, and 26]

9. Galvanized nails are installed in offset blocks. [Index 400 Sheet 16]

10. End anchorages are properly installed. [Index 400, QPL Section 536]

11. Panels, end sections and special end shoes are lapped in the direction of adjacent traffic. [Index 400 Sheet 1 General Note 5]
12. Guardrail reflectors are in compliance and mounted at the correct spacing and location. Guardrail reflector color conforms to the near lane edge line. [Specs. 536-2.6 and 993-3, Index 400 Sheet 1 General Note 18, Sheet 15, 17, and MUTCD Section 3F]

13. Guardrail holes are enlarged by drilling and not by flame cut. All new edges have been galvanized. [Specs. 562 and 975, Index 400 Sheet 1 General Note 17]

14. The correct washers are used for guardrail. [Index 400, Sheet 19]

15. Guardrail blocks and posts are plumb. [Index 400, Sheet 21]

16. Certification for guardrail materials and Certificate of Compliance is provided. [Specs. 536-2.7, CPAM 5.8.3, Job Guide]

17. Offset blocks are in conformance with the specified materials and sizes. All timber blocks are dressed on all four sides. [Spec. 536-2, Index 400 Sheet 1 Note 11 and 16, Sheets 13, 16, 19, 20, 21, and 22]

18. The EOR approves any field changes to guardrail lengths and locations. [CPAM 7.3 and 7.4]

19. The backup plate is installed at all non-splice post locations for Modified Thrie Beam Guardrail Systems. [Roadway Design Bulletin 05-07, Index 400 Sheet 1 Note 15 and Sheet 13, 19, and 20]

20. Separate payment is made for rub rail and pipe rail. [Specs. 536-7.8]

**SIGNING**

21. Signs are installed at proper location, offset, height and angle. [Specs. 700, Index 17302]

22. Signs are mounted on breakaway posts or frangible sign supports. [Specs. 700-2, Index 11860]

23. All nuts and bolts on signs are installed and tightened to their appropriate torque. [Index 11200 and 11860 Sheet 5]

24. Sign bolt threads are burred to prevent nut loosening. [Index 11200 Sheet 2 & 11860 Sheet 5]
25. Signs conform to the approved shop drawing or standard index. [Shop Drawings]

26. Sign posts are mounted plumb and have the correct diameter. [Index 11200 Sheet 2 and 11860 Sheet 5]

27. Span wire signage is in compliance with Index 17356. [Index 17356]

28. Manufacturer’s certifications are on file. [Spec. 700]

29. Relocated signs are properly maintained and protected. [Section 2.T.3 of these Technical Requirements]


31. Sign foundations are installed at the correct depth. [Index 11200 and 11860 Sheet 3]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.15 Utilities

GENERAL

1. Verify that the top of the utility is being buried at a depth below the final grade sufficient to provide the minimum required by the Utility Permit.

UTILITY WORK BY CONCESSIONAIRE

2. Oversee the work in accordance with the contract. [CPAM 5.6]

3. Allow UAO personnel to inspect the specific Utility Adjustment Work done by Concessionaire. [CPAM 5.6]

UTILITY WORK BY UAOs

4. Ensure that all Utility Adjustment Work was in accordance with the Utility Accommodation Manual, Utility Agreements, and Utility Permit.

5. Investigate potential conflicts between the proposed Utility Adjustment Work and the physical roadway features of the Project prior to the beginning of the Utility Adjustment Work. [CPAM 5.6]

6. Ensure that Utility Adjustment Work shall conform to the Utility Accommodation Manual, the Utility Agreement, and the Utility Permit. [CPAM 5.6]

7. Ensure no Utility Adjustment Work shall begin without an approved Utility Permit and the Utility Adjustment Work shall conform to all permit conditions. [CPAM 5.6]

8. All activities involved in the Utility Agreements and Utility Permits shall be recorded on a Daily Work Report under the remarks category for utilities. [CPAM 5.6]

9. All utility conflicts with Concessionaire’s operation shall be recorded on the Daily Work Report. [CPAM 5.6, Attachment 5-6-2 Unanticipated Utility Conflict]

10. Reimbursable Utility work shall be in accordance with the latest version of the Utility Work Agreements and Certification Process Topic No. 710-010-050. [CPAM 5.6]

11. Notification of beginning and ending of Utility Adjustment Work were made in accordance with the Utility Work Agreements and Utility Permits. [CPAM 5.6]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.16 Public Information/Business Access

1. Notify abutting residences and businesses of the start and duration of the project.
   [Good Practice]

2. Put post-mounted business signs in place. [Spec. 102-1, CPAM 9.1, Index 600]

3. Provide residential and business properties safe, stable, and reasonable access.
   [Spec. 102-8.1, CPAM 9.1.8.1]

4. For urban projects, where a Community Action Plan (CAP) is required, the CAP has
   been established before the start of construction.
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.17 Maintenance Customer Concerns

SIGNS

1. Round aluminum posts larger than 3½“diameter must be mounted on a slip base, in a concrete footing. [Index 11860, Sheet 1]

2. The horizontal slip joint on the slip base must be located 4 inches maximum above the finished ground elevation measured at the signpost centerline. [Index 11860 Sheet 5 Slip Base and Footing Detail, Index 11200 Sheet 2]

3. Where signs contain electric lines, an electrical fuse cut connection or quick disconnect plug must not be located above the mechanical breakaway connection. [Good Practice]

4. Sign mounting brackets use u-bolts and z-bars per index. [Indexes 11200, 11320, 11860 Sheet 4, and 13417]

5. Except for signs in narrow medians, where the median is too narrow to comply, sign faces are offset from the roadway with minimum skew and lateral clearance distances per index. [Index 17302]

6. Sign face is mounted at least at minimum elevation above the roadway per index. [Index 17302]

GUARDRAIL

7. Guardrail with no rub rail is installed 1’-9" from surface under face of rail to center of rail. Guardrail with rub rail is installed 2’-0" from surface under face of rail to center of rail. Minor exceptions per index. [Index 400, Sheet 1, General Note 4]

8. Galvanized 16d. nail is toe-nailed through top of timber offset block into timber post, per index, to stop rotation. [Index 400, Sheet 13]

9. Inspect end anchorages for proper installation. [QPL Section 536, Index 400]

10. Panels, end sections, and special end shoes are lapped in the direction of adjacent traffic. [Index 400 Sheet 1 General Note 5]

11. Guardrail holes are enlarged by drilling and not by flame cut. All new edges have been galvanized. [Specs. 562 and 975, Index 400 Sheet 1 General Note 17]
12. Use correct washers for each location per index. [Index 400, Sheet 19]

13. Guardrail blocks and posts are plumb. [Index 400, Sheet 21]

14. Certification for guardrail materials and Certificate of Compliance is provided. [Specs. 536-2.7, CPAM 5.8.3, Job Guide Schedule]

15. Offset blocks are in conformance with the specified materials and sizes. All timber blocks are dressed on all four sides. [Specs. 536-2, Index 400 Sheet 1 Note 11 and 16, Sheets 13, 16, 19, 20, 21, and 22]

16. Guardrail reflectors are mounted at the correct spacing and location with reflector color conforming to the near lane edge line and are in compliance with Spec. and Index. [Specs. 536-2.6 and 993-3, Index 400 Sheet 1 General Note 18, Sheet 15, 17, and MUTCD Section 3F]

17. The EOR approves any field changes to guardrail lengths and locations. [CPAM 7.3 and 7.4]

PAVEMENT MARKINGS

18. Width and spacing of marking is in compliance with the Design Standards. [Indexes 17344, 17345, 17346, and 17347]

19. The retroreflectivity is in accordance with the Contract Documents. [Specs. 102-10, 709-4, 709-7, 710-4, 711-4, 711-7, 713-4, 713-7, 971, FM 5-541]

20. Raised Pavement Markers (RPM’s) are installed as required by Contract Documents. [Indexes 600 Sheet 13, 17345, 17352, and 17359, Specs. 102-10 and 706-4]

TURF CONDITION

21. All seed, sod and mulch shall be free of noxious weeds and exotic pest plants, plant parts or seed listed in the current Category I “List of Invasive Species” from the Florida Exotic Pest Plant Council (FLEPPC, www.fleppc.org). [Specs. 981, 570-3, and 570-4]

22. Within the turf area, there are no bare spots larger than one square foot and provide an established turf as defined in Spec. [Spec. 570-4]
FRONT SLOPE

23. Front slopes provide a gradual transition from the edge of shoulder to the roadside ditch or toe of slope, as shown in the Plans, with no ruts or washouts. Maintain the grade within a tolerance of 0.3 ft above or below the plan cross section. [Specs. 120-11 and 120-12]

OBJECT MARKERS AND DELINEATORS

24. Object markers and delineators are installed in accordance with the manufacturer’s instructions. The top of the post should be 4′ above the edge of pavement grade. [Index 17346 Sheet 2, MUTCD Section 3F]

25. Object markers and delineators are installed plumb. [Good Practice]

26. Post-mounted delineators on exit and entrance ramps are installed at a uniform height and uniform offset per Contract Documents. [Index 17345 Sheet 4]

27. Post-mounted delineators at cross overs are installed at a uniform height and at offsets per Index. [Index 17346 Sheet 2]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.18 ADA – Accessibility Issues

SIDEWALKS

1. For sidewalk forms, verify that sidewalk width and profile meet requirements shown in Contract Documents and Design Standards. [Indexes 304 and 310]

2. For sidewalk forms, make sure the cross-slope of sidewalk is not more than 1:50 (2%). Out of tolerance forms must be adjusted prior to placing concrete. [Index 310 and 49 CFR 37, ADA Standards for Transportation Facilities – 403 and Guidelines for Accessible Public Rights of Way - R301]

3. Make sure that the width of sidewalk is always at least 48” unless FDOT approves in writing a reduction to no less than 36”. [Index 310]

4. Make sure that no obstruction (utility pole, equipment, sign structure and/or panel, landscape materials, etc.) restricts access along sidewalk to a path less than 48” wide. Where this is a problem immediately contact the QAM for approval in delaying the sidewalk panel pour until the obstruction owner can move the obstruction or moving the sidewalk around the obstruction, if feasible. Where neither solution is easible, document to file. If feasibility can be obtained by reducing the width to 36”, get FDOT’s approval. [Index 310 and 17302]

5. Make sure construction joints, expansion joints, valve boxes, manholes and junction/pull boxes for sidewalks are flush across the joints. [Specs. 635-3 and 522-7.2 and 49 CFR 37, ADA Standards for Transportation Facilities – 303, and Guidelines for Accessible Public Rights of Way - R302.7]

6. For sidewalks at inlet structures, make sure the sidewalk and inlet structure are flush across the joint. The sidewalk must match the profile of the utility structure. [Spec. 522-5 and 49 CFR 37, ADA Standards for Transportation Facilities – 303, and Guidelines for Accessible Public Rights of Way - R302.7]

7. For sidewalk closures, make sure that an accessible alternate path is provided for pedestrian TTC around the closed section of sidewalk. [Guidelines for Accessible Public Rights of Way – R205, Spec. 102-3 and Index 660]

8. Protect plastic concrete from damage (footprints, graffiti, heavy loads, etc.). [Section 3.1.1 of the Agreement]
Curb Ramps

9. For curb ramps and the sidewalk around them, make sure the formwork complies with the geometry for the curb ramp case numbers shown in the Contract Documents. [Index 304]

10. Provide level landing at least 48" deep by the width of the ramp at the top of each curb ramp. A flush pull box or drainage structure top may be located within this landing area. [Guidelines for Accessible Public Rights of Way – R304 and Index 304 Sheet 2]

11. Make sure that no obstruction (utility poles, equipment, post base, wall, guardrail, etc.) restricts access to a path to less than 48" wide entering the landing at the top of each curb ramp unless approved by FDOT. [Guidelines for Accessible Public Rights of Way – R302, Indexes 310 and 17302 General Note 7]

12. For curb ramps slopes, make sure the formwork complies with the slope geometry limits shown in the Design Standards. At no point, shall the ramp slope be greater than 1:12 (8.33%); nor shall the ramp cross-slope be greater than 1:50 (2%). Adjust formwork prior to placing concrete. [49 CFR 37, ADA Standards for Transportation Facilities – 406, Guidelines for Accessible Public Rights of Way – R304 and Index 304, General Note 3]


Pedestrian Detector Controls

15. Install pedestrian detector controls with the center of the push button 3'6" above finished walking surface immediately below the control. [Index 17784]

16. Each pedestrian detector control must have a level maneuvering space immediately in front. Each maneuvering space must be at least 30" wide x 48" deep. [49 CFR 37, ADA Standards for Transportation Facilities 309, and Guidelines for Accessible Public Rights of Way – R403, Index 17784 Note 6]
17. Assure that no obstruction restricts the access path to the maneuvering space for pedestrian detector control to a path width less than 48”. [49 CFR 37, ADA Standards for Transportation Facilities - 308 and Guidelines for Accessible Public Rights of Way – R302]

DRIVEWAYS

18. For driveway aprons/turnouts, provide level sidewalk walk-around. Walk-around must be at least 48” wide unless FDOT approves in writing a reduction to 36”. [Guidelines for Accessible Public Rights of Way – R302; Index 310]

PEDESTRIAN CROSSINGS

19. At curb ramp slopes, make sure that there are no profile grade break transitions greater than 13% between any 2 adjacent sections of the accessible route down the ramp slope and out into the roadway. If the profile grade break transition is greater than 13%, construct a 24” bottom level landing to reduce the transition to less than 13%. Also make sure that the transition between asphalt and curb & gutter materials are flush across the joint. [49 CFR 37, ADA Standards for Transportation Facilities - 308 and Guidelines for Accessible Public Rights of Way – R304.5.4; Index 304]

20. Make sure that drainage inlets shall not encroach into crossings. Where this is a problem, immediately contact FDOT for approval moving the crossing and curb ramp if feasible; if not feasible, document to file. [49 CFR 37, ADA Standards for Transportation Facilities - 308 and Guidelines for Accessible Public Rights of Way – R302.7.3]

21. Make sure that curb ramps are wholly contained within the crossing. Where this is a problem immediately contact FDOT for approval in altering. [Index 304 Sheet 1, 49 CFR 37, ADA Standards for Transportation Facilities - 308 and Guidelines for Accessible Public Rights of Way – R304]
MINIMUM QAM INSPECTION REQUIREMENTS
Category No.19 Noise and Vibration Abatement

GENERAL

1. Review Contract Documents relating to noise and/or vibration. (Spec 455-1.1, CPAM 8.10.3 and 9.10.5)

2. Be aware of any local ordinances relating to noise and/or vibration.

3. Review the project construction times and the nature of the activities generating noise and/or vibration, which may disturb residents or businesses in the area. Examples of Noise/Vibrations Sensitive businesses are Hospitals, Surgery Clinics etc. More details are given in “Construction Noise & Vibration Sensitive Sites” as referenced in Chap. 17 of the Part 2 of the “Project Development and Environment Manual”, found at the following URL. http://www.dot.state.fl.us/emo/pubs/pdeman/Pt2ch17_052411-current.pdf (CPAM 8.10.5)

COMPLAINTS DURING CONSTRUCTION AND REMEDIAL ACTIONS

4. The QAM shall document any complaints received during construction. Documentation should include, as a minimum:
   a. The nature of the complaint.
   b. The name and address of the individual making the complaint.
   c. The area affected by the problem.
   d. The type of construction operation generating the noise and/or vibration. (CPAM 8.10.5)

5. The QAM must report to and discuss with FDOT, any repeated noise or vibration complaints or any patterns of noise and vibration complaints including verbal complaints. (CPAM 8.10.6)

6. The QAM shall monitor noise and/or vibration during construction operations, at noise and/or vibration sensitive sites, or during specific operations for which complaints have been received. Particularly if the complaints are wide spread or if a change of construction method is being considered. (CPAM 8.10.6)

7. The QAM should document any remedial action or modifications to Concessionaire’s construction methods. (CPAM 8.10.6)
Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
# GENERAL OBLIGATIONS

1.1 GOVERNING DOCUMENTS AND APL/QPL ................................................................. 2
  1.1.1 Governing Documents ......................................................................................... 2
  1.1.2 APL/QPL ............................................................................................................. 2

1.2 PERFORMANCE MEASURES .................................................................................. 2
  1.2.1 Noncompliance Point System Relationship ...................................................... 2
  1.2.2 Construction Availability Faults ........................................................................ 2
  1.2.3 Construction O&M Violations .......................................................................... 2
  1.2.4 Availability Faults ............................................................................................. 2
  1.2.5 O&M Violation ................................................................................................. 2

1.3 O&M PLANS ....................................................................................................... 2
  1.3.1 Construction Period O&M Plan ........................................................................ 3
  1.3.2 Operating Period O&M Plan ............................................................................ 4
  1.3.3 O&M Manual .................................................................................................... 5
    1.3.3.1 Operations Manual ....................................................................................... 5
    1.3.3.2 Maintenance Manual ................................................................................... 5
  1.3.4 Quality Management Requirements ............................................................... 7
    1.3.5 Transition Plan ................................................................................................ 7

1.4 OPERATIONS AND MAINTENANCE RESPONSIBILITIES DURING THE CONSTRUCTION PERIOD ...................................................................................................... 7

1.5 MONTHLY O&M REPORTS .................................................................................. 8

1.6 FDOT INSPECTION AND TESTING ..................................................................... 9

1.7 MEETINGS ......................................................................................................... 9

1.8 SAFETY ............................................................................................................... 9

1.9 STAFFING .......................................................................................................... 10
  1.9.1 Staff Conduct and Grooming ........................................................................... 10
  1.9.2 Regional Traffic Management Center (RTMC) Staffing .................................. 10
  1.9.3 Maintenance of Traffic Supervisor ............................................................... 10

1.10 CONTAMINATION ............................................................................................ 10

1.11 GENERAL INSPECTIONS ................................................................................. 10

1.12 FDOT O&M MONITORING .............................................................................. 11
  1.12.1 Flexible Pavement/Friction Course Monitoring ............................................. 11
  1.12.2 Rigid Pavement Monitoring ......................................................................... 11

# MAINTENANCE REQUIREMENTS ............................................................................. 12

2.1 ROADWAY MAINTENANCE REQUIREMENTS ..................................................... 12
  2.1.1 Roadway Maintenance during the Construction Period .................................. 12
    2.1.1.1 O&M Work and O&M Limits during the Construction Period ................. 12
    2.1.1.2 Roadway Maintenance during the Operating Period .................................. 12
    2.1.2.1 O&M Work and O&M Limits during the Operating Period ..................... 13
    2.1.2.2 Water Quality ......................................................................................... 13
  2.1.3 Maintenance Plans & Schedules ...................................................................... 14
    2.1.3.1 Minimum Maintenance Tasks ................................................................. 14
    2.1.3.2 Planned Maintenance Work ................................................................. 14
    2.1.3.3 Renewal Work ....................................................................................... 14

2.2 BRIDGE INSPECTION ....................................................................................... 15

2.3 BRIDGE MAINTENANCE .................................................................................. 15

2.4 LANDSCAPE MAINTENANCE REQUIREMENTS ............................................. 17
  2.4.1 General Maintenance Requirements and Recommendations ..................... 17
    2.4.1.1 Watering Requirements ........................................................................... 17
    2.4.1.2 Integrated Plant Management ................................................................. 18
    2.4.1.3 Mulching ............................................................................................... 18
    2.4.1.4 Pruning ................................................................................................. 18
    2.4.1.5 Staking and Guying ............................................................................... 19
    2.4.1.6 Weeding/Herbicide ............................................................................... 19
    2.4.1.7 Landscape Reporting ............................................................................ 19
    2.4.1.8 Landscape Design Intent Maintenance ................................................... 19
### Operations Requirements

#### 3.5 Service Patrol Program

- **3.5.1 Services to Be Provided by Concessionaire**
  - 3.5.1.1 Concessionaire’s Service Patrol Project Manager
  - 3.5.1.2 Service Patrol Coverage Limits
  - 3.5.1.3 Incident Data Collection
  - 3.5.1.4 Disposal of Debris
  - 3.5.1.5 Minimum Number of Service Patrol Vehicles Required
  - 3.5.1.6 Service Patrol Vehicle Inspections
  - 3.5.1.7 Customer Satisfaction Survey

- **3.5.2 Service Patrol Vehicle and Equipment Requirements**

- **3.5.3 Communication Equipment Requirements**
  - 3.5.3.1 Automatic Vehicle Location and Service Patrol Mobile Software

- **3.5.4 Service Patrol Vehicle Operators Duties and Responsibilities**

### Emergency Access Gates

#### 3.6 Emergency Access Gates

### Emergency Management

#### 3.7 Emergency Management

- **3.7.1 General**
- **3.7.2 Emergency Management Plan**

#### 3.8 Interagency Participation

### Traffic Operations

#### 3.9 Traffic Operations

- **3.9.1 Portable Traffic Monitoring Sites (PTMS)**
- **3.9.2 Telemetered Traffic Monitoring Site (TTMS)**

### Customer Relations Unit

#### 3.10 Customer Relations Unit

### Permits Coordination and Inspection

#### 3.11 Permits Coordination and Inspection

### Roadway Characteristics Inventory (RCI)

#### 3.12 Roadway Characteristics Inventory (RCI)

### Maintenance Management System (MMS)

#### 3.13 Maintenance Management System (MMS)
4 MINIMUM REQUIREMENTS SUBJECT TO CONSTRUCTION O&M VIOLATIONS ............... 41
4.1 CONSTRUCTION AVAILABILITY FAULTS WITH TEMPORARY CURES ......................... 42
4.2 NOTIFICATION OF CONSTRUCTION AVAILABILITY FAULTS, CONSTRUCTION O&M VIOLATIONS AND CONSTRUCTION CLOSURES ......................................................... 42
5 MINIMUM REQUIREMENTS SUBJECT TO O&M VIOLATIONS (OPERATING PERIOD) ........ 42
5.1 ROUTINE MAINTENANCE AND INSPECTION PERFORMANCE MEASURES .................. 42
5.1.1 Maintenance Rating Program .................................................................................. 42
5.1.2 Maintenance and Inspection Performance Requirements ......................................... 43
5.2 ASPHALT PAVEMENT CONDITIONS ......................................................................... 44
5.2.1 Asphalt Pavement Remedial Work ........................................................................... 44
5.2.1.1 Materials and Construction Requirements .............................................................. 44
5.2.1.2 Remedial Requirements ......................................................................................... 44
5.3 PORTLAND CEMENT CONCRETE PAVEMENT CONDITIONS ................................. 48
5.3.1 Portland Cement Concrete Pavement Remedial Work .............................................. 48
5.3.1.1 Materials and Construction Requirements .............................................................. 48
5.3.1.2 Remedial Requirements ......................................................................................... 48
5.4 ROADWAY LIGHTING SYSTEM & MAPPING ............................................................... 49
5.5 OVERHEAD SIGN STRUCTURE INSPECTION, MAINTENANCE AND REPAIR .......... 49
5.6 MAST ARM STRUCTURE INSPECTIONS ................................................................... 50
5.7 MANDATORY SPARES ................................................................................................. 50
6 MINIMUM REQUIREMENTS SUBJECT TO AVAILABILITY FAULTS AND CONSTRUCTION AVAILABILITY FAULTS ................................................................................. 50
6.1 INCIDENT / EMERGENCY RESPONSE PERFORMANCE MEASURES ...................... 50
6.2 TEMPORARY MITIGATION PERFORMANCE MEASURES ........................................ 51
6.2.1 Roadway Operations ............................................................................................... 51
6.2.2 Debris Removal ....................................................................................................... 51
6.2.3 Roadway Elements ................................................................................................. 51
6.2.4 Flexible Pavement Pothole/Settlement/Depression/Rutting .................................... 51
6.2.5 Rigid Pavement – Potholes/Spalling ....................................................................... 52
6.2.6 Signs ....................................................................................................................... 52
6.2.7 Traffic Signal Structure ......................................................................................... 52
6.2.8 Highway Lighting ................................................................................................... 52
6.2.9 Bridge Damage/Element Failure ............................................................................. 52
6.2.10 Toll Collection Interruption .................................................................................... 53
6.2.11 Toll Gantry Damage .............................................................................................. 53
6.2.12 Emergency Access Gates ..................................................................................... 53
6.2.13 Fiber Optic Network FON ..................................................................................... 53
6.2.14 Toll Equipment Building ...................................................................................... 54
6.2.15 Switch Communications ....................................................................................... 54
6.3 AVAILABILITY FAULTS WITH TEMPORARY CURES ............................................... 54
6.4 NOTIFICATION OF AVAILABILITY FAULTS, O&M VIOLATIONS AND CLOSURES ....... 54
TABLES ................................................................................................................................. 55
TABLE 4.1 - CONSTRUCTION AVAILABILITY FAULTS .................................................... 55
TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS ............................................................. 55
TABLE 4.3 - AVAILABILITY FAULTS .................................................................................. 55
TABLE 4.4 - O&M VIOLATIONS ........................................................................................ 55
OPERATIONS AND MAINTENANCE REQUIREMENTS

1 GENERAL OBLIGATIONS

The goal of FDOT is to ensure that the Project is managed, maintained and operated in a manner that is consistent with FDOT procedures. Concessionaire shall operate and maintain the Project: (i) within the Construction Period O&M Limits from the date of NTP 2 until Final Acceptance and (ii) within the Operating Period O&M Limits from Final Acceptance until the Termination Date. Concessionaire’s obligation to operate and maintain the Project includes, to the extent within the applicable O&M Limits: (i) all existing I-4 infrastructure and associated roadway infrastructure; and (ii) the Project’s capital improvements as detailed in O&M Limits Construction Period maps and O&M Limits Operating Period maps in Volume III – Additional Mandatory Standards (with the exception of the Tolling Equipment). In addition, Concessionaire shall be responsible for carrying out the maintenance of the physical elements of the Project as described in this Section 4 of the Technical Requirements and ultimately handing back the facility in a manner that is compliant with the Handback Requirements set forth in the Contract Documents.

Concessionaire shall establish a self-monitoring program which provides the required trained personnel, off-site facilities, storage areas, fleet vehicles, ability to respond to Emergencies, computer hardware and software, tools, Intelligent Transportation System (ITS), coordination of operation and maintenance of Tolling Equipment, Customer Relations Unit, and other items as required to operate and maintain a safe and reliable roadway system with the main objectives to maximize public safety, reliability and roadway availability. Concessionaire shall coordinate, plan and perform the O&M Work required under the Contract Documents in a manner that will provide safe conditions for Concessionaire staff and the traveling public using the Project, while minimizing traffic disruptions. Payments owed to Concessionaire shall be subject to adjustments depending upon Concessionaire’s level of performance as described in the Contract Documents.

The scope of the O&M Work to be completed by Concessionaire shall include the following:

a. Provide maintenance of all assets within the Construction Zone from the date of commencement of any Advance Construction Activities until the earlier of completion of such Advance Construction Activities or NTP 2;

b. Provide maintenance and operations of all of the Project’s assets within the applicable O&M Limits;

c. Provide the required Renewal Work of the Project’s assets;

d. Provide handback of the Project’s assets; and

e. Provide first responder incident/emergency response and emergency repair.

The Project shall be available 24 hours per day, seven days per week, and every day of the year. Concessionaire shall provide the appropriate staff levels for these hours of operation and shall be available to assume these responsibilities from the date of NTP 2 or earlier, with respect to any Advance Construction Activities.
1.1 Governing Documents and APL/QPL

1.1.1 Governing Documents
Concessionaire shall be responsible for compliance with the Governing Regulations as referenced in Volume II, Section 2.B.1 – Governing Regulations, including all maintenance procedures, manuals, guides, and handbooks therein. With respect to the O&M Work, the then current edition of a Governing Regulation is defined as the edition in effect from time to time as the particular O&M Work is being performed.

1.1.2 APL/QPL
Concessionaire shall only use the items listed on the APL and QPL in effect at the time of use of the applicable equipment, products and materials. The provisions of Section 1.8 of the Agreement shall apply with respect to any changes made to the APL and QPL.

1.2 Performance Measures

1.2.1 Noncompliance Point System Relationship
Concessionaire shall maintain the assets within the O&M Limits to the minimum requirements specified in the Contract Documents. A failure to do so constitutes an event of Noncompliance and as such can trigger Noncompliance Points under the system set forth in the Contract Documents. The minimum requirements identified in Tables 4.1, 4.2, 4.3 and 4.4 shall be assigned Noncompliance Points as set forth in Appendix 5 of the Concession Agreement.

1.2.2 Construction Availability Faults
Construction Availability Faults result from the failure to meet the minimum performance requirements set forth in Table 4.1 within the applicable cure period (if any).

1.2.3 Construction O&M Violations
Construction O&M Violations result from the failure to meet the minimum performance requirements set forth in Table 4.2 within the applicable cure period (if any).

1.2.4 Availability Faults
Availability Faults result from the failure to meet the minimum performance requirements set forth in Table 4.3 within the applicable cure period (if any).

1.2.5 O&M Violation
O&M Violation results from the failure to meet the minimum performance requirements set forth in Table 4.4 within the applicable cure period (if any).

1.3 O&M Plans
Concessionaire shall submit O&M Plans to FDOT in accordance with Section 2.H.2 of the Technical Requirements.
1.3.1 Construction Period O&M Plan

Concessionaire shall develop, submit and maintain the Construction Period O&M Plan, which shall include, at minimum, the following as they relate to O&M Work during the Construction Period:

a. A staff organizational chart and staffing plan for the O&M Work;

b. A transition plan detailing how Concessionaire will transition O&M Work from the current FDOT asset maintenance contracts as detailed in Section 4-1.3.5 of the Technical Requirements.

c. Description of the O&M Work, including preventive and routine maintenance to be provided and the physical limits or boundaries of the Work.

d. Description of Concessionaire’s approach to safety and security for the O&M Work;

e. Concessionaire’s self-monitoring processes, including a list of the procedures to be used to monitor compliance with minimum performance criteria;

f. Description of Concessionaire’s approach to routine maintenance and non-routine maintenance services;

g. Bridge maintenance and bridge inspection plan;

h. Method to monitor all activities associated with routine maintenance and non-routine maintenance services, Renewal Work and incident/Emergency response requirements;

i. Method of tracking and reporting Noncompliance Points, Construction O&M Violations, O&M Violations, Availability Faults, Construction Closures and Closures including Permitted Closures and Permitted Construction Closures;

j. An Environmental Compliance Plan and a Contamination Management Plan for the Project;

k. Description of Concessionaire’s approach to the staffing and operation of the Customer Relations Unit (does not include SunPass Customer support);

l. Description of Concessionaire’s coordination with FDOT in connection with FDOT’s issuance of permits for areas within the O&M Limits;

m. An Emergency Management Plan as detailed in Section 4-3.7.2 of the Technical Requirements;

n. Description of Concessionaire’s approach to Emergency and incident response;

o. A Standard Operating Guideline for the Service Patrol Program (“Service Patrol SOG”);

p. A list of the facilities, including any off-site storage or maintenance facilities to be used by Concessionaire; and

q. An ITS Operations & Maintenance Plan as detailed in Section 4-2.5.10 of the Technical Requirements.
1.3.2 Operating Period O&M Plan

Concessionaire shall develop, submit and maintain the Operating Period O&M Plan, which shall include, at minimum, the following as they relate to O&M Work during the Operating Period:

a. A staff organizational chart and staffing plan for the O&M Work;

b. Description of the O&M Work, including preventive and routine maintenance.

c. Description of Concessionaire’s approach to safety and security for the O&M Work;

d. Concessionaire’s self-monitoring processes, including a list of the procedures to be used to monitor compliance with minimum performance criteria;

e. Description of Concessionaire’s approach to routine maintenance and non-routine maintenance services;

f. Bridge maintenance and bridge inspection plan;

g. Method to monitor all activities associated with the routine maintenance and non-routine maintenance services, Renewal Work and incident/Emergency response requirements;

h. Method of tracking and reporting Noncompliance Points, O&M Violations, Availability Faults and Closures including Permitted Closures;

i. An Environmental Compliance Plan and a Contamination Management Plan for the Project;

j. Description of Concessionaire’s approach and assumptions for the Renewal Work and equipment replacement, including life cycles as well as the Renewal Work Schedule;

k. Description of Concessionaire’s approach to the staffing and operation of the Customer Relations Unit (does not include SunPass Customer support);

l. Description of Concessionaire’s approach to meeting the periodic Maintenance Rating Program (MRP) rating requirements;

m. Description of Concessionaire’s coordination with FDOT in connection with FDOT’s issuance of permits for areas within the O&M Limits;

n. Emergency Management Plan as detailed in Section 4-3.7.2 of the Technical Provisions;

o. Description of Concessionaire's approach to Emergency and incident response;

p. A Service Patrol SOG;

q. A list of the facilities, including any off-site storage or maintenance facilities, that will be used by Concessionaire;

r. An ITS Operations & Maintenance Plan as detailed in Section 4-2.5.10 of the Technical Requirements; and
s. Copies of all As-Built Record Plans that detail the elements of the O&M Work provided and the physical limits or boundaries of the Work.

1.3.3 O&M Manual

1.3.3.1 Operations Manual

Concessionaire shall develop, submit and maintain, as part of the O&M Plans, a detailed Operations Manual based on the O&M Work required for the Project. The Operations Manual shall meet all applicable requirements set forth in the Contract Documents. The Operations Manual shall set forth the operating procedures for the facilities and roadways within the O&M Limits.

The Operations Manual shall be updated annually, or more frequently as necessary to indicate changes to operating protocols, agreements and interactions with other entities, and to indicate the revised operating requirements for equipment.

The Operations Manual shall include, at a minimum, the following:

a. Safety plan;

b. Quality Management System / Quality Assurance System;

c. Copies of all operations forms, checklists, Construction O&M Violation and O&M Violation logs, Noncompliance logs related to the performance of the O&M Work, Availability Faults detection logs, Closures and Construction Closures logs, including Permitted Closures and Permitted Construction Closures;

d. Establish regulations governing the performance of duties by Concessionaire’s RTMC personnel within the control room in order to create a professional atmosphere and to support the overall mission of the RTMC;

e. Provide an overview and establish procedures for handling personal injury or public safety concerns; and

f. Provide an overview of the steps taken when managing traffic incidents in support of the overall mission of the RTMC. This shall include details of the activities to be supported with respect to incident detection, resource dispatch, incident clearance, RTMC coordination, and on scene traffic management.

1.3.3.2 Maintenance Manual

Concessionaire shall develop, submit and maintain, as part of the O&M Plans, a detailed Maintenance Manual based on the O&M Work required for the Project. The Maintenance Manual shall meet all applicable requirements set forth in the Contract Documents. The Maintenance Manual shall set forth the maintenance procedures for the facilities and roadways within the O&M Limits, and shall include a detailed asset management plan that includes the following elements: routine maintenance services for roadway assets, a computerized maintenance management system for roadway assets, maintenance
records, condition assessments, staffing plans, procedures, and schedules.

The Maintenance Manual shall be used by Concessionaire’s maintenance staff and shall be updated annually, or more frequently as necessary, to indicate the maintenance requirements for the assets, equipment and systems as they are revised, upgraded and/or replaced.

The Maintenance Manual shall include, at a minimum, the following:

a. Description of all roadway assets within the O&M Limits, including facilities, systems and equipment to be maintained by Concessionaire;

b. A logical system breakdown of all roadway assets within the O&M Limits, including facilities equipment and systems and the levels of maintenance to be provided by Concessionaire’s staff;

c. Description of the staffing plan (including all positions, work locations, and work hours) and related workshop, maintenance garages, major equipment, vehicles, storage facilities, etc., as necessary to support the roadway assets maintenance program;

d. Description of the staff qualifications for each staff position;

e. List of supervisory personnel including their contact information.

f. List of the Project’s major systems and equipment manufacturers/vendors, including their contact information (contact person, address, telephone numbers, website address and e-mail address);

g. List of Contractors and subcontractors used to perform any roadway asset maintenance services and the identification of the services expected to be provided;

h. A detailed list of routine maintenance procedures for all roadway assets and landscaping areas, excluding Tolling Equipment, with a schedule indicating tasks and the required frequency;

i. A list of unplanned but anticipated maintenance services for all roadway assets;

j. Systems and equipment manufacturer’s operations and maintenance manuals and warranties;

k. Copies of all maintenance inspection forms, checklists, etc.;

l. A summary listing all maintenance tasks for all roadway assets categorized by system/discipline.

Standard service manuals for commercially available equipment and products shall be acceptable only if the equipment provided is standard off-the-shelf equipment without any custom features or functions. Custom equipment and systems shall have custom operations and maintenance manuals that include detailed information that addresses the custom features of the equipment provided. The non-applicable portions of standard manuals shall be neatly encircled
and cross hatched to clearly indicate that these sections are not applicable.

1.3.4 Quality Management Requirements

Concessionaire shall develop a comprehensive O&M Quality Management System (O&M-QMS) which shall fully comply with the requirements of the Contract Documents, with the primary function of establishing Concessionaire’s self-monitoring process and to monitor the performance of Concessionaire’s O&M Work. The O&M-QMS shall be submitted with the O&M Plan for review and approval by FDOT. The O&M-QMS shall provide the means to evaluate Concessionaire’s level of performance with respect to the minimum performance requirements. The O&M-QMS will provide a summary of O&M performance measure items with associated Noncompliance Points.

Concessionaire shall also develop a detailed quality assurance system for validating the information, accuracy, and results of the O&M-QMS. The system shall include procedures to validate the data, times, dates, other information and calculations that are the basis of the Availability Payment, Construction O&M Violations, Construction Availability Faults, O&M Violations, Availability Faults, Closures, Construction Closures and Noncompliance Points. Concessionaire shall report the results of the O&M-QMS and submit as part of the O&M Monthly Report.

1.3.5 Transition Plan

As part of the O&M Plan, Concessionaire shall present a transition plan and submit it to FDOT for approval in its reasonable discretion. The transition plan shall detail how Concessionaire will transition O&M Work from the current FDOT District asset maintenance contracts to Concessionaire in such a way as to ensure a seamless transfer of maintenance services and ensure a continuous (24 hours per day, seven days per week, and every day of the year) system operation and functionality of all components of the Project.

1.4 Operations and Maintenance Responsibilities during the Construction Period

Concessionaire shall conduct the O&M Work on the Project for the Construction Period. The level of O&M Work required for the Construction Period is listed in Tables 4.1 and 4.2.

Concessionaire shall be responsible for maintenance of all traffic signals within the Construction Period O&M Limits until Final Acceptance. Upon Final Acceptance the maintenance of the traffic signals shall be returned to the local agency that has maintenance responsibility per the Project Commitments in Volume III – Additional Mandatory Standards.

Concessionaire shall respond independently or as directed by FDOT’s Regional Traffic Management Center to any incident, emergency or event with the appropriate qualified staff, equipment and support personnel required to meet the minimum performance requirements and correct a failure to meet such minimum performance requirements within the required cure period.
1.5 Monthly O&M Reports

Concessionaire shall submit a monthly report (each, a “Monthly O&M Report”) not later than the 10th day of each month (or the first working day thereafter if the 10th day is not a working day), identifying all of the activities associated with O&M Work for the previous month, the actual maintenance performed during such month, and confirmation that Concessionaire performed all O&M Work in compliance with the Contract Documents.

The Monthly O&M Report shall contain at minimum the following information:

a. A summary of the Planned Maintenance activities for the upcoming month;

b. A summary of the maintenance performed and completed for the month;

c. A summary of the Planned Maintenance that was not completed for the month, including the reasons for the incompletion of the Planned Maintenance and a summary of deferred days for each deferred item;

d. Summary of the maintenance activities performed for the month beyond the Planned Maintenance activities for that month;

e. Detailed results of all Planned Maintenance and other maintenance work that was performed during the month;

f. Data to update the Maintenance Management System (MMS);

g. Summary of results from the periodic MRP program;

h. Summary of landscape maintenance activities;

i. Summary of inspected bridges including detailed bridge repairs and associated maintenance activities;

j. Summary of Noncompliance Points assessed including details of each assessment;

k. Summary of Construction O&M Violations, Construction Availability Faults, O&M Violations and Availability Faults, including details of each occurrence;

l. A summary of the status of the Project for the month identifying all Closures, Construction Closures including details describing the location and duration, and explaining as applicable for each Construction Closure whether it is a Permitted Construction Closure, and for each Closure whether it is an Unavailability Event or a Permitted Closures;

m. Details on all instances of Construction O&M Violations, Construction Availability Faults, O&M Violations and Availability Faults, describing at a minimum: the commencement time, duration, and details regarding the cure of such Construction O&M Violations, Construction Availability Faults, O&M Violations and Availability Faults;

n. Concessionaire’s Incident Response logs including a time based report of all actions and activities performed by Concessionaire;

o. Customer Relations Unit activities, including customer comments, comment tracking data, customer service rating data, and the details of Concessionaire’s response (does not include SunPass customer support);
p. Detailed results of all inspections, assessments and testing activities, including the related procedures, forms, etc.;
q. A Monthly Work Estimate Report for ITS devices as detailed in Section 4-2.5.9 of the Technical Requirements.
r. A device uptime report for ITS devices as detailed in Section 4-2.5.9 of the Technical Requirements; and
s. An O&M Quality Management System (O&M-QMS) report.

1.6 FDOT Inspection and Testing

FDOT may perform periodic inspections and testing of Concessionaire’s O&M Work to verify the O&M Work meets the minimum performance requirements. FDOT will notify Concessionaire of any Elements determined by FDOT to not meet the minimum performance requirements. Concessionaire will then be responsible for meeting the minimum performance requirement within the FDOT Reported Event Cure Period.

1.7 Meetings

Concessionaire and FDOT shall meet quarterly or more frequently as requested by FDOT to discuss the O&M Work. The items to be discussed shall include, at a minimum: maintenance activities of the previous period, Planned Maintenance for the next month, future planned lane closures, incidents/emergencies, incident management coordination, calculation of the adjustments to the Availability Payments, assessment of Noncompliance Points, Construction O&M Violations, Construction Availability Faults, O&M Violations, Availability Faults, Closures, Construction Closures and any other pertinent information related to the O&M Work.

Concessionaire shall actively participate in Traffic Incident Management (TIM) team meetings, Service Patrol meetings, Community Traffic Safety Team (CTST) and other meetings as directed by FDOT, in its reasonable discretion, to provide assistance, information, and expertise as needed. Concessionaire shall conduct incident debriefings to review lessons learned and best practices. These incident debriefings shall be summarized at subsequent TIM meetings.

Concessionaire shall attend quarterly meetings with the District’s Traffic Operations Department. The purpose of these meetings will be to review any safety and traffic operations issues or requests on the Project.

1.8 Safety

Concessionaire shall develop a Safety Plan that includes staff training, safety procedures and protocols to address the hazardous conditions associated with the O&M Work. The Safety Plan shall be an integral part of the O&M Plan and shall be included in the O&M Manual. Concessionaire shall follow all safety requirements of the Contract Documents, including those outlined in the National Electric Safety Code (NESC) and the Occupational Safety and Health Administration (OSHA). Concessionaire shall notify FDOT immediately after any injury incurred by person(s) working on the Project. Concessionaire is solely responsible for the safety of all its personnel and shall be solely responsible for maintaining the safety required and providing safety equipment and procedures for the protection of employees and the public throughout the O&M Limits.
1.9 Staffing

Concessionaire shall identify a primary maintenance staff to be dedicated to the Project and shall maintain adequate support staff with appropriate skill levels, to respond to all of the Project's O&M requirements, at all times, for the full duration of the Term.

Concessionaire shall maintain updated staff records and shall provide FDOT access to these staff records upon request.

1.9.1 Staff Conduct and Grooming

Concessionaire shall ensure that staff of Concessionaire and Contractors performing O&M Work exercise good sound judgment in carrying out their duties and conduct themselves in such a manner that will reflect favorably upon FDOT. FDOT also reserves the right to require removal of any employee from the Project who cannot perform the duties or damages the reputation of FDOT. In general Concessionaire staff will:

a. Wear clean and neat uniforms.

b. Be well groomed and courteous at all times.

1.9.2 Regional Traffic Management Center (RTMC) Staffing

Concessionaire employees working in the RTMC shall not have any felony conviction record. A criminal history record check shall be conducted for each employee before being hired. Concessionaire may be requested by FDOT to perform periodic criminal record checks on all RTMC staff, and shall do so no less than once per year. Each of Concessionaire’s staff assigned to the RTMC must pass a Florida Department of Law Enforcement (FDLE) and Federal Bureau of Investigation (FBI) background check. The FDLE and FBI background check shall be updated for each person on an annual basis.

Concessionaire shall provide proof, by a licensed medical practitioner or technician that all RTMC staff is drug free in accordance with Section 112.0455, Florida Statutes prior to reporting to the RTMC. Concessionaire shall submit the proof described above for its staff every six months thereafter.

1.9.3 Maintenance of Traffic Supervisor

Concessionaire shall have on its staff, individuals that are certified in accordance with the Standard Specifications as a Worksite Traffic Supervisor that will be responsible to respond to an incident or lane closure event throughout the duration of the Term.

1.10 Contamination

Concessionaire shall comply with all requirements relating to Contaminated Materials or fuel spill events set forth in Tables 4.2 and 4.4 and the Contract Documents.

1.11 General Inspections

Concessionaire shall carry out general inspections and continuous monitoring of the Project in accordance with the O&M Plan. Concessionaire shall use the results of general inspections to develop and update the Renewal Work Schedule, to maintain
asset conditions and service levels, and to develop programs of maintenance and Renewal Work to minimize the effect of O&M Work on Users.

1.12 FDOT O&M Monitoring

FDOT will conduct pavement condition surveys as described in Section 1.12.1 and 1.12.2 of the Technical Requirements. These pavement condition surveys will provide the roadway condition for the Project based on the following sections:

- Western Terminus of the Operating Period O&M Limits to the centerline of Orange Blossom Trail (Orange County)
  - Begin at the western terminus of the Operating Period O&M Limits to mile post 14.495
- Centerline of Orange Blossom Trail to the centerline of Ivanhoe Blvd (Orange County)
  - Mile post 14.495 to mile post 18.565
- Centerline of Ivanhoe Boulevard to the centerline of Kennedy Boulevard (Orange County)
  - Mile post 18.565 to mile post 23.442
- Centerline of Kennedy Boulevard to the centerline of Maitland Boulevard (Orange County)
  - Mile post 23.442 to mile post 24.673
- Centerline of Maitland Boulevard to the centerline of Central Parkway (Seminole County)
  - Mile post 0.0 to mile post 2.610
- Centerline of Central Parkway to the eastern terminus of the Operating Period O&M Limits (Seminole County)
  - Mile post 2.610 to eastern terminus of the Operating Period O&M Limits

1.12.1 Flexible Pavement/Friction Course Monitoring

Concessionaire shall consistently monitor the pavement condition in accordance with the Contract documents. FDOT will conduct a routine annual pavement condition surveys in accordance with FDOT's Flexible Pavement Conditions Survey Handbook. The pavement condition survey results shall meet the minimum performance requirements set forth in Table 4.4.

1.12.2 Rigid Pavement Monitoring

Concessionaire shall consistently monitor the pavement condition in accordance with the Contract Documents. FDOT will conduct pavement condition surveys in accordance with FDOT's Rigid Pavement Conditions Survey Handbook. The pavement condition survey results shall meet minimum performance requirements set forth in Table 4.4.
2 MAINTENANCE REQUIREMENTS

2.1 ROADWAY MAINTENANCE REQUIREMENTS

2.1.1 Roadway Maintenance during the Construction Period

Concessionaire shall be responsible for maintaining the assets within the Construction O&M Limits identified in Volume III – Additional Mandatory Standards, including maintenance of all traffic transitions and tapers approaching the Project. Concessionaire shall be responsible for providing all routine maintenance activities, incident/Emergency response and maintenance of the roadway assets as detailed in Tables 4.1 and 4.2 from the date of NTP 2 or earlier, for any Advance Construction Activities, until commencement of the Operating Period.

Concessionaire shall provide and maintain properly trained staff to perform the continuous, routine maintenance activities required for the duration of the Construction Period. Concessionaire’s staff shall be available 24 hours per day, seven days per week, and every day of the year to respond as necessary to support the maintenance requirements during the Construction Period.

For scheduled road closures associated with routine maintenance operations, Concessionaire shall coordinate these lane closures and maintenance activities with FDOT, affected local Governmental Entities a minimum of two weeks in advance of the planned activities as Planned Maintenance. Concessionaire shall notify FDOT, affected local Governmental Entities when closing any travel lanes or ramps for unplanned closures when the circumstances arise.

For scheduled closures associated with the Construction Work, Concessionaire shall to adhere to the requirements of Volume II, Section 3.H.5.

2.1.1.1 O&M Work and O&M Limits during the Construction Period

Concessionaire’s O&M Work responsibilities for the Construction Period are detailed in Tables 4.1 and 4.2 and the Construction Period O&M Limits are shown in Volume III – Additional Mandatory Standards.

2.1.2 Roadway Maintenance during the Operating Period

Concessionaire shall be responsible for maintaining the Element categories within the Operating O&M Limits as identified in Volume III – Additional Mandatory Standards. Concessionaire shall also be responsible for maintaining all signs and sign structures inside the O&M Limits, including DMS Sign Structures that are located outside the O&M Limits but within the ITS Maintenance Project Limits as shown in Volume III – Additional Mandatory Standards. Concessionaire shall be responsible for maintenance of the Element categories as detailed in Table 4.3 and Table 4.4 from the date of the commencement of the Operating Period.

Concessionaire shall provide and maintain properly trained staff to perform the continuous, routine and periodic maintenance activities required for the duration of the Operating Period. Concessionaire’s staff shall be available 24 hours per day, seven days per week, and every day of the year to respond as necessary to support the maintenance requirements for the Operating Period.
For scheduled road closures associated with routine maintenance operations, Concessionaire shall coordinate these closures and maintenance activities with FDOT a minimum of two weeks in advance of the planned activities as Planned Maintenance. Concessionaire shall notify FDOT, CFX and other affected local agencies when closing any travel lanes or ramps for unplanned closures when the circumstances arise.

2.1.2.1 O&M Work and O&M Limits during the Operating Period

Concessionaire’s O&M Work responsibilities for the Operating Period are detailed in Tables 4.3 and 4.4 and the Operating Period O&M Limits are shown in Volume III – Additional Mandatory Standards.

2.1.2.2 Water Quality

The “State of Florida Department of Environmental Protection (FDEP) Generic Permit for Stormwater Discharge from Large and Small Construction Activities” applies to this Project. Concessionaire shall obtain a copy of the permit through FDOT’s website and comply with the requirements of the permit. The URL for obtaining a copy of the permit is http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/DEPPermitt.pdf. In accordance with the requirements of the DEP generic permit, Concessionaire’s responsibilities shall include the following:

1. Preparation, execution and submission of DEP Generic Permit Notice of Intent (NOI) and payment of associated fee(s);
2. Preparation and submission of erosion control plan as outlined in Section 104 of the Specifications;
3. Any Concessionaire-initiated SWPPP modifications;
4. Performing inspections using a qualified inspector;
5. Completion of SWPPP construction inspection reports;
6. Executing associated certification forms provided by FDOT; and
7. Preparation, execution and submission of Notice of Termination (NOT) of the DEP Generic Permit coverage.

Concessionaire shall submit a Notice of Intent for a construction National Pollutant Discharge Elimination System (NPDES) permit, prior to the initiation of the O&M Work, which shall identify erosion and sedimentation control devices, locations and scheduled inspection and maintenance of the selected devices. Concessionaire shall comply with the requirements of Rule 62-520.400 F.A.C. (Minimum Criteria for Groundwater) and Rule 62-520.430, F.A.C. (Standards for Class G-III Groundwater) during any dewatering to groundwater wells associated with this Project, and any other applicable Laws.
2.1.3 Maintenance Plans & Schedules

2.1.3.1 Minimum Maintenance Tasks

The minimum maintenance tasks are shown in Tables 4.2 and 4.4 and shall be performed by Concessionaire at the minimum specified frequencies and shall meet the minimum performance requirements, in accordance with the Contract Documents, or as per the frequency specified in Concessionaire’s O&M Plan, whichever is greater. Concessionaire may propose revisions to Tables 4.2 and 4.4 for FDOT review and approval, based on the final design, materials and equipment used.

2.1.3.2 Planned Maintenance Work

Concessionaire shall prepare a Planned Maintenance Schedule on a monthly and annual basis in accordance with the requirements set forth herein and in accordance with Appendix 3-C and Appendix 6 of the Concession Agreement. The monthly Planned Maintenance Schedules are for O&M Work that is planned for the upcoming month. The monthly Planned Maintenance Schedules shall describe, for each section within the O&M Limits, all of the scheduled maintenance tasks or activities for the given period.

2.1.3.3 Renewal Work

During each year of the Operating Period, Concessionaire shall prepare a five year Renewal Work Schedule that identifies Concessionaire’s plan for repairing, replacing, or renovating the Project assets. The Renewal Work shall identify the first three Calendar Years with project specific commitments to be accomplished and include sections detailed in Section 4-1.12 of the Technical Requirements failing to meet the Pavement Condition Survey performance requirements as detailed in Table 4.4. The roadway section identified for renewal shall include all pavement in the General Use Lanes (including all shoulders, auxiliary lanes, and ramps) or Express Lanes (including all shoulders and Express Lane Ramps) for the direction failing the performance requirements listed in Table 4.4. Candidate projects for Calendar Years four and five may be modified on a yearly basis. The Renewal Work Schedule shall set forth, by Element, (a) the estimated Useful Life, (b) the estimated Residual Life, (c) a brief description of the type of Renewal Work anticipated to be performed at the end of the Element’s Residual Life, (d) the estimated cost of such Renewal Work, (e) the total estimated cost of Renewal Work in each of the years Renewal Work is anticipated to be performed under the Renewal Work Schedule and (f) a schedule of anticipated closures and work windows for the performance of the Renewal Work covered by the Renewal Work Schedule during the upcoming five Calendar Years.

Not later than 90 Days after the end of each Calendar Year, Concessionaire shall deliver to FDOT a written report of the Renewal Work performed, including any as-built drawings, in the immediately preceding Calendar Year. The report shall describe, by location, the
2.2 BRIDGE INSPECTION

Concessionaire shall be responsible for conducting bridge inspections during the Construction and Operating Periods on all the bridges within the O&M Limits in accordance with Rule 14-48.0011, F.A.C., and shall request FDOT approval for all Bridge Inspection Team Leaders, Bridge Inspection Supervisors, and the approving Professional Engineer a minimum of 60 days before initiating the bridge inspections. Any changes in such personnel must be approved by FDOT.

Concessionaire shall inspect all State owned bridges as detailed above according to the frequencies and criteria required by the Code of Federal Regulations, the F.A.C., FDOT’s Bridge and Other Structures Inspection Reporting Procedure 850-010-030 or successor, FDOT’s Bridge Underwater Operations Procedure 850-010-011 or successor, FDOT’s Bridge Operations and Maintenance Manual, and other applicable Contract Documents. Concessionaire shall create inspection reports using FDOT’s Bridge Management System. Concessionaire shall furnish FDOT an original signed and sealed bridge inspection report and a color copy within 60 days after completion of each inspection. Inspection reports shall be created according to FDOT’s Bridge Maintenance Inventory System (BMIS) and shall be recorded in Bridge Management software (BrM). Concessionaire shall be responsible for data entry.

As a part of bridge inspection duties, Concessionaire shall determine if a review of the then current load rating capacity is warranted for each inspection. If warranted, Concessionaire shall perform a revised bridge load rating analyses.

Concessionaire shall immediately notify FDOT verbally if field observations reveal deficiencies sufficiently critical to warrant immediate and substantial traffic restriction or closing of the bridge. Concessionaire shall confirm the verbal notification with a written notification within 4 hours.

Concessionaire shall maintain all bridge records at all times in preparation for audit reviews. Concessionaire shall ensure that bridge inspectors attend appropriate bridge inspection training as required by FDOT. FDOT will provide District-specific quality control checklists/criteria to Concessionaire. FDOT will perform quality assurance reviews using these checklists by inspecting bridges that have been previously inspected by Concessionaire and by reviewing the inspection records for conformity with FDOT’s findings.

2.3 BRIDGE MAINTENANCE

As detailed in FDOT’s Bridge and Other Structure Inspection Reporting Procedure No. 850-010-030 in FDOT’s Bridge Load Rating Manual, bridge maintenance tasks are divided into maintenance activities as described in FDOT’s Maintenance Cost Handbook. Concessionaire shall perform routine/preventive bridge maintenance, minor bridge maintenance and repair, Major Repairs including collision damage repair, defined as follows:

a. Routine/preventive maintenance: The preservation and upkeep of a structure, including all its appurtenances, in its original condition (or as subsequently improved) insofar as practical. Preventive maintenance includes any activity...
intended to maintain an existing condition or to prevent deterioration. Examples include: cleaning, lubrication, spot painting, dirt and debris removal, and application of protective systems. Routine/preventive maintenance work shall be completed in accordance with Tables 4.2 and 4.4.

b. Minor repair: The restoration of a structure, including all its appurtenances, to its original condition (or as subsequently improved) insofar as practical. Minor repairs include any activity intended to correct the effects of minor material deterioration by restoring the damaged member. Minor repairs are generally defined as repairs to bridge elements that are structurally sound (i.e., no loss of strength), but may have minor section loss, cracking, spalling, or scour. These conditions will have "fair", "satisfactory", or "good" condition ratings. Minor repairs are un-anticipated routine maintenance work as identified by Concessionaire’s bridge inspectors. Minor maintenance and repair work shall be completed in accordance with Tables 4.2 and 4.4. Examples include localized material restoration of:

- deck expansion joints and joint systems,
- deck surfaces,
- sidewalks,
- drainage systems,
- bridge railing systems,
- superstructure members and bearing devices,
- substructure members,
- waterway channels,
- approach slabs,
- anchorages, and structural crack injection and matrix loss restoration.

c. Rehabilitation: The improvement or betterment of a structure, including all its appurtenances, to a condition meeting or exceeding then current design standards, insofar as practical shall be considered Rehabilitation.

Concessionaire shall maintain all paint systems on structures to a minimum "Condition State" of no less than 50% in condition state 2 or better (per FDOT Bridge Inspectors Field Guide Structural Elements). Spot painting is only acceptable for active corrosion areas as a preventive measure. For aesthetic reasons, the paint system shall always be of uniform color and appearance.

FDOT may periodically perform quality assurance reviews by inspecting bridge repairs and maintenance activities recently completed by Concessionaire. In addition, FDOT may perform field reviews of completed work orders for quality and completeness of the repair. All bridge records shall be made available to FDOT for review at any time during the Term.

Concessionaire will conduct monthly work order review meetings with FDOT. Bridge work orders for deficiencies that were noted in the inspection report as needing repair shall be issued through FDOT's Work Order System and completed by Concessionaire. Concessionaire shall notify FDOT regarding closing work orders after the work is completed.
2.4 LANDSCAPE MAINTENANCE REQUIREMENTS

Concessionaire shall maintain landscape improvements within the Operating Period O&M Limits throughout the Operating Period. FDOT recognizes that landscape plantings, unlike many elements of a roadway corridor, are living, and will grow and have maintenance requirements that evolve over time. Therefore, maintenance activities such as plant replacement, trimming, and fertilization will vary as the landscape ages and matures. It is the intent of these guidelines to require maintenance at a high enough level so that the landscape grows in a way that consistently evokes the Florida Experience concept, while allowing flexibility with some aspects of maintenance as these plantings mature.

2.4.1 General Maintenance Requirements and Recommendations

As part of the Maintenance Manual, Concessionaire shall develop a landscape maintenance plan detailing landscape maintenance practices. Maintenance practices for landscape material shall be specific to individual plant types (palms, shade trees, flowering trees, shrubs, grasses, etc.) Plantings and all other landscape improvements shall also be maintained to avoid potential roadway hazards and to provide required clear visibility, accessibility, clearance, and setbacks as set forth in the Contract Documents. The landscape maintenance plan shall include materials, procedures, responsibilities, and schedule for the following activities:

1. soil moisture testing
2. soil pH and nutrient level testing
3. fertilizer application
4. pruning
5. stake and guy inspection and removal
6. weeding
7. insect / pest control
8. mulch replenishment / maintenance
9. If irrigation equipment is utilized, irrigation equipment replacement / adjustments (as applicable) to include program adjustments to control system, spray/nozzle adjustments, bubbler flow, etc.
10. Submittal of Material Safety Data Sheets for any chemical herbicides or pesticides used
11. Submittal of materials information for products such as mulch and stake and guy equipment
12. Documentation of any unhealthy, dead, or missing plant material
13. Documentation of any plant replacements

2.4.1.1 Watering Requirements

Watering is a critical concern for not only the establishment and maintenance of healthy plant material, but also for observing water conservation practices. The amount of water to apply at any one time
varies with the weather, drainage conditions and water holding capacity of the soil. For plant materials that have been established, it is imperative that any mandated water restrictions be fully conformed to. Proper watering techniques should provide even and thorough water dispersal to wet the entire root zone, but not saturate the soil or over-spray onto travel lanes. Automatic irrigation may be utilized by the Concessionaire, if desired, for establishment of plant material. Irrigation is not, however, required for watering, unless required by a Landscape and Irrigation Maintenance Agreement.

2.4.1.2 Integrated Plant Management

An assessment of each planting area’s soil quality is recommended to periodically determine the nutrient levels needed to sustain healthy, vigorous plant growth. Palms, shrubs, trees and turf areas shall be fertilized in such a manner and frequency to ensure that the plant material remains healthy and vigorously growing. Concessionaire shall incorporate an integrated plant management program in the Maintenance Manual to ensure healthy plants, which are free of disease and pests.

2.4.1.3 Mulching

Concessionaire shall mulch planting beds and tree rings in such a manner as to:

1. prevent weed growth;
2. retain moisture to the plants;
3. protect against soil erosion and nutrient loss;
4. maintain a more uniform soil temperature;
5. improve the appearance of the planting beds.

Avoid mulch mounded up on the trunks of trees, palms, and the base of shrubs to encourage air movement in this area that aids in lowering disease susceptibility. Cypress mulch shall not be used on Project.

2.4.1.4 Pruning

All pruning, and the associated safety criteria, shall be performed according to American National Standard Institute ANSI A300 standards and shall be supervised by an International Society of Arboriculture (ISA) certified arborist. Pruning shall be carried out with the health and natural growth of plant materials in mind, to specific pruning heights which maintain clear visibility for motorists, and to provide vertical clearance for pedestrian, bicyclist, and truck traffic where applicable. Visibility windows must be maintained free of view obstructions from plant materials, (with particular attention to fronds and fruit) to prevent potential roadway and pedestrian hazards, consistent with FDOT standards. Specific pruning heights should be determined by the project landscape architect during design, and the landscape architect and contractor during installation of the plants. The intended mature maintained height and spread of plants shall be noted on the planting plans. Understory plant materials planted within the restricted planting areas (Limits of Clear Sight) of the medians
shall be maintained at a height in compliance with Contract Documents.

2.4.1.5 Staking and Guying

All staking materials, except for replacements, shall be removed within one year of planting. Any subsequent staking and guying activities by Concessionaire must adhere to the Contract Documents. Concessionaire shall closely monitor staking and guying attachment materials so that they are securely fastened to avoid potential roadway hazards.

2.4.1.6 Weeding/Herbicide

All planting areas shall be maintained as weed free as practical, enlisting integrated pest management practices in areas specified on the Plans and by maintaining proper mulch levels. Extreme care is recommended if using a chemical herbicide to avoid overspray onto plant materials. Concessionaire shall be responsible for replacing any damaged plantings due to herbicide overspray.

2.4.1.7 Landscape Reporting

Concessionaire shall detail in the O&M Monthly Report the landscape maintenance plan activities and testing conducted in the previous month.

2.4.1.8 Landscape Design Intent Maintenance

Concessionaire shall maintain the landscape plantings in a way that is consistent with the design intent of the approved landscape design as implemented. In addition, the landscape shall be maintained and or replaced in such a manner that the design at the time of hand back is the same as it was at installation, but with the benefit of growth over time.

2.4.1.9 Plant Material Replacement

Concessionaire shall replace plant material that is dead or dying or is in poor condition due to pest infestation, lack of fertilizer or nutrients, lack of water, improper pruning techniques, age related decline, or damaged from incident or acts of nature. If replacement occurs within 4 years of initiation of the Operating Period, replacement size shall be the same or greater than that initially installed. If replacement occurs after 4 or more years after initiation of the Operating Period, replacement sizes shall be as follows:

- Canopy Trees – 6” caliper, or initial size, whichever is greater
- Multi-trunk/understory trees – 16’-18’ OA, or initial size, whichever is greater
- Palms – match size at time of death of palm
- Shrubs/groundcover – initial size

Plant material to be replaced shall be identified and included in the O&M Monthly Report along with the location, quantity required, and specifications. Concessionaire shall provide documentation that plant
material has been replaced or is in the process of being ordered by the following month’s landscape report.

2.5 Intelligent Transportation System (ITS)

2.5.1 ITS Maintenance Requirements

Concessionaire shall be responsible for maintaining the Project ITS upon NTP 2, including the following, during the Construction and Operating Periods:

a. Routine maintenance
b. Preventative maintenance
c. Device installations and calibration
d. Configuration management
e. Troubleshooting
f. Warranty coordination
g. Insurance claim coordination
h. Repairs and replacement
i. Electrical work: inspection, repairs, new installation, and grounding
j. Electrical service charge
k. Conduit work: repair, replacement, installation, directional boring
l. Generators: storage, placement, maintenance, re-fueling
m. Data and communications cabling including all aspects of Fiber Optic Network (FON) maintenance
n. Maintenance management systems

Concessionaire shall coordinate electric service points for ITS. Location of load centers shall be accessible to the maintenance personnel. Concessionaire shall pay for all electric service charges related to the Project beginning at NTP 2.

Concessionaire shall identify and make repairs needed to make the existing ITS meet the performance measures. Performance of these modifications shall not exceed 60 days in duration beyond NTP 2. Concessionaire shall be responsible for providing documentation to determine the baseline performance of the existing FON strands prior to making changes to the FON. Baseline performance information shall include the Unmanaged Fiber Optic Network (UFON) strands. Documentation shall include loss budget by strand. Concessionaire shall return loss budget to the baseline. Concessionaire shall replace any damaged fiber optic cable from termination point to termination point with the same type of cable.

Concessionaire shall maintain the systems, excluding the Controlling Software, that make up the ITS as detailed in Intelligent Transportation System, Section 3 Attachment 1 of the Technical Requirements. Maintenance shall include the following ITS system functions:

ITS
- Provide CCTV, MVDS, and DMS data in a format compatible with the Controlling Software to permit posting of messages via traveler information phone service, traveler information website, and FDOT’s social media accounts; and
- Provide real-time AVL and status data of Service Patrol in a format compatible with the Controlling Software.

FMS
- Provide field data related to I-4 to the Controlling Software when requested by the Controlling Software;
- Receive and post messages from the Controlling Software; and
- Provide device updates to the Controlling Software.

FMS CCTV
- Pan, tilt, and zoom via the Controlling Software;
- Provide iris control via the Controlling Software;
- Provide focus control via the Controlling Software;
- Provide real-time video in a format compatible with the display on the FDOT's then current video wall;
- Provide real-time video in a format compatible with the distribution of video to local agencies and other third party users;
- Provide real-time video along I-4;
- Provide real-time video of FMS DMS messages; and
- Provide real-time video of RSS.

RSS
- Provide signal indications when activated by the Controlling Software;
- Provide a Dark Mode when deactivated by the Controlling Software;
- Provide timing adjustments locally in response to the detectors consistent with logic (increase green time when more gaps, decrease green time when few gaps) when loss of connection to Controlling Software occurs; and
- Provide timing adjustments as controlled by the Controlling Software.

FMS DMS
- Provide self-diagnostics reporting to the Controlling Software;
- Provide real-time display reporting to the Controlling Software;
- Blank via Controlling Software; and
- Provide real-time display of messages to travelers via the Controlling Software.

FMS MVDS
- Provide volume, speed, and occupancy at point locations to the Controlling Software; and
- Provide real-time detector data in a format compatible with the archiving of detector data through the Controlling Software.

ELMS
- Provide field data related to the Express Lanes to the Controlling Software when requested by the Controlling Software;
- Receive and post pricing messages from the Controlling Software; and
- Provide device updates to the Controlling Software.
ELM CCTV
- Pan, tilt, and zoom via the Controlling Software;
- Provide iris control via the Controlling Software;
- Provide focus control via the Controlling Software;
- Provide real-time video in a format compatible with the display on the FDOT’s then current video wall;
- Provide real-time video in a format compatible with the distribution of video to local agencies and other third party users;
- Provide real-time video along the Express Lanes; and
- Provide real-time video of ELMS DMS messages.

ELMS DMS
- Provide self-diagnostics reporting to the Controlling Software;
- Provide real-time display reporting to the Controlling Software;
- Blank via Controlling Software; and
- Provide real-time display of messages to travelers via the Controlling Software.

ELMS MVDS
- Provide volume, speed, and occupancy at point locations to the Controlling Software; and
- Provide real-time detector data in a format compatible with the archiving of detector data through the Controlling Software.

2.5.2 Staffing
Concessionaire’s staff shall be available 24 hours per day, seven days per week, and every day of the year for the duration of the Term to respond to emergency repair and/or replacement work, including hurricane warning situations. Concessionaire shall maintain at all times staffing levels required to ensure the Project’s maintenance requirements are met. A minimum of one (1) staff member assigned by Concessionaire shall be fully certified by the manufacturer on the deployed device model, qualified and trained to handle all ITS requirements for the duration of the Construction and Operating Periods.

Concessionaire shall have the necessary equipment and personnel capable of performing various types of device and telecommunications troubleshooting and field repairs associated with the ITS. With respect to fiber optic repair, this will include at a minimum: mid-span fusion fiber splicing, fiber trunk splicing, Optical Time Domain Reflectometer (OTDR) testing, fiber enclosure/fiber distribution panel installations, and terminations. Concessionaire shall have the capability to install both open trench and directional bored conduit for new installation and replacement of damaged conduit.

2.5.3 Sunshine One-Call
Concessionaire shall register with Sunshine One Call for the fiber optic cable within the ITS Maintenance Project Limits as shown in Volume III - Additional Mandatory Standards. Prior to NTP 2, Concessionaire shall be registered with Sunshine One Call and shall remain registered through the Term. Concessionaire shall respond to Sunshine One Call design and construction
tickets and provide locates as necessary to protect the integrity of the existing ITS system.

2.5.4 Repairs, Parts and Materials

Concessionaire shall repair or replace damaged, missing or malfunctioning devices using products approved on the APL.

2.5.5 Emergency Power

Concessionaire shall be responsible for placement, security, maintenance, and re-fueling of mobile generators and stationary generators to maintain power to the ITS. These generators shall be maintained by Concessionaire according to the manufacturer’s operating manual.

2.5.6 Configuration

Concessionaire shall ensure all software and firmware is maintained according to the supplier’s instructions and that then current versions of the software and firmware are used, unless FDOT concurs that the introduction of said current version of the software and firmware shall result in loss of functionality.

2.5.7 Maintenance Management Systems

2.5.7.1 Network Management

Concessionaire shall be responsible for the operation and maintenance of the network management software to manage the ITS connected via the Managed Fiber Optic Network (MFON). Concessionaire shall configure the network management software to communicate with the ITS allowing field devices to be auto-discovered, monitored and controlled. This shall include the resources required to populate the database and update the information daily. Concessionaire shall be responsible for the provision of all hardware and software required to support this network management function. Concessionaire shall also provide a system interface and a data stream to enable FDOT to receive all alerts associated with network management. The network management system shall have the capability to support additional network nodes to allow expansion of the ITS.

2.5.7.2 Fiber Optic Network (FON) Management

Concessionaire shall also provide a Geographic Information System (GIS) and relational database based Fiber Optic Network (FON) management software. This shall include the resources required to populate the database and update the information about Concessionaire’s FON daily. Concessionaire shall be responsible for the provision of all hardware and software required to support this FON management function. Concessionaire shall also provide a system interface and a data stream to enable FDOT to receive updates within 24 hours. The FON management software shall contain the following minimum data fields and these fields shall be up to date and fully populated:
- Geolocation of pull boxes, splice boxes, poles, and cabinets for fiber and power
- Approximate location of connecting conduit
  - Conduit size
  - Conduit color assignment
- Fiber location
- Tone wire
- Splicing details (fiber assignment buffer and strand)
- Termination details (fiber assignment buffer and strand)
- Jumpers
- Devices jumpered to and from patch panel
  - Device port number
- Service points
- Cable footages at pull box locations
- Association of fibers/jumpers/equipment to allow traceability

2.5.7.3 Maintenance Work and Inventory

Concessionaire shall also provide a relational database based maintenance record and inventory management software. This shall include the resources required to populate the database and update the maintenance work and inventory information within 12 hours. Concessionaire shall be responsible for the provision of all hardware and software required to support this database. Concessionaire shall also provide a system interface and a data stream to enable FDOT to receive updates within 24 hours. FDOT shall be able to create tickets in the maintenance work and inventory database if outages or devices appear to be malfunctioning.

Inventory shall be done at a level that allows the tracking of individual components that may be moved, replaced, or otherwise become disassociated with other components.

Concessionaire’s database shall indicate the operational status of each ITS device and shall create an event to indicate when each device is inoperable and status update when the element has returned to service. A monthly report submitted as part of the O&M Monthly Report shall be produced with an annual rollup report documenting the total downtime and percentage available for the previous 12 months per device with a weighted average for the total equipment percentage reported. Downtime related to natural disasters shall be recorded separately from all other failures.

Concessionaire shall provide and FDOT will review (as part of the O&M Monthly Report) the ITS uptime matrix. Concessionaire shall cooperate and assist FDOT throughout this review process. The maintenance work and inventory software shall contain the following minimum data fields and these fields shall be up to date and fully populated.

Minimum data fields
2.5.7.4 Configuration Management

An inventory of all software and firmware utilized in the system shall be maintained. The inventory shall contain the following minimum data fields and these fields shall be up to date and fully populated.

Minimum data fields
- Version numbers
- Deployment date
- Device make
- Device model
- Location

2.5.8 ITS Maintenance Performance Requirements

Concessionaire shall be responsible for the monitoring and availability of the ITS 24 hours per day, seven days per week, every day of the year, and shall aim to maintain the highest system availability.

DMS displays shall be usable and functional at all times. CCTV shall be clear, accurate, distortion free video with detailed images and be free from transfer smear and oversaturation. MVDS shall meet the requirements set forth in the
then current Standard Specifications. RSS of the ramps shall be maintained as
determined by vehicles detected locally and the Controlling Software.

2.5.8.1 Emergency Maintenance Work

Concessionaire shall provide emergency maintenance response 24
hours per day, seven days per week, every day of the year. Emergency maintenance response shall be required when any device
or component of the device results in the complete failure to critical
operational elements of the ITS or when any system infrastructure
item that is in a condition that is unsafe and/or may present a life
threatening condition.

Typical examples of events requiring emergency maintenance
response include:

a. Failure of ELMS DMS and/or ELMS CCTV cameras
b. System-wide communication outage
c. Message being stuck on a ELMS DMS
d. Fiber optic cable cuts, electrical risks, or potential fire risks
e. Failure of CCTV camera to provide 100% viewing coverage of I-4
   RSS
f. Failure of DMS to display legible message with FDOT’s then
current font, brightness and resolution
g. Failure to provide RSS signal indications or transition into Dark
   Mode when activated by Controlling Software

Immediately upon arrival at the site, Concessionaire shall update the
RTMC of the status and estimated time required for repairs. If the
repair time will exceed two hours, Concessionaire shall notify the
RTMC immediately and begin preparation of a contingency plan.
Submittal of a contingency plan does not change or modify repair cure
periods detailed in Table 4.2 and 4.4. A repair will be deemed
complete once 100% of the device function has been restored. A
work-around should be considered if it would not negatively impact
any part of the Project operations.

Concessionaire shall notify the RTMC when the maintenance actions
have been completed and describe any resulting operational
restrictions.

2.5.8.2 Urgent Maintenance Work

Urgent maintenance response will be required 24 hours per day,
seven days per week, and every day of the year when any system
component results in multiple devices being concurrently down or
unusable or when any system component creates the potential for a
system-wide outage.

Typical examples of events requiring urgent maintenance response
include.
2.5.8.2 Emergency Maintenance Work

A. Responsive Maintenance Work

Concessionaire shall respond to address the ITS system and equipment problems that result in the failure of a device or component of the device to function as expected.  Concessionaire shall perform responsive maintenance as required in the following conditions:

a. Failure of CCTV camera to pan and tilt 360 degrees
b. Failure of ELMS MVDS to meet performance requirements set forth in the then current Standard Specifications reporting speed, volume, and occupancy at low speeds (below 10 mph)
c. Failure of RSS to update release rate based on locally detected vehicles

Immediately upon arrival at the site, Concessionaire shall update the RTMC of the status and estimated time required for repairs.  If the repair time will exceed four hours, Concessionaire shall notify the RTMC immediately and begin preparation of a contingency plan.  A work-around should be considered if it would not negatively impact any part of the Project operations.  Concessionaire shall notify the RTMC when the maintenance actions have been completed and describe any resulting operational restrictions.

b. Failure of ELMS MVDS to meet performance requirements set forth in the then current Standard Specifications reporting speed, volume, and occupancy at low speeds (below 10 mph)

c. Failure of RSS to update release rate based on locally detected vehicles

2.5.8.3 Priority Maintenance Work

Priority maintenance response will be required when a device or component of the device has failed and must be repaired in order for the ITS to function as expected.

Typical examples of events requiring priority maintenance response include:

a. Failure of CCTV cameras to zoom to the maximum zoom according to manufactures specification
b. Failure of CCTV camera iris control to open and close providing a clear, visible and recognizable image at the RTMC
c. Failure of DMS to diagnose performance issues within 5 seconds
d. Failure of DMS to turn off pixels within 5 seconds of request
e. Failure of FMS MVDS to meet performance requirements set forth in the then current Standard Specifications reporting speed, volume, and occupancy at low speeds (below 10 mph)

Concessionaire shall promptly assess and update the RTMC of the status and estimated time required for repairs.  If the repair time will exceed 24 hours, Concessionaire shall notify the RTMC immediately and begin preparation of a contingency plan.  A work-around should be considered if it would not negatively impact any part of the Project.  Concessionaire shall notify the RTMC when the maintenance actions have been completed and describe any resulting operational restrictions.

2.5.8.4 Preventive and Routine Maintenance Work

Concessionaire shall perform all ITS preventive maintenance and routine maintenance within the periodic intervals as recommended and specified by the equipment manufacturer, and based on the equipment’s operating condition over the duration of the Term.  Concessionaire shall meet the minimum performance requirements.
As part of the O&M Plan, Concessionaire shall develop a standard preventive maintenance plan schedule/checklist of the items to be checked or changed on the ITS. This shall be submitted to FDOT for approval as part of the O&M Plan prior to use. The plan shall be updated annually following submittal of such plan to reflect any future ITS related Renewal Work during the Term.

Concessionaire shall keep power and communications service runs cleared for unobstructed recognition of the pull boxes and unobstructed access to the service run. Dirt, plants, weeds, etc. shall be removed from pull box covers. The areas surrounding the controller cabinet’s utility service poles, camera/device poles, and sign structures shall be mowed/trimmed and free of insects (i.e., ants, bees, etc.). The interior of the controller cabinets and the DMS signs shall be free of excess dust, dirt, debris, cobwebs, etc. The exterior of the signs shall be washed quarterly. This service shall be performed in conjunction with the monthly project maintenance.

Concessionaire shall ensure that the FON cable standard route markers are in place and that they are in good condition. This service will be provided each month as part of the preventive maintenance, for each marker, for the entire Project. If a need arises for Concessionaire to purchase replacement cable standard route markers, these markers shall be similar to the existing markers and Concessionaire shall ensure that the same markings are used to identify the cable route.

2.5.8.5 Diagnostic and Troubleshooting Work

Upon the observation or a notification of a malfunction or problem with the ITS, it is Concessionaire’s responsibility to dispatch qualified personnel to provide diagnostic and troubleshooting services as required, to identify the problem and, to fix the problem. It is the responsibility of Concessionaire to service equipment and repair system components to a 100% functional status.

Concessionaire shall coordinate with local agencies as part of troubleshooting, repairing, and/or restoring existing functionality in the event of the loss of functionality.

2.5.9 Reporting

Concessionaire shall notify the RTMC when the maintenance actions have been completed and describe any resulting operational restrictions.

Concessionaire shall provide a monthly work estimate report for ITS devices summarizing all work performed by Concessionaire and the status of that work as part of the O&M Monthly Report. This summary shall also document and certify that all work has been completed in accordance with manufacturer’s specifications and the Contract Documents and any routine and/or preventive maintenance has been carried out as per manufacturer’s recommendations.
This summary shall include an assessment by Concessionaire of equipment failures and their causes such as design/construction errors, age of component, environmental problems, and lightening/surge/power inadequacies etc.

Concessionaire shall be responsible for developing a device uptime report including an availability matrix and submitting it as part of the O&M Monthly Report. The matrix shall include all device systems and subsystems for ITS devices.

2.5.9.1 Disaster Reporting

Concessionaire shall provide a detailed damage report in a reasonably prompt manner after the occurrence of any disaster. This report shall include an individual site analysis with the following information at a minimum:

- Device location
- Date and time of visit
- Description of failure or issue and system impacts
- Site conditions noted i.e. submerged, structure down, no power
- Photo documentation (digital only)
- Damaged parts list: type, model, serial and control number
- Needed parts list
- Repair cost breakdown
- General notes
- Schedule of repair duration

The damage report by Concessionaire shall be per site and include all devices connected to the cabinet location. This work shall be coordinated between Concessionaire and FDOT to establish time frames for these reports to be delivered to FDOT depending on the severity of the disaster.

2.5.10 ITS Operations & Maintenance Plan

Concessionaire shall develop an ITS Operations & Maintenance Plan and submit it as part of the O&M Plan detailed in Section 4-1.3 of the Technical Requirements. At a minimum, the plan shall contain the following information:

a. Proposed arrangements for transitioning maintenance of the current FON and FMS infrastructure from FDOT to Concessionaire;

b. Physical limits or boundaries of the O&M Work related to ITS;

c. Proposed staffing arrangements;

d. Standard operating guidelines for ITS ("ITS SOG"). The ITS SOG shall define processes and procedures for the performance of Concessionaire’s ITS responsibilities. Concessionaire shall also define the proposed arrangements for reviewing the ITS SOG every six months after the initial review and for comments and edits to be submitted to FDOT for review and approval;

e. Systems and procedures for documentation management;
   - Proposed maintenance management systems. This shall include a
description of the arrangements for populating the database and prompt updating of information;

- Inventory management and control;
- As-built revision maintenance in CADD;
- Configuration management plan to track and test new software and firmware ensuring that all software and firmware provided is maintained according to the developer's instructions and that the most up to date versions are used. This shall include an inventory of all software and firmware utilized in the system, details on how the version numbers will be tracked and managed and details of the arrangements for systematically keeping the versions up to date. This shall also include information on the procedures for tracking new version releases and the arrangements for installing new versions and testing their operation;

f. Proposed arrangements for preventive maintenance and systematic equipment inspections;

g. Proposed arrangements for technical systems support including
   - diagnostics and troubleshooting;

h. Proposed arrangements for routine maintenance including;
   - Delivery of the specified maintenance services to the required service and quality levels;
   - Electrical work: inspection, repairs, new installation, and grounding;
   - Conduit work: repair, replacement, installation, directional boring;
   - Generators: storage, placement, maintenance, re-fueling;
   - Repairs and parts replacement plan;
   - Data and communications cabling including fiber optic work: inspection, repairs, new installation, fusion splicing, terminations, OTDR/fiber testing
   - Device installations and calibration;

i. Proposed RSS operations, including
   - Shutdown routine in the event of RSS equipment malfunction
   - Coordination with FDOT with respect to RSS emergency shutdown activities. FDOT shall make final decisions relating to RSS equipment shut down
   - Field support verifying operation of RSS meter stations.

2.6 Drainage Inspection

Concessionaire shall be responsible for conducting pipe inspections as necessary if signs of leaks in pipes are detected. Pipe inspections shall be conducted in accordance with Section 430-4.8 of the Standard Specifications.

5 years after Substantial Completion, Concessionaire shall conduct a pipe inspection in accordance with Section 430-4.8 of the Standard Specifications as modified in this Section on all pipes installed within the layered structural elements in a reinforced soil zone of an MSE wall. Pipe inspections shall be limited to measurements of pipe joint gaps and documentation of joint separation, infiltration, exfiltration and soil intrusion.

Concessionaire shall submit the video report to FDOT in accordance with Section 430-4.8.1 of the Standard Specifications. FDOT shall reserve the right, at any time after reviewing the submitted pipe reports, to direct additional inspections in its reasonable discretion.
All leaking pipe shall be repaired and/or replaced at Concessionaire’s expense. Concessionaire shall submit all repair procedures to FDOT for review and approval.

3 OPERATIONS REQUIREMENTS

Concessionaire shall be responsible for operating the Project with the main objectives of maximizing safety, reliability and roadway availability. Concessionaire shall be responsible for operating the Project within the applicable O&M Limits. Concessionaire shall provide and maintain the appropriate number of properly trained operations staff to perform the operating duties.

3.1 Regional Traffic Management Center Operations

3.1.1 RTMC Control Room Personnel

Concessionaire shall ensure that staff wears a picture ID when stationed at the RTMC and maintains a professional demeanor and appearance at all times. Service Patrol and RTMC staff shall attend semi-annual joint RTMC Operator/Road Ranger training provided by FDOT.

3.1.2 RTMC Control Room Hours of Operation

FDOT will provide Concessionaire a station in the RTMC for two control room personnel. The station will be available at all times (24 hours per day seven days a week, every day of the year) and utilized at Concessionaire’s discretion.

3.2 Data and Video Sharing

FDOT will share with Concessionaire all live streaming video within the Project Limits provided Concessionaire establishes a network connection.

Concessionaire shall not record video obtained through the use of ITS cameras without prior written permission from FDOT. Concessionaire shall comply with FDOT CCTV Agreement Procedure No. 750-040-005.

Concessionaire shall not provide data or live video feeds to any person, organization or entity without prior written permission from FDOT.

3.3 Open Roads Policy

Concessionaire shall comply with the State of Florida “Open Roads Policy”, an agreement between the Florida Highway Patrol (FHP) and FDOT to provide traffic control to expedite the removal of vehicles, cargo, and debris from roadways on the State Highway System and to restore in an URGENT MANNER the safe and orderly flow of traffic following a motor vehicle crash or incident on Florida’s roadways.

3.4 Traffic Incident Management (TIM)

TIM is the planned and coordinated program to detect, respond to, and clear traffic incidents, thereby restoring traffic capacity as safely and as quickly as possible. Concessionaire has important roles and responsibilities in the event of a traffic incident. These are detailed in the Traffic Incident Management Recommended Operational Guidelines included in the Reference Documents along with the roles and responsibilities for other regional participants. Coordination of the actions and
resources for all participants is vital to the success of TIM. Concessionaire shall be part of the Tri-County TIM Team beginning at NTP 2 and through the remainder of the Term. This coordinated process involves a number of public and private sector partners, including the following agencies and services:

a. Law enforcement  
b. Fire and rescue  
c. Emergency medical services  
d. Hazardous material concessionaires  
e. Towing and recovery  
f. Transportation agencies  
g. Traffic information media  
h. Emergency management

Concessionaire shall install 511 signage, Move-Over signs, and Call *FHP for Service Patrol signs to facilitate the TIM activities within the O&M Limits. Signs shall be per the requirements of FDOT’s Traffic Engineering Manual. Concessionaire will also be required to provide a TIM Plan consistent with the Open Roads Policy to include minor and major incidents within the Project Limits. This plan shall describe resources and arrangements for TIM within the Project.

3.5 Service Patrol Program

Concessionaire shall provide a Service Patrol Program for the Project. The Service Patrol shall be free of charge to the public. The purpose of the Service Patrol Program is to patrol the Project Limits for fault detections, clearing disabled vehicles from travel lanes, changing flat tires, jump-starting batteries, minor mechanical repairs, removing minor non-hazardous spills and debris from the highway and assisting the Florida Highway Patrol and local law enforcement during incidents. Service Patrol vehicles shall conform to statewide standards in services provided, paint scheme, markings and equipment load-out. From the date of NTP 2 and for the duration of the Term, Concessionaire shall operate the Service Patrol Program within the Service Patrol Limits as shown in Volume III – Additional Mandatory Standards.

Concessionaire shall be responsible for developing a set of Standard Operating Guidelines for the Service Patrol Program (“Service Patrol SOG”) and submit it as part of the O&M Plan detailed in Section 4-1.3 of the Technical Requirements. The current District 5 Road Ranger Service Patrol Contract and FDOT Road Ranger Program Procedure No. 750-030-015 are included in the Reference Documents.

3.5.1 Services to Be Provided by Concessionaire

Concessionaire shall furnish all personnel, supervision, expertise, vehicles, equipment, materials, parts, licenses, supplies and incidentals necessary to provide the Service Patrol Program described herein.

Concessionaire shall be responsible for assisting FDOT and the RTMC with providing immediate first-hand information on incidents involving fatalities, hazardous spills, etc. In addition, when directed by FDOT, Concessionaire shall provide this type of information to other government agencies, private companies or individuals.
3.5.1.1 Concessionaire's Service Patrol Project Manager

Concessionaire shall appoint a project manager ("Service Patrol Project Manager") to be responsible for the Service Patrol Program. This person shall be thoroughly knowledgeable and experienced in relation to all the aspects of the services required herein, and shall have the administrative authority to deal with any situation in relation to the personnel and service patrol operation. This person shall be available to FDOT 24 hours a day, seven days a week through a reliable, toll free or local area code phone number. The Service Patrol Project Manager is to act as the incident response coordinator and report real time incident conditions to the RTMC.

3.5.1.1.1 Service Patrol Project Manager Staffing Certifications

Concessionaire shall be responsible for ensuring that the Service Patrol Project Manager is trained and qualified, prior to the start of service, with the following certifications, at a minimum:

a. National Incident Management System (NIMS) Incident Management and Command
   - National Incident Management System-Introduction
   - Introduction to Incident Command System
b. FDOT Advanced Maintenance of Traffic

3.5.1.2 Service Patrol Coverage Limits

Service Patrol Program will be provided by Concessionaire to patrol, respond and assist motorists and law enforcement agencies, as directed by FDOT and the RTMC, within the Service Patrol Limits as shown in Service Patrol Limits Map, included in Volume III – Additional Mandatory Standards.

3.5.1.3 Incident Data Collection

Concessionaire shall maintain an incident report which shall be completed and submitted to FDOT within 24 hours after the incident was cleared. The incident report shall reflect, at a minimum, the following data:

a. The month, day and year of the incident occurrence.
b. The Service Patrol operator name and truck number.
c. The time when the Service Patrol operator was notified of a given incident
d. The time Service Patrol vehicle starts in-route to the incident scene.
e. If a decision was made not to respond, the name of the decision maker and reasons.
f. The time of arrival of the Service Patrol at a given incident.
g. The time of departure of the Service Patrol from the scene of a given incident.
h. Lane closure time, by each lane.
i. Lane open time, by each lane
j. The nature of each incident, such as debris removal, stalled vehicle and crash.
k. A list of the equipment and quantity used.
l. Where applicable, the following information regarding on scene contacts shall be recorded:
   1. FHP
   2. FHP incident commander
   3. FHP incident case number
   4. Investigation trooper
   5. Number of troopers on scene
   6. Duties of troopers
   7. Other law enforcement assistance
   8. Fire & rescue
   9. Service Patrol
   10. Medical examiner’s office
   11. Tow company
   12. Environmental clean-up agency
   13. Other pertinent information or comments.

3.5.1.4 Disposal of Debris

Debris gathered during the patrolling rounds and generated during incidents, shall be disposed of by Concessionaire. Concessionaire shall use appropriate containers to store materials collected from travel lanes or at the incident sites during clean up. Service Patrol Operators shall not dispose of collected material at any roadside and shall only dispose of the collected material at official collection sites.

3.5.1.5 Minimum Number of Service Patrol Vehicles Required

Assuring Service Patrol availability for the Project is the responsibility of Concessionaire. Concessionaire shall provide the appropriate number of Service Patrol vehicles needed and shall meet the requirements of the Contract Documents.

3.5.1.6 Service Patrol Vehicle Inspections

All Service Patrol vehicles and their associated equipment, accessories and parts shall be subject to periodic inspection by FDOT to identify potentially unsafe, poorly maintained or improperly
equipped vehicles. FDOT may order such vehicle(s) removed from service and that they be immediately replaced with acceptable service vehicles at Concessionaire’s cost.

3.5.1.7 Customer Satisfaction Survey

Upon the completion of assisting a motorist the Service Patrol operator shall provide the motorist with a FDOT provided postage paid comment card. Comment cards returned by motorists will be collected and evaluated by FDOT on a quarterly basis.

3.5.2 Service Patrol Vehicle and Equipment Requirements

All Service Patrol vehicles, vehicle markings and equipment shall be consistent with procedure 750-030-015. FDOT shall review and approve the design of all vehicles and equipment.

3.5.3 Communication Equipment Requirements

Concessionaire is to develop the Service Patrol vehicle communications equipment to be consistent with Procedure 750-030-015. Equipment specifications and requirements should be included the Service Patrol SOG.

3.5.3.1 Automatic Vehicle Location and Service Patrol Mobile Software

a. Concessionaire shall install, operate, and maintain a tablet PC or equivalent electronic device mounted in each vehicle to support the Automatic Vehicle Location (AVL) system and the Road Ranger Mobile Application (RRMA) to be provided by FDOT.

b. Concessionaire shall mount the tablet PC’s or equivalent electronic device in a fixed bracket in each vehicle with a power connection and any necessary antennae to improve the wireless data connection and GPS reception.

c. All GPS receivers must capture location packets for the AVL system 99% of the time. Defective GPS receivers shall be replaced promptly.

d. Concessionaire shall purchase tablet PC’s or equivalent electronic device with GPS capability and wireless data connectivity to the RTMC for each vehicle, including backup vehicles. The Service Patrol SOG should detail the tablet PC or equivalent electronic device specifications.

e. Concessionaire shall pay all costs related to the hardware and software in the vehicles, including equipment costs, installation, software licenses, and network services.

f. Concessionaire’s staff (Service Patrol Project Manager and patrol vehicle operators) shall complete training provided for the RRMA system and demonstrate competence and ability to operate the RRMA system.

g. Concessionaire shall be responsible for protecting the hardware and software system components installed in the vehicles.
h. The data generated by the AVL and RRMA systems shall be recorded and stored for a minimum of seven years. Real-time AVL data will be provided to FDOT as well as access to historical AVL data for reporting, analysis, and auditing purposes.

3.5.4 Service Patrol Vehicle Operators Duties and Responsibilities

The Service Patrol SOG should detail the patrol operators’ duties and responsibilities, and how all regulations and safety rules will be followed. The Service Patrol SOG should detail the requirements for Service Patrol operator resumes, background checks and driver’s license checks. It is Concessionaire’s responsibility to ensure the Service Patrol operators are sufficiently qualified and trained before performing their duties and responsibilities.

If a particular Service Patrol operator, in the opinion of FDOT, has behaved inappropriately based on any of the requirements, regulations, rules, or guidelines set forth in the Service Patrol SOG, FDOT reserves the right to restrict the operator from performing the duties and responsibilities of a Service Patrol operator, and also from interfacing with any external partner, agency, media, or member of the general public within the scope of this project, for a period of time to be determined at FDOT’s discretion, with no upper limit.

3.6 Emergency Access Gates

Concessionaire shall test, inspect, and maintain the operations of the emergency access gates located in the barrier wall between the Express Lanes and the General Use Lanes to (1) provide emergency responders with strategic accessibility between the Express Lanes and the General Use Lanes and (2) to provide egress points for motorists stranded in the Express Lanes following major incidents.

3.7 Emergency Management

3.7.1 General

FDOT categorizes Emergency management into two classifications: “Governor Declared Emergencies” and “Other Emergencies.” Governor Declared Emergencies will most commonly be major hurricanes or other natural disasters, but can include smaller natural disasters/events/storms, collisions with structures and related components, and incidents/events resulting from human interactions. Other Emergencies are incidents/events that do not prompt the Governor of Florida to declare a state of Emergency in response to the incident/event. Other Emergencies will most commonly be traffic crashes, guardrail hits, severe potholes, debris within travel lanes, crash cushion hits, roadway shoulder wash-outs, roadway cave-ins and downed light poles but can include natural disasters/events/storms and incidents/events resulting from human interactions.

For any Emergency, Concessionaire shall perform all aspects of responding to the incident/event, including pre-event preparation, post-event initial response to protect the traveling public from hazards created by the Emergency, and post-event cleanup and repair, in each case as directed by FDOT. Concessionaire shall perform the following three (3) activities before every foreseeable Emergency management incident/event:
a. Develop a complete up-to-date list of equipment resources and staging locations and of all stockpiled materials and their locations.

b. Secure and lockdown all structures covered under the Contract Documents.

c. In preparation for high winds, rains, and other impending elements, secure all existing worksites associated with the Project.

Unless otherwise noted in the Contract Documents, FDOT will not provide additional compensation to Concessionaire through the Contract Documents for any Emergency management activities, including the three activities described above.

For all Emergency management activities, FDOT reserves the right to take control of the incident and/or perform recovery work with its own or other contracted forces when FDOT determines it is in FDOT’s best interest to do so.

3.7.2 Emergency Management Plan

Concessionaire shall know the applicable District Comprehensive Emergency Management Plan as well as the FHWA and FEMA guidelines for federal reimbursement. Concessionaire shall ensure compliance with all State and Federal Emergency management requirements. Concessionaire shall administer all response and recovery efforts in accordance with these documents. Concessionaire shall develop and submit it as part of the O&M Plan detailed in Section 4-1.3 of the Technical Requirements, an Emergency Management Plan that contains all elements of the District’s Comprehensive Emergency Management Plan. Concessionaire shall include details in the Emergency Management Plan including, at a minimum:

- Procedures for incident/event management
- Agency and public notifications
- Assurance of motorist safety
- Handling of hazardous waste
- Coordination with law enforcement and other appropriate agencies
- Traffic control
- Coordination with FDOT and other agencies to establish or implement pre-established detour routes
- Maintenance of detour routes
- Making emergency repairs
- Debris removal
- Evacuation/ response
- Submission of incident/event reports
- Plan for compliance with the Open Roads Policy
- Detailed organizational structure with the functions, qualifications, experience level, and contact information of staff assigned to respond to incidents/events

Concessionaire shall update the Emergency Management Plan in April of each year by engaging in an iterative process of discussion between FDOT and Concessionaire whereby lessons learned from past experience can be implemented for future use. Prior to the occurrence of any incidents/events,
Concessionaire shall ensure that an approved Emergency Management Plan is in effect and shall be prepared to act upon that plan.

3.7.3 Specific Concessionaire Responsibilities for Governor Declared Emergencies

Governor Declared Emergencies are incidents/events that prompt the Governor of Florida to declare a state of Emergency in response to the incident/event. Concessionaire shall perform the following post-event activities:

a. Search roadways within the O&M Limits for hazards (roadway washouts/cave-ins, downed electrical lines, non-traversable bridges, etc.). This may include clearing some debris from the roadway in order to access these hazardous areas. Concessionaire shall immediately respond to perform traffic control, set up safety devices, and lay out established or improvised detour routes in order to protect the traveling public from hazards created by the incident/event. When detour routes are required due to an incident/event occurring within the O&M Limits, Concessionaire shall manage and maintain the entire detour route, even if the route extends onto roadways outside the O&M Limits. Concessionaire shall coordinate all detours with the District maintenance office and other agencies including incidents/events not in the Project Limits or the O&M Limits but with detours extending into the Project Limits or O&M limits.

b. Notify FDOT’s designated contact person immediately upon occurrence of all major incidents/events and immediately upon road closure for all roadway closures. Concessionaire shall notify FDOT upon roadway reopening.

c. Inspect and perform any minor repairs.

d. Perform damage assessment reviews as per Bridge, Overhead Sign Structures and High Mast Light Poles Damage Assessment Review Guidelines.

e. Concessionaire shall not perform debris removal, cleanup, or federally reimbursable repair work necessitated by a Governor Declared Emergency incident/event unless otherwise directed by FDOT.

3.7.4 Specific Concessionaire Responsibilities for Other Emergencies

Concessionaire shall respond and deploy resources according to the goals established in the Open Roads Policy and as detailed in this Section. Concessionaire shall arrive onsite, prepared to take necessary action with necessary manpower and emergency response equipment to safely secure the site and shall provide temporary traffic control as well as relieving Law Enforcement personnel of traffic control functions (if applicable) within the time periods detailed in Table 4.1 and 4.3.

Concessionaire shall manage all aspects of traffic control related to an incident/event, including coordination with governmental agencies when incidents/events spill over onto roadways and/or structures not included in the construction Project Limits or the O&M Limits. When detour routes are required due to an incident/event occurring on a roadway and/or structure, Concessionaire shall manage and maintain the entire detour route including...
roadways and/or structures extending beyond the construction Project Limits or O&M Limits. Concessionaire shall be responsible for notifying the RTMC immediately upon occurrence of all major incidents/events and immediately upon road closure for all roadway and/or structure closures. Concessionaire shall notify FDOT upon roadway and/or structure reopening. Communications with the RTMC shall be maintained on 15 minute intervals during the incident/event.

3.8 Interagency Participation

Concessionaire shall participate in, and adhere to all guidelines set forth by interagency organizations as directed by FDOT.

3.9 Traffic Operations

FDOT will be responsible for monitoring safety and operations issues on the Project. Concessionaire shall conduct awareness meetings with traffic operations staff every 3 months (quarterly) to review any safety or operations issues on the Project, unless otherwise prompted by urgent traffic operations issues. FDOT will conduct traffic safety studies, review crash data annually and identify crash patterns. Concessionaire shall develop countermeasures for FDOT’s review and approval, in its reasonable discretion, and implement as necessary, excluding signal re-timing.

Concessionaire shall coordinate with FDOT on the following traffic operations issues:

a. Speed limit changes to the ramps within the Project;
b. Signing and pavement marking improvements;
c. Modifications to regulatory, overhead and ground mounted signs;
d. Interchange modifications;
e. Ramp congestion;
f. Experimentation with new products
g. Special event approval / coordination; and
h. Safety studies.

Concessionaire shall request approval from FDOT for revisions and modifications to:
a. Speed limits within the Operating Period O&M Limits.
b. Modification to any interchanges within the Project.

3.9.1 Portable Traffic Monitoring Sites (PTMS)

Throughout the Operating Period, Concessionaire shall collect traffic classification / volume counts at each of FDOT’s existing PTMS sites within the Project Limits. Data collection shall be in accordance with FDOT Traffic Monitoring Handbook. Traffic classification / volume counts shall be collected once annually for a single continuous 48 hour period between the dates of January 15 and April 15 of each calendar year. Proposed dates for data collection shall be submitted and approved by FDOT prior to collection of any data. All data shall be submitted in a format that can be processed with FDOT software. Any data not determined acceptable by the FDOT District 5 Data Collection Manager shall be recounted / resubmitted for approval.
3.9.2 Telemetered Traffic Monitoring Site (TTMS)

Throughout the Operating Period, Concessionaire shall maintain the data collection ability provided by FDOT’s existing Telemetered Traffic Monitoring Sites (TTMS) at the following locations:

- Site 750196 located just east of Kaley Avenue (mile point 16.408)
- Site 770343 located 400’ west of EE Williamson overpass (mile point 5.135)

Refer to FDOT Roadway and Traffic Design Standards for TTMS installation requirements.

All work associated with the TTMS sites shall be coordinated with FDOT. Concessionaire shall contact FDOT ten days prior to any roadwork performed in the vicinity of the existing TTMS sites and ten days prior to installation of any new or replacement site.

3.10 Customer Relations Unit

Concessionaire shall provide a Customer Relations Unit that distributes general information regarding the Project to the public. Concessionaire shall not be responsible for SunPass customer support or tolls related questions. Concessionaire shall forward these SunPass customer support or tolls related questions to the FTE SunPass customer service center. The Customer Relations Unit shall maintain a telephone line dedicated to handling incoming calls and distributing information to callers, a customer service rating program, a complaint tracking system, and a corrective action program. The Customer Relations Unit shall handle complaints and requests from the general public, FDOT, RTMC and other governmental entities that are received via telephone, email or in person. Concessionaire shall report safety related complaints to FDOT within one day. Other complaints shall be reported and documented in Concessionaire’s O&M Monthly Report. Concessionaire shall respond to valid complaints or requests to the extent that the complaints or requests cover issues addressed herein. Concessionaire shall convey any requests for services that are beyond those detailed herein to FDOT for further direction. The O&M Monthly Report shall identify the time and date of the complaint, the nature of the complaint, location of the complaint, identification and contact information of the individual making the complaint, the date that the complaint response was issued and the completion date of any work or services performed to resolve the complaint. Concessionaire shall meet the minimum performance requirements for response and resolution of incoming complaints and requests. As part of the O&M Plan, Concessionaire shall submit a detailed approach to the management and operations of the Customer Relations Unit.

3.11 Permits Coordination and Inspection

Concessionaire shall inspect all construction activities resulting from approved permits issued by FDOT within the O&M Limits. In the O&M Plan, Concessionaire shall include a Permit Coordination and Inspection Plan which details the coordination and inspection process for permits approved by FDOT. Concessionaire is responsible for assisting in the review of permit requests submitted to FDOT, such as access management permits, drainage connection permits, and utility and general use permits that fall within the limits of the Project. Concessionaire shall review and provide comments to FDOT within 14 days of the time FDOT receives the submittal.
Concessionaire shall demonstrate knowledge and understanding of the F.A.C. Rules and provide the necessary personnel to provide permit inspection for the following permits including, at a minimum:

a. 14-20 Bus Stops, Shelters, and Benches
b. 14-40 Highway Beautification and Landscape Management
c. 14-43 Regulation of Encroachments Over State Rights of Way
d. 14-46 Utility Installation or Adjustment
e. 14-63 Building Moving Permit Regulations
f. 14-65 Temporary Closing and Special Use of State Roads
g. 14-86 Drainage Connections
h. 14-96 State Highway System Connection Permits
i. 14-97 State Highway System Access Management Classification System and Standards
j. General Use Permits

Concessionaire shall coordinate with FDOT any Permitted Closures that are required as part of the work associated with the general use permits. Concessionaire shall maintain inspection records for all activities related to the inspections of permit work assigned by FDOT. These inspection records shall be included in the O&M Monthly Report. Concessionaire shall also obtain access to FDOT’s Permit Information Tracking System (PITS) or applicable permit tracking system, update the permit inspection information and close out permits.

3.12 Roadway Characteristics Inventory (RCI)

FDOT will be responsible for maintaining the Roadway Characteristic Inventory (RCI) for the Project. Concessionaire shall be responsible for developing and maintaining an independent inventory of assets. Modifications or addition of assets within the Project Limits shall be updated in Concessionaire’s maintained inventory.

3.13 Maintenance Management System (MMS)

Concessionaire shall be responsible for providing FDOT with the necessary data for FDOT’s update of Maintenance Management System (MMS) on a monthly basis. This shall be accomplished in accordance with the procedures for reporting maintenance contract production in the then current issue of the MMS User’s Manual or applicable system as referenced by the Maintenance Management System, Procedure No. 325-010-001.

4 MINIMUM REQUIREMENTS SUBJECT TO CONSTRUCTION O&M VIOLATIONS

Construction O&M Violations are instances in which the performance of systems, equipment, and/or personnel is below the applicable minimum requirements specified herein. The description of each performance category set forth in Table 4.2 includes (i) required tasks, (ii) minimum performance requirement, and (iii) the related cure period (if any). Concessionaire shall develop and detail in the O&M Plans the approach to be used in order to achieve and meet the minimum performance.
Concessionaire shall bear the responsibility for operating and maintaining the Project from the date of NTP 2 until Final Acceptance in a safe manner at all times regardless of these minimum performance requirements. Concessionaire’s performance will be evaluated with respect to these minimum performance requirements specified herein.

4.1 Construction Availability Faults with Temporary Cures

Construction Availability Faults that have been rectified through the use of temporary repairs or other temporary means shall be subject to the minimum performance requirements and deemed a Construction O&M Violation if not remedied within the applicable cure period. Concessionaire shall develop procedures to track the rectification means of Construction Availability Faults to identify the rectification means as temporary or permanent. Construction Availability Faults with temporary rectifications shall remain a Construction O&M Violation until the permanent rectification is completed. Concessionaire shall submit copies of the completed tracking forms to FDOT as part of the Monthly O&M Report.

4.2 Notification of Construction Availability Faults, Construction O&M Violations and Construction Closures

Concessionaire’s operations procedures shall include the process for the immediate notification to FDOT of these events. Concessionaire shall include copies of the related information to confirm compliance with this requirement in the Monthly O&M Report.

5 MINIMUM REQUIREMENTS SUBJECT TO O&M VIOLATIONS (OPERATING PERIOD)

O&M Violations as set forth in Appendix 6 of the Agreement are instances in which the performance of systems, equipment, and/or personnel is below the applicable minimum requirements specified herein. The description of each performance category set forth in Table 4.4 includes (i) required tasks, (ii) minimum performance requirements, and (iii) the related cure period (if any).

Concessionaire shall bear the responsibility for operating and maintaining the Project in a safe manner at all times regardless of these minimum performance requirements. Concessionaire’s performance will be evaluated with respect to these minimum performance requirements specified herein, however, to acknowledge Concessionaire’s ability to utilize design innovation, there may be circumstances in which Concessionaire’s final design or other Project requirements impact the performance categories to be monitored or the minimum performance levels required. Concessionaire, under these circumstances, shall submit the equivalent system and the proposed minimum performance level to FDOT for review and approval.

5.1 Routine Maintenance and Inspection Performance Measures

5.1.1 Maintenance Rating Program

The Maintenance Rating Program (MRP) will be the primary tool used by FDOT to evaluate the overall quality and effectiveness of Concessionaire’s routine maintenance activities on the Project. MRP is a systematic and formal method of collecting data and establishing required levels of maintenance. Concessionaire shall achieve and maintain a MRP rating, using the criteria
detailed in the procedures, for all elements and characteristics in order to ensure a uniform and consistent level of maintenance at all times.

Concessionaire shall be responsible for conducting a periodic MRP rating of the system in accordance with the MRP Handbook. As part of the O&M Monthly Report, Concessionaire shall report the results of the periodic MRP rating. Concessionaire shall maintain the Project in order to achieve and maintain a minimum overall maintenance rating as required in FDOT Procedure No. 850-000-015 - Roadway and Roadside Maintenance. O&M Violation Classifications will be assessed for failure to meet the periodic MRP rating.

FDOT will randomly generate locations to be rated by Concessionaire on a periodic basis. Concessionaire shall contract with an independent qualified firm who shall certify the accuracy of each MRP rating to FDOT. FDOT reserves the right to participate in such inspections and perform interim MRP inspections as deemed necessary.

5.1.2 Maintenance and Inspection Performance Requirements

Concessionaire shall perform and comply with additional maintenance and inspection requirements that are not part of MRP as set forth herein. Concessionaire shall develop and detail in the O&M Plans the approach to be used in order to achieve and meet the minimum performance requirements for the following items, at a minimum:

a. Flexible pavement conditions
   - Category 1 pavement
   - Category 2 pavement
   - Category 3 pavement
b. Rigid pavement conditions
c. Guardrail inspection & maintenance
d. Crash cushion inspection & maintenance
e. Sign inspection & maintenance
f. Drainage systems
g. Maintenance of retention/detention ponds
h. NPDES and other permits compliance, monitoring and reporting
i. Barrier walls
j. Concrete sidewalk
k. Toll gantry inspection & maintenance
l. Toll Equipment Building inspection & maintenance
m. Emergency access gate inspection, maintenance and testing
n. Clear zone obstructions
o. Lighting inspection
p. Overhead sign inspection, maintenance & repair
q. Mast arm inspection & maintenance
r. Bridge maintenance & inspection (in accordance with Section 4-2.2 and 4-2.3 of the Technical Requirements)
s. Painting of steel structures
t. Painted aesthetic elements including steel and concrete structures
u. Graffiti
v. Pressure cleaning of concrete surfaces
w. Vegetation control on impervious slopes, concrete surfaces, mechanically stabilized earth (MSE) walls, noise barriers etc.
x. Landscape areas
y. Chemical vegetation control
z. Sound barrier inspection & maintenance

5.2 Asphalt Pavement Conditions

Concessionaire shall continually monitor and meet the minimum performance requirements and criteria as detailed in Table 4.4. Failure to maintain flexible pavement installed by Concessionaire within the O&M Limits will result in O&M Violations as identified in Table 4.4.

5.2.1 Asphalt Pavement Remedial Work

Concessionaire shall be responsible for performing all remedial work in accordance with the tables below.

5.2.1.1 Materials and Construction Requirements.

Meet the requirements of the following:
- Standard Specifications Section 320
- Standard Specifications Section 330
- Standard Specifications Section 334
- Standard Specifications Section 337

5.2.1.2 Remedial Requirements

5.2.1.2.1 Category 1 Pavement

<table>
<thead>
<tr>
<th>Category 1 Pavements – Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category 1 Pavement</strong> – mainline roadways, access roads and frontage roads with a design speed of 55 mph and greater</td>
</tr>
<tr>
<td><strong>Type of Distress</strong></td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Rutting (1)</td>
</tr>
</tbody>
</table>
## Category 1 Pavements – Table 1

**Category 1 Pavement** – mainline roadways, access roads and frontage roads with a design speed of 55 mph and greater

<table>
<thead>
<tr>
<th>Type of Distress</th>
<th>Remedial Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end.</td>
<td><strong>(2,7)</strong></td>
</tr>
<tr>
<td><strong>Ride</strong></td>
<td>Remove and replace the friction course for the full length and width of the distressed 0.1 mile.</td>
</tr>
<tr>
<td><strong>Settlement/Depression</strong></td>
<td>Propose the method of correction to FDOT for approval prior to beginning remedial work. <strong>(7)</strong></td>
</tr>
<tr>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end.</td>
<td><strong>(7)</strong></td>
</tr>
<tr>
<td><strong>Raveling and/or Delamination affecting the Friction Course</strong></td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end. <strong>(7)</strong></td>
</tr>
<tr>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end.</td>
<td><strong>(7)</strong></td>
</tr>
<tr>
<td><strong>Pot holes and Slippage Area(s)</strong></td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end. <strong>(7)</strong></td>
</tr>
<tr>
<td><strong>Bleeding</strong></td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end. <strong>(7)</strong></td>
</tr>
<tr>
<td><strong>Pavement Damage due to a crash or fuel spill</strong></td>
<td>Propose the method of correction to FDOT for approval prior to beginning remedial work.</td>
</tr>
</tbody>
</table>

---

**Notes:**

1. Rutting: Rut depth to be determined by laser profiler in accordance with the Flexible Pavement Condition Survey Handbook. For any 0.1 mile length that cannot be surveyed by laser profiler, rut depth to be determined manually in accordance with the Flexible Pavement Condition Survey Handbook, with the exception that the number of readings per 0.1 mile will be one every 50 feet. For lengths less than 0.1 mile, a minimum of three measurements not exceeding 50 feet apart will be made. When the average of the measurements by manual straightedge exceeds a 0.50 inch threshold value or if any individual measurement exceeds 0.8 inch, remedial work will be required.

2. Remedial Work for Rutting: The Concessionaire may propose removal and replacement of less than the full depth of all layers.
### Category 1 Pavements – Table 1

**Category 1 Pavement** – mainline roadways, access roads and frontage roads with a design speed of 55 mph and greater

<table>
<thead>
<tr>
<th>Type of Distress</th>
<th>Remedial Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>by preparation and submittal of a signed and sealed engineering analysis report, demonstrating the actual extent of the distressed area(s). Remedial work must be performed in accordance with Table 1 unless FDOT approves the proposal.</td>
<td></td>
</tr>
<tr>
<td>(3) Ride: Ride Rating to be established by laser profiler in accordance with FM 5-549 and the Flexible Pavement Condition Survey Handbook. Correct all deficiencies in accordance with acceptance criteria for pavement smoothness in accordance with 330-12.6.</td>
<td></td>
</tr>
<tr>
<td>(4) Settlement/Depression: Depth of the settlement/depression to be determined by a 6 foot manual straightedge.</td>
<td></td>
</tr>
<tr>
<td>(5) Raveling, Delamination, Pot holes, Slippage: As defined and determined by the Engineer in accordance with the examples displayed at the following URL: <a href="http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm">http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm</a></td>
<td></td>
</tr>
<tr>
<td>(6) Bleeding: Bleeding to be defined and determined by the Engineer in accordance with the examples displayed at the following URL: <a href="http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm">http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm</a></td>
<td></td>
</tr>
<tr>
<td>(7) Where the limits of remedial action are not separated by 1,000 feet, the remedial work will be required for the entire area contiguous to the distressed areas, including intermediate areas otherwise requiring no remedial action.</td>
<td></td>
</tr>
</tbody>
</table>
5.2.1.2.2 Category 2 Pavement

Category 2 Pavements – Table 2

Category 2 Pavement – mainline roadways, access roads and frontage roads with a design speed less than 55 mph; approach transition and merge areas at toll booths; ramps; acceleration and deceleration lanes (including tapers); turn lanes; parking areas; rest areas.

<table>
<thead>
<tr>
<th>Type of Distress</th>
<th>Remedial Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rutting(^{(1)})</td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end(^{(4,5)})</td>
</tr>
<tr>
<td>Surface Deterioration(^{(2)})</td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end.(^{(5)})</td>
</tr>
<tr>
<td>Settlement/Depression(^{(3)})</td>
<td>Propose the method of correction to FDOT for approval prior to beginning remedial work</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Rutting: Rut depth to be determined by laser profiler in accordance with the Flexible Pavement Condition Survey Handbook. For any 0.1 mile length that cannot be surveyed by the laser profiler, the rut depth will be determined manually in accordance with the Flexible Pavement Condition Survey Handbook, with the exception that the number of readings per 0.1 mile will be one every 50 feet. For lengths less than 0.1 mile, minimum of three measurements not exceeding 50 feet apart will be made. When the average of the measurements by manual straightedge exceeds 0.6 inch, the remedial work is required. When any individual measurement exceeds 0.6 inch, the remedial work is required.

\(^{(2)}\) Surface Deterioration: Surface deterioration includes raveling and/or delamination affecting the friction course, pot holes, slippage area(s), segregated area(s) and bleeding as defined below:
- Raveling, Delamination, Pot holes, Slippage: As defined and determined by the Engineer in accordance with the examples displayed at the following URL: http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtml
- Bleeding to be defined and determined by the Engineer in accordance with the examples displayed at the following URL: http://www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtml

\(^{(3)}\) Settlement/Depression: Depth of the settlement/depression to be determined by a 6 foot manual straightedge.

\(^{(4)}\) Remedial Work for Rutting: The Concessionaire may propose removal and replacement of less than the full depth of all layers by preparation and submittal of a signed and sealed engineering analysis report, demonstrating the actual extent of the distressed area(s). Remedial work must be performed in accordance with Table 1 unless FDOT approves the proposal.

\(^{(5)}\) Where the limits of remedial action are not separated by 1,000 feet, the remedial work will be required for the entire area contiguous to the distressed areas, including intermediate areas otherwise requiring no remedial action.

5.2.1.2.3 Category 3 Pavement

Category 3 Pavements – Table 3

Category 3 Pavement – bicycle paths, walking paths, median crossovers, shoulders and other areas as determined by FDOT.

<table>
<thead>
<tr>
<th>Type of Distress</th>
<th>Remedial Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Deterioration(^{(1)})</td>
<td>Remove and replace the distressed area(s) to the full distressed depth and the full lane width, for the full distressed length plus 50’ on each end(^{(3)})</td>
</tr>
</tbody>
</table>
### 5.3 Portland Cement Concrete Pavement Conditions

Concessionaire shall continually monitor and meet the minimum performance requirements and criteria as detailed in Table 4.4. Failure to maintain Portland cement concrete pavement installed by Concessionaire within the O&M Limits will result in O&M Violations as identified in Table 4.4.

#### 5.3.1 Portland Cement Concrete Pavement Remedial Work

Concessionaire shall be responsible for performing all remedial work in accordance with the tables below.

##### 5.3.1.1 Materials and Construction Requirements

Meet the requirements of the following:

- Standard Specification Section 346
- Standard Specification Section 350
- Standard Specification Section 352

##### 5.3.1.2 Remedial Requirements

<table>
<thead>
<tr>
<th>DEFICIENCY TYPE</th>
<th>REMEDIAL ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rideability</td>
<td>Grind all deficient sections in accordance with Section 352 of the Standard Specifications.</td>
</tr>
</tbody>
</table>
Spalling | Full depth slab replacement for a minimum of 6 feet in length and the full width of the slab in accordance with Section 353 of the Standard Specifications. Grind full slab replacement plus 25’ on each end of adjacent slabs in accordance with Section 352 of the Standard Specifications

Cracking | Full depth slab replacement for a minimum of 6 feet in length and the full width of the slab in accordance with Section 353 of the Standard Specifications. Grind full slab replacement plus 25’ on each end of adjacent slabs in accordance with Section 352 of the Standard Specifications

Shattered | Full slab replacement in accordance with Section 353 of the Standard Specifications. Grind full slab replacement plus 25’ on each end of adjacent slabs in accordance with Section 352 of the Standard Specifications

5.4 Roadway Lighting System & Mapping

Unless otherwise provided in the Off-System Construction and Maintenance Agreements, Concessionaire shall maintain all highway lighting within the O&M Limits such that the lighting system adheres to the requirements set forth in the Contract Documents. Lighting outages shall not exceed 10% for any lighting type (standard, under-deck, and sign) on the Project. Concessionaire shall continuously monitor for lighting outages.

As part of the O&M Plan, Concessionaire shall develop a lighting system map. The lighting system map shall include, at a minimum, a map of each field location (pole location, service point, load center, pull box, under-deck fixture location, and lighted sign) and the marking/tagging of all poles and service points within the O&M Limits as updated from time-to-time based on Renewal Work or upgrades to the lighting system. This lighting system map shall include, at a minimum, the location and numbers of all the load centers, circuits and all associated lighting structures and all pull boxes. Each service point location must contain the load center number, type voltage, type phase, size of wire, number of lights, and breaker amps.

Concessionaire shall identify bridges by name and bridge number for proper identification of all under-deck lighting.

Concessionaire shall coordinate electric service points for the system. Location of load centers shall be accessible to the maintenance personnel. Concessionaire shall pay for electric service charges beginning at NTP 2 or earlier.

5.5 Overhead Sign Structure Inspection, Maintenance and Repair

Concessionaire shall perform all regular and emergency overhead sign structure inspections within the O&M Limits in accordance with FDOT’s Bridge and Other Structures Inspection Reporting Procedure 850-010-030 including DMS structures installed outside the O&M Limits and within the ITS Maintenance Project Limits as shown in Volume III - Additional Mandatory Standards. Concessionaire shall perform all necessary maintenance and repairs, including collision damage repair or replacement, of all sign structures inside the O&M Limits and DMS structures outside the O&M Limits and within the ITS Maintenance Project Limits as shown in Volume III - Additional Mandatory Standards.
5.6 Mast Arm Structure Inspections
Concessionaire shall perform all regular and emergency inspections of Traffic Signal Mast Arm (TSMA) structures within the O&M Limits in accordance with FDOT’s Bridge and Other Structures Inspection Reporting Procedure 850-010-030. Concessionaire is not required to perform maintenance work for TSMA structures within the O&M Limits.

5.7 Mandatory Spares
Concessionaire shall determine the spares required to meet its maintenance obligations under the Contract Documents. However, due to their nature and associated long lead time, Concessionaire shall, at a minimum, store spare parts for the following: crash cushion parts, guardrail panels, emergency access gates (EAG) parts, regulatory signs and equipment for the operation of the Express Lanes.

6 MINIMUM REQUIREMENTS SUBJECT TO AVAILABILITY FAULTS AND CONSTRUCTION AVAILABILITY FAULTS
Construction Availability Faults and Availability Faults result in the failure to meet the minimum performance requirements within the applicable cure period (if any).

6.1 Incident / Emergency Response Performance Measures
Concessionaire shall be responsible for the continual monitoring of the Project and shall respond to any incident/Emergency event 24 hours per day, seven days per week, every day of the year when the incident/Emergency event results in a condition that is unsafe and/or may present a life threatening condition as directed by FDOT or the RTMC. These incidents/Emergency events are most commonly related to, but are not limited to, vehicle crashes, roadway debris, guardrail hits, potholes, debris within travel lanes, crash cushion hits, roadway shoulder wash-outs, roadway cave-ins, and downed light poles but can include natural disasters/events/storms, collisions with structures and related components and incidents/events resulting from human interactions.

Concessionaire shall respond, as directed by FDOT or the RTMC, to any incident/Emergency and be prepared to deploy all necessary resources to meet the goals established in the Open Roads Policy. Concessionaire shall arrive onsite, prepared to take necessary action with necessary manpower and emergency response equipment. Concessionaire shall be prepared to relieve law enforcement personnel (as necessary) of traffic control functions.

Concessionaire shall support and respond to the RTMC as needed for any necessary traffic control related to a lane closure event when incidents/Emergencies spill over onto roadways outside the O&M Limits. When detour routes are required due to an incident/Emergency occurring within the O&M Limits, Concessionaire shall support and respond to FDOT and the RTMC with the necessary personnel and equipment to maintain the entire detour route, even if the route extends onto roadways outside the O&M Limits. Concessionaire shall notify FDOT’s designated contact person immediately upon occurrence of all major incidents/Emergencies and immediately upon road closure for any roadway closures expected to exceed one hour. Notify FDOT again upon roadway reopening.
6.2 Temporary Mitigation Performance Measures

Temporary Mitigation Performance Measures are requirements that allow Concessionaire to temporarily mitigate a defect and ensure that the defect does not threaten the safety of the roadway user. There are specific requirements associated with the time Concessionaire has to provide temporary mitigation to the defect as well as the required time to conduct the permanent repairs.

6.2.1 Roadway Operations

When a broken down or stranded vehicle is within the O&M Limits, Concessionaire shall remove the vehicle from General Use Lanes onto shoulders or to off ramps and notify FHP of the location of the broken down/stranded vehicle within the specified time frame as detailed in Tables 4.1 and 4.3. Concessionaire shall remove broken down/stranded vehicles from the Express Lanes and shoulders within the time frame as detailed in Table 4.3. This Temporary Mitigation Performance Measure is the requirement for Concessionaire to remove the vehicle from travel lanes and ensure that the vehicle does not threaten the safety of the roadway user.

6.2.2 Debris Removal

When there is debris within the O&M Limits, Concessionaire shall use all available resources to remove the debris within the specified time frame as detailed in Tables 4.1 and 4.3. If the debris is too large to be removed within the specified time frame, Concessionaire shall secure the area by use of an approved lane closure in accordance with FDOT Design Standards to secure the area until the debris can be removed and the roadway safely re-opened to traffic. This Temporary Mitigation Performance Measure is the requirement for the removal of the debris from the roadway that cannot be removed as detailed in Tables 4.1 and 4.3.

6.2.3 Roadway Elements

When damage to a roadway element occurs, such as guardrail, crash cushions, emergency access gates or barrier wall failure, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Tables 4.1 and 4.3. This Temporary Mitigation Performance Measure is the requirement for Concessionaire to mitigate the defect and ensure that the defect does not threaten the safety of the roadway user. This could include the use of traffic control systems such as barricades, drums, or other approved devices to secure the area until the defect can be restored to its original design condition.

6.2.4 Flexible Pavement Pothole/Settlement/Depression/Rutting

When a flexible pavement pothole, settlement, depression, rutting, or damage as a result of construction develops within the O&M Limits, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Table 4.1 and 4.3.
6.2.5  Rigid Pavement – Potholes/Spalling

When a rigid pavement pothole/spalling or damage as a result of construction develops within the O&M Limits, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Table 4.1 and 4.3.

6.2.6  Signs

When damage to a single or multi-post sign assembly occurs, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Tables 4.1 and 4.3. This Temporary Mitigation Performance Measure shall consist of, at minimum, the removal of the damaged or downed sign assembly, and securing the damaged sign assembly by use of barricades, drums or other approved traffic warning devices. Damaged sign panels shall be re-installed within the specified time frame as detailed in Tables 4.2 and 4.4.

6.2.7  Traffic Signal Structure

When damage to a traffic signal structure occurs, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Table 4.1. This Temporary Mitigation Performance Measure shall consist of, at minimum, the removal of the damaged or downed traffic signal structure, securing the area damaged by use of barricades, drums securing wires feeding the signal and maintaining the appropriate level of traffic control means to safely operate the intersection.

6.2.8  Highway Lighting

When damage to the highway lighting system occurs, Concessionaire shall use all available resources to provide a temporary mitigation to the defect within the specified time frame as detailed in Tables 4.1 and 4.3. This Temporary Mitigation Performance Measure shall consist of, at minimum, the removal of the damaged or downed light pole, securing the area damaged by use of barricades, drums or other approved traffic warning devices, safely securing the lighting wires feeding the lights and repairing/testing the lighting circuit to ensure that other roadway lighting within that circuit is operational.

6.2.9  Bridge Damage/Element Failure

When damage to a bridge or failure of a component of a bridge occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Tables 4.1 and 4.3. Such Temporary Mitigation Performance Measures shall include securing the area damaged by use of barricades, drums or other approved traffic warning devices and safely conducting the repairs on the structure within the specified time frame. Damage to a bridge includes:

a. Critical damage to main structural members which endangers public safety.

b. Cracks in fracture critical members.

c. Unstable foundations.
d. Vertical or horizontal displacement of the structure which endangers structural stability.

e. Loose expansion joints which may damage passing vehicles.

Concessionaire shall also provide a certified bridge inspector to inspect and evaluate the damage to the structure.

6.2.10 Toll Collection Interruption

Concessionaire shall meet and perform all requirements under the Contract Documents to enable the uninterrupted collection of tolls when any of the I-4 Express Lanes is open to traffic. All Tolling Point Infrastructure provided by Concessionaire shall be maintained.

6.2.11 Toll Gantry Damage

Concessionaire shall be responsible for maintaining all elements of the tolling gantries within the O&M Limits. When damage to a toll gantry occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Table 4.3. Such Temporary Mitigation Performance Measures shall include securing the area damaged by use of barricades, drums or other approved traffic warning devices and safely repairing the critical damage to the structure within the specified time frame. Damage to the toll gantry includes:

a. Critical damage to main structural members which endangers public safety.

b. Cracks in fracture critical members.

c. Unstable foundations.

d. Vertical or horizontal displacement of the structure which endangers structural stability.

e. Gantry arms or related appurtenances failing to meet rigidity or spatial tolerances.

f. Conduits, junction boxes, etc. exhibiting corrosion or similar disrepair that compromises the integrity of the electrical system.

6.2.12 Emergency Access Gates

When damage to the EAG occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Table 4.3. Such Temporary Mitigation Performance Measures shall include securing the area damaged by use of barricades, drums or other approved traffic warning devices and safely repairing the critical damage on the structure within the specified time frame.

6.2.13 Fiber Optic Network FON

When damage to the FON occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Table 4.1 and 4.3. This Temporary Mitigation Performance Measure is to restore communication through the FON.
6.2.14 Toll Equipment Building
Concessionaire shall be responsible for maintaining all elements of the toll equipment buildings within the O&M Limits. When damage to the Toll Equipment Building occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Table 4.3. Such Temporary Mitigation Performance Measures shall include securing the area damaged by use of barricades, drums or other approved traffic warning devices, protecting the structure to minimize damage from nature’s elements, securing the structure from unwanted entry and safely conducting the repairs to the critical damage section of the structure within the specified time frame.

6.2.15 Switch Communications
When loss of communication to the Switches from the RTMC or between Switches occurs, Concessionaire shall use all available resources to provide temporary mitigation of the defect within the specified time frame as detailed in Table 4.1 and 4.3. This Temporary Mitigation Performance Measure is to restore communication to the RTMC and between the Switches.

6.3 Availability Faults with Temporary Cures
Availability Faults that have been rectified through the use of temporary repairs or other temporary means shall be subject to the minimum performance requirements and deemed O&M Violations if not remedied within the applicable cure period. Concessionaire shall develop procedures to track the rectification means of Availability Faults to identify the rectification means as temporary or permanent. Availability Faults with temporary rectifications shall remain an O&M Violation until the permanent rectification is completed. Concessionaire shall submit copies of the completed tracking forms to FDOT in the O&M Monthly Report.

6.4 Notification of Availability Faults, O&M Violations and Closures
Concessionaire shall, at a minimum, notify FDOT of an Availability Fault, O&M Violations, and Closures, including unscheduled Closures. Concessionaire’s operations procedures shall include the process for the immediate notification to FDOT of these events.

Concessionaire shall include copies of the related information to confirm compliance with this requirement in the O&M Monthly Report.
TABLES

TABLE 4.1 - CONSTRUCTION AVAILABILITY FAULTS

TABLE 4.2 – CONSTRUCTION O&M VIOLATIONS

TABLE 4.3 - AVAILABILITY FAULTS

TABLE 4.4 - O&M VIOLATIONS
### TABLE 4.1 – CONSTRUCTION AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Asset</th>
<th>Minimum Performance Requirements</th>
<th>Construction Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.01</td>
<td>Incident Response</td>
<td>Upon notification/observation, Concessionaire shall arrive, provide temporary traffic control and be able to support/relieve law enforcement personnel (if present) with traffic control functions at the site of an incident, emergency, accident, and or any other event that results in a condition that is unsafe and/or may present a life threatening condition, such as, at a minimum, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements Categories as detailed in this matrix.</td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes 30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon initial notification/ observation, Concessionaire shall establish temporary maintenance of traffic control measures in accordance with Standard Index 600 at the site of an incident, emergency, accident, and or any other event that results in a condition that is unsafe and/or may present a life threatening condition, such as, at a minimum, accidents, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements categories as listed in this matrix within the applicable cure period.</td>
<td>B</td>
<td>2 hours</td>
<td>2 hours 30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon initial notification/observation or release of the incident site by the emergency service (FHP, Fire Department, etc.), whichever occurs later, Concessionaire shall provide all necessary equipment, staff and resources to clean up and open the travel lanes at the site.</td>
<td>B</td>
<td>120 minutes</td>
<td>120 minutes 60 minutes</td>
</tr>
</tbody>
</table>
# TABLE 4.1 – CONSTRUCTION AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Asset</th>
<th>Minimum Performance Requirements</th>
<th>Construction Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

- **Element No.**
- **Asset**
- **Minimum Performance Requirements**
- **Construction Availability Fault Classification**
- **Cure Period**
- **Interval of Recurrence**

of incidents, emergencies, accidents and other events such as, at a minimum, accidents, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements Categories as listed in this matrix in order to comply with the Open Roads Policy.

Upon arrival and on fifteen (15) minute intervals provide information as to the status of the incident, emergency or other event to the RTMC. This information can be provided via telephone, text, email, or direct input into the FDOT’s EM system.

Continually monitor the Project and remove broken down or stranded vehicles from General Use Lanes as set forth in Section 4-6.2.1 of the Technical Requirements.

Conduct the removal and disposal of debris from travel lanes, including at a minimum, large objects, dead animals and tires. Meet the temporary mitigation performance requirements with respect to debris removal as set forth in Section 4-6.2.2 of the Technical Requirements, and meet the requirements as detail in the Contract Documents.
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Asset</th>
<th>Minimum Performance Requirements</th>
<th>Construction Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.04</td>
<td>Flexible Pavement Pot Holes or damage as a result of Construction Work</td>
<td>Pavement within the Construction Period O&amp;M Limits shall not have a pot hole or spalling greater than 0.5 square feet in area, any single measurement within a pot hole or spalling of 1.5 inches in depth including any single area in the wheel path exceeding 3 inches in width measured longitudinally and 12 inches in length measured transversely.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.05</td>
<td>Rigid Pavement Pot Holes/Spalling</td>
<td>Pavement within the Construction Period O&amp;M Limits shall not have a pot hole or spalling greater than 0.5 square feet in area, any single measurement within a pot hole or spalling of 1.5 inches in depth including any single area in the wheel path exceeding 3 inches in width measured longitudinally and 12 inches in length measured transversely.</td>
<td>C</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.06</td>
<td>Flooding of a Lane</td>
<td>No portion of a lane can have standing water.</td>
<td>D</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.07</td>
<td>Guardrail</td>
<td>Guardrail shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.08</td>
<td>Crash Cushion</td>
<td>Crash cushions shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Asset</td>
<td>Minimum Performance Requirements</td>
<td>Construction Availability Fault Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.1.09</td>
<td>Signs (single or multi-post)</td>
<td>Regulatory and warning signs e.g. Stop, Yield, One-Way, Do Not Enter shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.6 of the Technical Requirements.</td>
<td>A</td>
<td>30 minutes 60 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sign &amp; double post signs shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.6 of the Technical Requirements.</td>
<td>A</td>
<td>6 hours 12 hours 4 hours</td>
<td></td>
</tr>
<tr>
<td>4.1.10</td>
<td>Traffic Signal Structure</td>
<td>Traffic signal structure shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.7 of the Technical Requirements.</td>
<td>A</td>
<td>30 minutes 60 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.11</td>
<td>Highway Light Poles</td>
<td>Highway light poles shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.8 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes 60 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.12</td>
<td>Barrier Wall</td>
<td>Barrier wall shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>C</td>
<td>30 minutes 60 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.13</td>
<td>Bridge Hit/Element Failure</td>
<td>Bridge element shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.9 of the Technical Requirements.</td>
<td>D</td>
<td>30 minutes 60 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Asset</td>
<td>Minimum Performance Requirements</td>
<td>Construction Availability Fault Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.1.14</td>
<td>Switches</td>
<td>Switches shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.15 of the Technical Requirements.</td>
<td>C</td>
<td>60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.15</td>
<td>FON</td>
<td>FON shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.13 of the Technical Requirements.</td>
<td>E</td>
<td>4 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.1.16</td>
<td>Enhanced Paving Material Pot Holes/Spalling</td>
<td>Modular concrete paver driving surfaces within the Construction Period O&amp;M Limits shall not have a pot hole or spalling greater than 1/2 square foot in area including any single measurement within a pot hole or spalling of 1-1/2 inches or greater in depth. Repaired areas are not required to match the surrounding enhanced surface treatment.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>
## TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period FDOT Reported Event</th>
<th>Cure Period Concessionaire Reported Event</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.01</td>
<td>Fuel Spills/ Contamination Management Plan.</td>
<td>Provide Contamination Management Plan after a fuel spill/contamination event.</td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
<td>24 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comply with the FDOT approved Contamination Management Plan</td>
<td>A</td>
<td>N/A</td>
<td>24 hours</td>
<td>24 hours</td>
<td></td>
</tr>
<tr>
<td>4.2.02</td>
<td>Mowing</td>
<td>Continually monitor and maintain roadside mowing height within the Project Limits.</td>
<td>Maintain mowing areas within Limited Right of Way with no more than 1% exceeding 18 inches in height. Maintain arterial roadway mowing area with no more than 1% exceeding 12 inches in height. Maintain slope areas with no more than 2% exceeding 12 inches in height. Maintain curb or sidewalk edging not to exceed 6 inches encroachment.</td>
<td>A</td>
<td>48 hours</td>
<td>48 hours</td>
<td>7 days</td>
</tr>
<tr>
<td>4.2.03</td>
<td>Litter Removal</td>
<td>Continually monitor and pick-up, remove, and properly dispose of litter.</td>
<td>No more than three cubic feet per acre of litter.</td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
<td>72 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
<td>------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.2.04</td>
<td>Road &amp; Bridge Sweeping</td>
<td>Continually monitor and provide road and bridge sweeping.</td>
<td>Material accumulation is not greater than one (1) inch deep for more than two (2) continuous feet in the traveled way or shall not exceed 2-1/4 inches in depth for more than 1 continuous foot in any gutter.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
<td>72 hours</td>
</tr>
<tr>
<td>4.2.05</td>
<td>Pavement (All)</td>
<td>Inspection of the Pavement after major damage such as fire, fuel spill or other incident/event</td>
<td>Conduct a visual inspection of the affected area and provide written recommendation for remedial work to FDOT.</td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs set forth in the inspection and meet the written recommendation plan</td>
<td></td>
<td>C</td>
<td>72 hours</td>
<td>72 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.2.06</td>
<td>Maintenance of Traffic</td>
<td>Continually monitor the Project and install, maintain traffic control and safety devices.</td>
<td>Maintain roadway surfaces that are being used for TTC, including detours and temporary facilities, free of dust, rutting. Maintain manholes/crosswalks/joint not to exceed one (1) inch above the riding surface in accordance with the Contract Documents.</td>
<td>C</td>
<td>24 hours</td>
<td>48 hours</td>
<td>5 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------</td>
<td>------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintain the Project free of conflicting pavement markings and ensure all work zone pavement markings, including, at a minimum, centerlines, raised pavement markers, lane lines, edge lines, stop bars and turn arrows are installed in accordance with the Contract Documents to ensure the safe passage of traffic through the work zone.</td>
<td>B</td>
<td>24 hours</td>
<td>48 hours</td>
<td>5 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide and maintain continuous access for residents and business along frontage roads and within intersections including driveway maintenance as necessary for a safe, stable and reasonable access.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operate and maintain all detours in accordance with the Contract Documents including all signs, arrow boards, variable message signs for the safe passage of traffic, pedestrian and bicycle movements.</td>
<td>C</td>
<td>60 minutes</td>
<td>2 hours</td>
<td>6 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove or cover temporary detours signs and devices that are no longer needed.</td>
<td>A</td>
<td>6 hours</td>
<td>24 hours</td>
<td>24 hours</td>
<td></td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period FDOT Reported Event</td>
<td>Cure Period Concessionaire Reported Event</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------</td>
<td>------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide traffic control officers in accordance with Contract Documents.</td>
<td>A</td>
<td>60 minutes</td>
<td>2 hours</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operate and maintain temporary traffic control devices including signs, barricades, lights and cones in accordance with the Contract Documents and keep these devices in the correct position, properly directed, clearly visible, upright and clean.</td>
<td>B</td>
<td>60 minutes</td>
<td>2 hours</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide and maintain work zone signs in accordance with the Contract Documents with appropriate hardware, supports and meet the requirements as set forth in the Contract Documents.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide and maintain business signs in accordance with the Contract Documents including ensuring that the retro-reflective sheeting meets the requirement of the Contract Documents.</td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Properly mitigate drop off conditions and above ground hazards in work zones in accordance with the Contract Documents.</td>
<td>C</td>
<td>3 hours</td>
<td>6 hours</td>
<td>6 hours</td>
<td>6 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>4.2.07</td>
<td>Guardrail</td>
<td>Continually monitor and maintain guardrail.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>48 hours</td>
<td>5 days 24 hours</td>
<td></td>
</tr>
<tr>
<td>4.2.08</td>
<td>Crash Cushions</td>
<td>Continually monitor and maintain crash cushion.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours 24 hours</td>
<td></td>
</tr>
<tr>
<td>4.2.09</td>
<td>Barrier Wall</td>
<td>Continually monitor and maintain barrier walls.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>4 days</td>
<td>7 days 24 hours</td>
<td></td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported</td>
<td>Concessionaire Reported</td>
<td>Interval of Recurrence</td>
<td></td>
</tr>
<tr>
<td>4.2.10</td>
<td>Highway Lighting</td>
<td>Perform a monthly inspection in order to monitor and maintain all highway lighting.</td>
<td>Inspection shall be conducted monthly.</td>
<td>A</td>
<td>N/A</td>
<td>10 days</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor and maintain the highway lighting system.</td>
<td>Highway lighting including temporary lighting shall be maintained with a minimum of ninety percent (90%) of highway lighting (including overhead, underdeck, high mast and sign lighting) operational.</td>
<td>A</td>
<td>N/A</td>
<td>10 days</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No highway light shall be inoperable for a period extending more than 5 days.</td>
<td>C</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor and maintain the highway lighting system and replace damaged light poles.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>C</td>
<td>5 days</td>
<td>10 days</td>
<td>24 hours</td>
</tr>
</tbody>
</table>
## TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.11</td>
<td>Traffic Signal Structure</td>
<td>Provide and maintain the traffic signal structure operational in a temporary condition after damaged by traffic accidents or incidents.</td>
<td>Provide temporary equipment necessary to restore intersection signal operation.</td>
<td>C</td>
<td>12 hour</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.2.12</td>
<td>Signs (single or multi-post)</td>
<td>Provide and maintain regulatory and warning signs e.g. Stop, Yield, One-Way, Do Not Enter after damaged by traffic accidents or incidents.</td>
<td>Provide replacement regulatory and warning signs</td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide and maintain sign &amp; double post signs</td>
<td>Provide replacement sign &amp; double post signs</td>
<td>A</td>
<td>24 hours</td>
<td>48 hours</td>
</tr>
</tbody>
</table>
### TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period FDOT Reported Event</th>
<th>Concessionaire Reported Event</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.13</td>
<td>Fence</td>
<td>Continually monitor and maintain fence at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents. Maintain fence free of openings greater than 1/3 of its original height as measured from the natural ground to the top of the fence fabric, openings greater than 2 square feet in the fence fabric, openings greater than 6 inches between gates or posts, missing or broken fence posts, fence fabric not being attached to fence posts and less than one continuous strand of barb wire is in place at the top of the fence.</td>
<td>C</td>
<td>24 hours</td>
<td>48 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintain all access gates locked during periods of no work activity.</td>
<td>Access gates shall be locked.</td>
<td>B</td>
<td>0</td>
<td>0</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.2.14</td>
<td>Concrete sidewalk and Pedestrian curb ramps</td>
<td>Continually monitor and maintain sidewalk at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents. Maintain sidewalk area free of (i) vertical misalignments greater than 1/4 inch (ii) horizontal cracks greater than 3/4 inch (iii) visible hazards</td>
<td>A</td>
<td>5 days</td>
<td>10 days</td>
<td>24 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>Construction O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>------------------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>4.2.15</td>
<td>Graffiti</td>
<td>Continually monitor and maintain assets free of graffiti.</td>
<td>Graffiti shall be removed, covered or painted over to match the color and the painted finish/Class 5 application finish of adjacent area.</td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.2.16</td>
<td>Environmental Compliance</td>
<td>Monitor water management, Army Corp of Engineers, NPDES and other Permits obtained during construction.</td>
<td>Comply with permit requirements, monitoring and reporting for all water management, Army Corp of Engineers, NPDES and other Permits obtained during construction.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor the erosion control and Storm Water Pollution Prevention Plan</td>
<td>Provide and maintain all erosion control features in accordance with the Contract Documents.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
<td>6 hours</td>
</tr>
<tr>
<td>4.2.17</td>
<td>Parking under the Downtown Viaduct</td>
<td>Comply with the requirements for parking within the area of the</td>
<td>Failure to provide ingress/egress to the parking area.</td>
<td>C</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
</tbody>
</table>
## Table 4.2 - Construction O&M Violations

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period FDOT Reported Event</th>
<th>Concessionaire Reported Event</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bridge District in accordance with Contract Documents.</td>
<td>Failure to provide the required number of parking spaces.</td>
<td>C</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

### 4.2.18 ITS Maintenance Services - FMS DMS

#### Emergency Work

- **Respond to emergency maintenance work during high priority hours.**
  - Element: A
  - Minimum Performance Requirement: 30 minutes
  - Cure Period: 30 minutes
  - Interval of Recurrence: 30 minutes

- **Respond to emergency maintenance work during low priority hours.**
  - Element: A
  - Minimum Performance Requirement: 60 minutes
  - Cure Period: 60 minutes
  - Interval of Recurrence: 30 minutes

#### Priority Work

- **Complete repairs for emergency maintenance work during high priority hours.**
  - Element: A
  - Minimum Performance Requirement: 2 hours
  - Cure Period: 2 hours
  - Interval of Recurrence: 60 minutes

- **Complete repairs for emergency maintenance work during low priority hours.**
  - Element: A
  - Minimum Performance Requirement: 4 hours
  - Cure Period: 4 hours
  - Interval of Recurrence: 2 hours

- **Respond to a priority maintenance work during high priority hours.**
  - Element: A
  - Minimum Performance Requirement: 2 hours
  - Cure Period: 2 hours
  - Interval of Recurrence: 60 minutes

- **Respond to a priority maintenance work during low priority hours.**
  - Element: A
  - Minimum Performance Requirement: 4 hours
  - Cure Period: 4 hours
  - Interval of Recurrence: 2 hours
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for a priority maintenance work during high priority hours.</td>
<td>A 8 hours</td>
<td>8 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for priority maintenance work during low priority hours.</td>
<td>A 24 hours</td>
<td>24 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during high priority hours.</td>
<td>A 30 minutes</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during low priority hours.</td>
<td>A 60 minutes</td>
<td>60 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during high priority hours.</td>
<td>A 2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during low priority hours.</td>
<td>A 4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to an urgent maintenance work during high priority hours.</td>
<td>A 30 minutes</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to an urgent maintenance work during low priority hours.</td>
<td>A 2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

**Table 4.2 - Construction O&M Violations**

- **ITS Maintenance Services – FMS CCTV**
  - Continually monitor and maintain all FMS CCTV on the Project operational as detailed in Section 4-2.5.8 of the Technical Requirements.
<table>
<thead>
<tr>
<th>TABLE 4.2 - CONSTRUCTION O&amp;M VIOLATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element No.</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>4.2.20</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Element No.</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>4.2.21</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Element No.</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>4.2.22</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS**
### TABLE 4.2 - CONSTRUCTION O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>Construction O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>4.2.23</td>
<td>ITS Maintenance Services Blue Tooth (BLUETOAD) Receivers</td>
<td>Continually monitor and maintain all Blue Tooth (BLUETOAD) receivers on the Project operational as detailed in Section 4-2.5.8</td>
<td>Complete repairs and restore operation of Blue Tooth (BLUETOAD) Receiver system. Upon initial installation, Blue Tooth (BLUETOAD) receivers shall operate 24 hours per day, each day of the year, except during Planned Maintenance.</td>
<td>A</td>
<td>48 hours</td>
<td>48 hours</td>
</tr>
</tbody>
</table>
### TABLE 4.3 – AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Availability Faults</th>
<th>Minimum Performance Requirements</th>
<th>Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.01</td>
<td>Incident Response</td>
<td>Upon notification, observation, Concessionaire shall arrive, provide temporary traffic control and be able to support/relieve law enforcement personnel (if present) with traffic control functions at the site of an incident, emergency, accident, and or any other event that results in a condition that is unsafe and/or may present a life threatening condition, such as, at a minimum, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements Categories as detailed in this matrix.</td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

Upon initial notification, observation, Concessionaire shall establish temporary maintenance of traffic control measures in accordance with Standard Index 600 at the site of an incident, emergency, accident, and or any other event that results in a condition that is unsafe and/or may present a life threatening condition, such as, at a minimum, accidents, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements categories as listed in this matrix within the applicable cure period.
## TABLE 4.3 – AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Availability Faults</th>
<th>Minimum Performance Requirements</th>
<th>Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon initial notification, observation or release of the incident site by the emergency service (FHP, Fire Department, etc.), whichever occurs later, Concessionaire shall provide all necessary equipment, staff and resources to clean up and open the travel lanes at the sites of incidents, emergencies, accidents and other events such as at a minimum, accidents, fuel spills, debris, pavement failure (e.g. pot holes, etc.), flooding, guardrail failures, crash cushion faults, and other Elements categories as listed in this matrix in order to comply with the Open Roads Policy.</td>
<td>B</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon arrival and on fifteen (15) minutes intervals provide information as to the status of the incident, emergency or other event to the RTMC. This information can be provided via telephone, text, email, or direct input into the FDOT’s EM system.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.3.02</td>
<td>Roadway Operations (Broken down or stranded Vehicles)</td>
<td>Continually monitor the Project and remove broken down or stranded vehicles from General Use Lanes as set forth in Section 4-6.2.1 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor the Project and remove broken down or stranded vehicles from Express Lanes as set forth in Section 4-6.2.1 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Availability Faults</td>
<td>Minimum Performance Requirements</td>
<td>Availability Fault Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>--------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td>Roadway Surface Debris</td>
<td>Conduct the removal and disposal of debris from travel lanes, including at a minimum, large objects, dead animals and tires. Meet the temporary mitigation performance requirements set forth in Section 4-6.2.2 of the Technical Requirements and meet the requirements as detailed in the Contract Documents.</td>
<td>C</td>
<td>30 minutes 30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.04</td>
<td>Flexible Pavement Pot Holes</td>
<td>Pavement shall meet the requirements set forth in Section 4-6.2.4 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.05</td>
<td>Flexible Pavement Settlement and Depression</td>
<td>Pavement shall not exceed a depth of 0.5 inches and meet the requirements set forth in Section 4-6.2.4 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.06</td>
<td>Flexible Pavement Rutting</td>
<td>Pavement shall not exceed a depth of 0.6 inches and meet the requirements set forth in Section 4-6.2.4 of the Technical Requirements.</td>
<td>B</td>
<td>30 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.07</td>
<td>Rigid Pavement Pot Holes/Spalling</td>
<td>Pavement shall not have a defect greater than 0.5 square feet in area and including any single measurement of 1.5 inches or greater in depth including any single area in the wheel path exceeding 3 inches in width measured longitudinally and 12 inches in length measured transversely. Pavement shall meet the temporary mitigation performance requirements</td>
<td>B</td>
<td>30 minutes 60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Availability Faults</td>
<td>Minimum Performance Requirements</td>
<td>Availability Fault Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>set forth in Section 4-6.2.5 of the Technical Requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.08</td>
<td>Flooding of a Lane</td>
<td>No portion of a lane shall have standing water.</td>
<td>D 30 minutes 60 minutes 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.09</td>
<td>Guardrail</td>
<td>Guardrail shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>B 30 minutes 60 minutes 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.10</td>
<td>Crash Cushion</td>
<td>Impact Attenuators shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>B 30 minutes 60 minutes 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.11</td>
<td>Signs (single or multi-post)</td>
<td>Regulatory and warning signs e.g. Stop, Yield, One-Way, Do Not Enter shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.6 of the Technical Requirements.</td>
<td>A 30 minutes 60 minutes 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sign &amp; double post signs shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.6 of the Technical Requirements.</td>
<td>A 6 hours 12 hours 4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.12</td>
<td>Highway Lighting</td>
<td>Highway Lighting shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.8 of the Technical Requirements.</td>
<td>B 30 minutes 60 minutes 60 minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 4.3 – AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Availability Faults</th>
<th>Minimum Performance Requirements</th>
<th>Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td>FDOT Reported Event</td>
</tr>
<tr>
<td>4.3.13</td>
<td>Barrier Wall</td>
<td>Barrier wall shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>C</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.14</td>
<td>Bridge Hit/Element Failure</td>
<td>Bridge element shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.9 of the Technical Requirements.</td>
<td>D</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.15</td>
<td>Toll Interruption After Completion of Successful End to End Testing through December 2028</td>
<td>In the event of a reported toll interruption by FDOT that is caused by failure of the Tolling Point Infrastructure, Concessionaire shall comply with all requirements under the Contract Documents, including Section 4 of the Technical Requirements, to enable the uninterrupted operation of the Tolling Equipment when any portion of the Express Lanes is open to traffic.</td>
<td>C</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td>Toll Interruption – January 2029 through December 2038</td>
<td>In the event of a reported toll interruption by FDOT that is caused by failure of the Tolling Point Infrastructure, Concessionaire shall comply with requirements under the Contract Documents, including Section 4 of the Technical Requirements, to enable the uninterrupted operation of the Tolling Equipment when any portion of the Express Lanes is open to traffic.</td>
<td>D</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
</tbody>
</table>
TABLE 4.3 – AVAILABILITY FAULTS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Availability Faults</th>
<th>Minimum Performance Requirements</th>
<th>Availability Fault Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>4.3.16</td>
<td>Toll Gantry</td>
<td>Toll gantry shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.11 of the Technical Requirements. This Availability Fault does not apply if a failure shall meet the performance requirements interrupts operation of the Tolling Equipment on the Express Lanes, in which case it shall be deemed a Toll Collection Interruption Availability Fault.</td>
<td>D</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.17</td>
<td>Emergency Access Gates</td>
<td>EAG shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.3 of the Technical Requirements.</td>
<td>D</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4.3.18</td>
<td>Toll Equipment Building</td>
<td>Toll Equipment Building / FON hub shall meet the temporary mitigation performance requirements set forth in Section 4-6.2.14 of the Technical Requirements. This Availability Fault does not apply if a failure to meet the performance requirements interrupts collection of tolls on the Express Lanes, in which case it</td>
<td>C</td>
<td>60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Availability Faults</td>
<td>Minimum Performance Requirements</td>
<td>Availability Fault Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td>FDOT Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>E</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>60 minutes</td>
<td></td>
</tr>
</tbody>
</table>

shall be deemed a Toll Interruption Availability Fault.

The FON shall meet the temporary mitigation performance requirements set forth in Section 4-6.2 of the Technical Requirements. This Availability Fault does not apply if a failure to meet the performance requirements interrupts collection of tolls on the Express Lanes, in which case it shall be deemed Toll Interruption Availability Fault.
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conduct a periodic MRP cycle in accordance with FDOT MRP Handbook and FDOT Procedure No. 850-000-015&quot;.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.01</td>
<td>Maintenance Rating Performance (MRP)</td>
<td></td>
<td>Meet a minimum periodic overall MRP rating as required in FDOT Procedure No. 850-000-015 - Roadway and Roadside Maintenance.</td>
<td>D</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet a minimum periodic MRP rating as required in FDOT Procedure No. 850-000-015 - Roadway and Roadside Maintenance for individual elements.</td>
<td>C</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet a minimum periodic MRP rating as required in FDOT Procedure No. 850-000-015 - Roadway and Roadside Maintenance for individual characteristics.</td>
<td>B</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Flexible Pavement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.02</td>
<td>Category 1 Pavement</td>
<td>Maintain flexible pavement at acceptable level of safety for traveling public.</td>
<td></td>
<td>B</td>
<td>180 days</td>
<td>180 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maintain Ride, Rutting and Cracking pavement condition survey rating of 7.0 or greater for roadway sections described in Section 4-1.12 of the Technical Requirements.</td>
<td>B</td>
<td>24 months</td>
<td>24 months</td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.03</td>
<td>Category 2 Pavement</td>
<td>Maintain flexible pavement at acceptable level of safety for the traveling public.</td>
<td>Meet Ride, Rutting and Cracking pavement condition of 7.0 or greater.</td>
<td>B</td>
<td>36 months</td>
<td>36 months</td>
</tr>
</tbody>
</table>

Meet the requirements set forth in Section 4-5.2.1 of the Technical Requirements for rutting depth of 0.5 inches or greater.

Meet the requirements set forth in Section 4-5.2.1 of the Technical Requirements for settlement/depression depth of 0.5 inches or greater.

Meet the requirements set forth in Section 4-5.2.1 of the Technical Requirements for raveling and/or delamination affecting the friction course for length greater than 10 feet and 1 (one) foot wide.

Meet the requirements set forth in Section 4-5.2.1 of the Technical Requirements for pot holes and slippage area(s) greater than 0.5 square feet in area and 1.5 inches deep.
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet the performance requirements set forth in Section 4-5.2.1 of the Technical Requirements for rutting depth of 0.6 inches or greater.</td>
<td>B</td>
<td>180 days</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet the performance requirements set forth in Section 4-5.2.1 of the Technical Requirements for surface deterioration including raveling and/or delamination affecting the friction course, segregated area(s) for lengths greater than 10 feet and 1 (one) foot wide.</td>
<td>B</td>
<td>180 days</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet the performance requirements set forth in Section 4-5.2.1 of the Technical Requirements for pot holes and slippage area(s) greater than 0.5 square feet in area and 1.5 inches deep.</td>
<td>C</td>
<td>7 days</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meet the performance requirements set forth in Section 4-5.2.1 of the Technical Requirements for settlement/depression depth of 0.5 inches or greater.</td>
<td>B</td>
<td>30 days</td>
<td>24 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>4.4.04</td>
<td>Category 3 Pavement</td>
<td>Maintain flexible pavement at acceptable level of safety for the traveling public.</td>
<td>Meet the performance requirements set forth in Section 4-5.2.1 of the Technical Requirements for surface deterioration including raveling and/or delamination affecting the friction course, segregated area(s) for any length and bleeding as defined by the loss of surface texture due to excess asphalt, individual area ≥10.</td>
<td>B</td>
<td>180 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>30 days</td>
</tr>
<tr>
<td></td>
<td>4.4.05</td>
<td>All Flexible Pavement</td>
<td>Inspection of flexible pavement after major damage such as fire, fuel spill or other incident/event.</td>
<td>Conduct a visual inspection of the affected area and provide a written recommendation for repairs to the FDOT.</td>
<td>A</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection and meet the approved written recommendation.</td>
<td>C</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rigid Pavement</td>
<td>Portland</td>
<td>Maintain rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.4.07</td>
<td>Fuel Spills/Contamination Management Plan</td>
<td>Provide Contamination Management Plan after a fuel spill/contamination event.</td>
<td></td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comply with the FDOT approved Contamination Management Plan.</td>
<td></td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>Maintenance of Traffic</td>
<td>Continually monitor the Project and install, maintain traffic control and safety devices.</td>
<td>Maintain roadway surfaces that are being used for TTC, including detours and temporary facilities, free of dust, rutting. Maintain manholes/crosswalks/joint not to exceed one (1) inch above the riding surface in accordance with the Contract Documents.</td>
<td>C</td>
<td>24 hours</td>
<td>48 hours</td>
</tr>
<tr>
<td>4.4.08</td>
<td></td>
<td></td>
<td>Maintain the Project free of conflicting pavement markings and ensure all work zone pavement markings, including, at a minimum, centerlines, raised pavement markers, lane lines, edge lines, stop bars and turn arrows are installed in accordance with the Contract Documents to ensure the safe passage of traffic through the work zone.</td>
<td>B</td>
<td>24 hours</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide and maintain continuous access for residents and business along frontage roads and within intersections including driveway maintenance as necessary for a safe, stable and reasonable access.</td>
<td>B</td>
<td>30 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operate and maintain all detours in accordance with Plans including all signs, arrow boards, variable message signs for the safe passage of traffic, pedestrian and bicycle movements.</td>
<td>C</td>
<td>60 minutes</td>
<td>6 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Remove or cover temporary detour signs and devices that are no longer needed.</td>
<td>A</td>
<td>6 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide traffic control officers in accordance with Contract Documents.</td>
<td>A</td>
<td>60 minutes</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operate and maintain temporary traffic control devices including signs, barricades, lights and cones as detailed in the Contract Documents and keep these devices in the correct position, properly directed, clearly visible, upright and clean.</td>
<td>B</td>
<td>60 minutes</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide and maintain work zone signs in accordance with the Contract Documents with appropriate hardware and supports as set forth in the Contract Documents.</td>
<td>B</td>
<td>60 minutes</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

**TABLE 4.4 – O&M VIOLATIONS**
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Provide and maintain business signs in accordance with the Contract Documents and having the retro-reflective sheeting meeting the requirement of the Contract Documents.</td>
<td></td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Properly mitigate drop off conditions and above ground hazards in work zones in accordance with the Contract Documents.</td>
<td></td>
<td>C</td>
<td>3 hours</td>
<td>6 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operate and maintain high intensity flashing lights, warning/channelizing devices including cones, temporary barrier wall, arrow boards, portable changeable message signs (PCMS), portable regulatory signs in accordance with the Contract Documents.</td>
<td></td>
<td>B</td>
<td>6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operate and maintain warning/channelizing devices including cones, arrow boards, portable changeable message signs (PCMS), portable regulatory signs within an active lane closure in accordance with the Contract Documents.</td>
<td></td>
<td>B</td>
<td>60 minutes</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

FLORIDA DEPARTMENT OF TRANSPORTATION
I-4 Ultimate Project
Contract # E5W13
Federal Aid # D041(228)
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guardrail</td>
<td>Maintain guardrail at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>5 days</td>
<td>10 days</td>
</tr>
<tr>
<td>4.4.09</td>
<td></td>
<td>Perform inspection of the guardrail system and submit copies to FDOT.</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-050-003.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection report.</td>
<td></td>
<td>B</td>
<td>N/A</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.10</td>
<td>Crash Cushion</td>
<td>Maintain crash cushions at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>72 hours</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform inspection of the crash cushion system and submit copies to FDOT.</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-055-003.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection report.</td>
<td></td>
<td>B</td>
<td>N/A</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.11</td>
<td>Fence</td>
<td>Maintain fence at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>C</td>
<td>24 hours</td>
<td>72 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>4.4.12</td>
<td>Signs</td>
<td>Maintain all access gates locked during periods of no work activity.</td>
<td>Access gates shall be locked.</td>
<td>B</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.4.13</td>
<td>Pavement Markings and Striping</td>
<td>Maintain pavement markings and striping at acceptable level of safety for the traveling public.</td>
<td>All pavement markings and striping systems must meet a 150 millicandela (MCD) value or higher.</td>
<td>C</td>
<td>N/A</td>
<td>30 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period FDOT Reported Event</td>
<td>Cure Period Concessionaire Reported Event</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>4.4.14</td>
<td>Drainage Systems</td>
<td>Maintain drainage system as per original design and at an acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents</td>
<td>B</td>
<td>72 hours</td>
<td>7 days</td>
</tr>
<tr>
<td>4.4.15</td>
<td>Front Slopes</td>
<td>Continually monitor and maintain front slopes.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.4.16</td>
<td>Slope Pavement</td>
<td>Continually monitor and maintain slope pavement.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>12 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.4.17</td>
<td>Water Management, Army Corp of Engineers, NPDES and other Permits</td>
<td>Monitor Water Management, Army Corp of Engineers, NPDES and any other permits.</td>
<td>Comply with permit monitoring and reporting requirements for Water Management, Army Corp of Engineers, NPDES and any other permits.</td>
<td>C</td>
<td>72 hours</td>
<td>5 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.4.18</td>
<td>Concrete sidewalk and Pedestrian Ramps Inspection</td>
<td>Maintain sidewalk and pedestrian ramps at acceptable level of safety for the traveling public.</td>
<td>Meet the performance requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>5 days</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform an annual inspection of sidewalks pedestrian ramps.</td>
<td>Conduct an annual inspection in accordance with the criteria set forth in the MRP Handbook and as required to meet ADA criteria.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection.</td>
<td></td>
<td>B</td>
<td>N/A</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.19</td>
<td>Barrier Wall</td>
<td>Maintain barrier walls at acceptable level of safety for the traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents.</td>
<td>B</td>
<td>4 days</td>
<td>7 days</td>
</tr>
<tr>
<td>4.4.20</td>
<td>Toll Gantry System</td>
<td>Perform inspection of toll gantry system.</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-010-030.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete toll gantry work order meetings with FDOT on a monthly basis.</td>
<td></td>
<td>A</td>
<td>N/A</td>
<td>10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform repairs generated from toll gantry</td>
<td>Priority 3. Complete required repairs within applicable cure period of work order issuance.</td>
<td>B</td>
<td>N/A</td>
<td>365 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.21</td>
<td>Toll Equipment Building</td>
<td>Maintain Toll Equipment Building</td>
<td>Meet the requirements set forth in the Contract Documents with respect to Toll Equipment Building.</td>
<td>B</td>
<td>72 hours</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform an annual inspection of the Toll Equipment Building and submit copies to FDOT</td>
<td>Complete inspection of roof, wall, doors, and lights.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection report.</td>
<td>B</td>
<td>N/A</td>
<td>30 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Perform periodic inspection in accordance with manufacturer’s specifications.</td>
<td>B</td>
<td>N/A</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operate and maintain HVAC units.</td>
<td>C</td>
<td>6 hours</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

**TABLE 4.4 – O&M VIOLATIONS**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Priority 2. Complete required repairs within applicable cure period of work order issuance.**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Priority 1. Complete required repairs to within applicable cure period of work order issuance.**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notify FDOT of completed toll gantry work orders**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Written notification of completed toll gantry work orders within applicable cure periods.**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BN / A 180 days 24 hours**

**BN / A 60 days 24 hours**

**BN / A 30 days 24 hours**

**BN / A 180 days 24 hours**
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Building.</td>
<td>Perform an annual inspection of the Toll Equipment Building HVAC and submit copies to FDOT.</td>
<td>B</td>
<td>N/A</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection report.</td>
<td>B</td>
<td>N/A</td>
<td>10 days</td>
</tr>
<tr>
<td>4.4.22</td>
<td>Clear Zone Obstructions</td>
<td>Maintain clear zone at acceptable level of safety for the traveling public</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
<tr>
<td>4.4.23</td>
<td>Highway Lighting</td>
<td>Continually monitor and maintain the coating system on highway light poles.</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
</tbody>
</table>

**4.4.22 Clear Zone Obstructions**

- **0 to 5 years after start of the Operating Period:** Maintain all coating systems on light poles to a minimum change in color not to exceed \( 8\Delta E \)‘s per the CIE L*ab* 1976 with a maximum delamination of 100 square inches when evaluated using SSPC-SP2.
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post 5 Years after start of the Operating Period: Maintain all coating systems on light poles to a minimum change in color not to exceed 20ΔE’s per CIE L<em>a</em>b* 1976 with a maximum delamination of 200 square inches when evaluated using SSPC-SP2</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
<td>180 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continually monitor and maintain the highway lighting system.</td>
<td>C</td>
<td>5 days</td>
<td>10 days</td>
<td>24 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform a monthly inspection.</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>24 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain highway lighting at acceptable level of safety for traveling public.</td>
<td>B</td>
<td>N/A</td>
<td>48 hours</td>
<td>24 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No highway light shall be inoperable for a period extending more than 5 days.</td>
<td>C</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>4.4.24</td>
<td>Traffic Signal Structure</td>
<td>Perform traffic signal structure inspection.</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-010-030.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td>30 days</td>
</tr>
</tbody>
</table>

**Element No.**

- **4.4.24** Traffic Signal Structure

**Required Task**

- Perform traffic signal structure inspection.

**Minimum Performance Requirements**

- Complete the inspection in accordance with FDOT Procedure 850-010-030.

**O&M Violation Classification**

- A
- B

**Cure Period**

- 0 days
- 30 days
- N/A

**Interval of Recurrence**

- 24 hours
- 30 days
- 24 hours

**Notes**

- Same highway light cannot appear on two consecutive monthly inspection reports without documented repair records showing that highway light had been repaired after the first documented outage.
- Continually monitor and maintain highway lighting components and ensure that plates, access panel covers, pull box covers are not damaged, and are secured, or are not missing.
- Meet the requirements set forth in the Contract Documents.
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period FDOT Reported Event</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.25</td>
<td>Overhead Sign Structure</td>
<td>Perform overhead sign structure</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-010-030.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete overhead sign structure work order meetings with FDOT on a monthly basis.</td>
<td>A</td>
<td>N/A</td>
<td>10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Priority 3.</strong> Complete required repairs within applicable cure period of work order issuance.</td>
<td>B</td>
<td>N/A</td>
<td>365 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Priority 2.</strong> Complete required repairs within applicable cure period of work order issuance.</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Priority 1.</strong> Complete required repairs within applicable cure period of work order issuance.</td>
<td>C</td>
<td>N/A</td>
<td>60 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Notify FDOT of completed overhead sign structure work orders</td>
<td>Written notification of completed overhead sign work orders within applicable cure periods</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>4.4.26</td>
<td>Bridges Inspection</td>
<td>Perform bridge inspections.</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-010-030.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| 4.4.27      | Bridge Maintenance | Conduct work order review meetings with FDOT | Complete bridge work order meetings with FDOT on a monthly basis. | A | N/A | 10 days | 24 hours |
| Priority 3  | Complete required repairs within applicable cure period of work order issuance. | B | N/A | 365 days | 10 days |
| Priority 2  | Complete required repairs within applicable cure period of work order issuance. | C | N/A | 180 days | 5 days |
| Priority 1  | Complete required repairs within applicable cure period of work order issuance. | E | N/A | 60 days | 24 hours |

TABLE 4.4 – O&M VIOLATIONS
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Notify FDOT of completed bridge work orders</td>
<td>Written notification to FDOT of completed bridge work orders within applicable cure periods.</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor the paint system on steel bridges</td>
<td>Maintain all paint systems on steel structures to a minimum “Condition State” of no less than 50% in condition state 2 or better (per FDOT Bridge Inspectors Field Guide Structural Elements).</td>
<td>B</td>
<td>N/A</td>
<td>120 days</td>
</tr>
<tr>
<td>4.4.28</td>
<td>Maintenance of Paint system on Aesthetic Features</td>
<td>Continually monitor the paint system on all steel structures including, steel bridges, overhead sign structures, toll gantry and roadway lighting.</td>
<td>0 to 5 Years after start of the Operating Period: Maintain all paint systems on steel structures to a minimum change in color not to exceed $8\Delta E's$ per the CIE $L^*a^<em>b^</em>$ 1976.</td>
<td>B</td>
<td>N/A</td>
<td>120 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor the paint system on all concrete elements including, MSE</td>
<td>Post 5 Years after start of the Operating Period: Maintain all paint systems on steel structures to a minimum change in color not to exceed $20\Delta E's$ per the CIE $L^*a^<em>b^</em>$ 1976.</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continually monitor the paint system on all concrete elements including, MSE</td>
<td>0 to 3 Years after start of the Operating Period: Maintain all paint systems on concrete elements to a minimum change in color not to exceed $8\Delta E's$ per the CIE $L^*a^<em>b^</em>$ 1976.</td>
<td>B</td>
<td>N/A</td>
<td>120 days</td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Walls, barrier walls, retaining walls, sound walls</td>
<td><strong>Post 3 Years after start of the Operating Period:</strong> Maintain all paint systems on concrete elements to a minimum change in color not to exceed 20ΔE’s per the CIE L<em>a</em>b* 1976.</td>
<td>B</td>
<td>N/A</td>
<td>180 days</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.29</td>
<td>Graffiti</td>
<td>Continually monitor and maintain assets free of graffiti and promptly remove or cover graffiti.</td>
<td>A</td>
<td>12 hours</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.4.30</td>
<td>Concrete slopes, retaining wall and sidewalks.</td>
<td>Concrete surfaces shall be kept clean and free of stains, tire marks, dirt and mildew.</td>
<td>A</td>
<td>60 days</td>
<td>120 days</td>
<td>30 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>----------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td>Vegetation Control on Concrete Slopes and Concrete Surfaces</td>
<td>Continually monitor concrete walls, sound barrier walls, MSE walls, concrete slopes, retaining wall, sidewalks, etc.</td>
<td>Concrete surfaces shall be kept free of vegetation as provided for in the Contract Documents. Vegetation shall not be allowed to grow between concrete joints on slopes, bridges, walls, sidewalk or curb &amp; gutter sections.</td>
<td>A</td>
<td>15 days</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.31</td>
<td>Landscape Areas</td>
<td>Continually monitor landscape</td>
<td>Replace any missing, damaged, or dead tree or palm</td>
<td>A</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Replace any single tree or palm that has declined to an unhealthy condition</td>
<td>A</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maintain any understory planting bed to less than 10% missing, damaged or dead</td>
<td>A</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maintain any understory planting bed to more than 90% in a healthy condition</td>
<td>A</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Restore any mulch bed area and depth missing 10%</td>
<td>A</td>
<td>45 days</td>
<td>90 days</td>
</tr>
</tbody>
</table>
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.33</td>
<td>Chemical Vegetation Control</td>
<td>Continually monitor roadside vegetation, areas under guardrail, joints on paved surfaces, aquatic vegetation and areas around retention ponds and canals.</td>
<td>Meet the requirements set forth in the Contract Documents</td>
<td>B</td>
<td>15 days</td>
<td>30 days</td>
</tr>
<tr>
<td>4.4.34</td>
<td>Noise Walls</td>
<td>Maintain sound barriers at acceptable level of safety for traveling public.</td>
<td>Meet the requirements set forth in the Contract Documents</td>
<td>B</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td>4.4.35</td>
<td>Customer Service Staff</td>
<td>Respond in accordance with Contract Documents.</td>
<td>Contact Customer. Report safety complaints to FDOT. Respond to the customer’s request and provide written response to FDOT.</td>
<td>C</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform work in accordance with Customer Relations Unit requirements as detailed in Section 4-3.10 of the Technical Requirements and Contract Documents.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meet the performance requirements set forth in the manufacturer's specifications.</td>
<td></td>
<td>D</td>
<td>N/A</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>4.4.36 Emergency Access Gates</td>
<td>Maintain EAG at acceptable level of safety for the traveling public.</td>
<td></td>
<td></td>
<td></td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inspect and test the EAGs on an annual basis.</td>
<td></td>
<td>B</td>
<td>N/A</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs identified in the inspection report.</td>
<td></td>
<td>C</td>
<td>N/A</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period FDOT Reported Event</th>
<th>Concessionaire Reported Event</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.37</td>
<td>ITS Maintenance Services – ELMS DMS</td>
<td>Continually monitor and maintain all ELMS DMS on the Project operational as detailed in Section 4-2.5.8 of the Technical Requirements.</td>
<td>Respond to emergency maintenance work during high priority hours.</td>
<td>C</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during low priority hours.</td>
<td>C</td>
<td>60 minutes</td>
<td>60 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during high priority hours.</td>
<td>C</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during low priority hours.</td>
<td>C</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to a priority maintenance work during high priority hours.</td>
<td>C</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to a priority maintenance work during low priority hours.</td>
<td>C</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------------------</td>
<td></td>
</tr>
<tr>
<td>4.4.38</td>
<td>ITS Maintenance Services –FMS DMS</td>
<td>Continually monitor and maintain all FMS DMS on the Project operational as detailed in Section 4-2.5.8 of the technical Requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.38</td>
<td>ITS Maintenance Services –FMS DMS</td>
<td>Respond to emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td></td>
</tr>
<tr>
<td>4.4.38</td>
<td>ITS Maintenance Services –FMS DMS</td>
<td>Respond to emergency maintenance work during low priority hours.</td>
<td>A</td>
<td>60 minutes</td>
<td>60 minutes</td>
<td>30 minutes</td>
<td></td>
</tr>
<tr>
<td>4.4.38</td>
<td>ITS Maintenance Services –FMS DMS</td>
<td>Complete repairs for emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td>4.4.38</td>
<td>ITS Maintenance Services –FMS DMS</td>
<td>Complete repairs for emergency maintenance work during low priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
<td></td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>----------------------------</td>
<td>-------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
<td></td>
</tr>
<tr>
<td>PRIORITY WORK</td>
<td></td>
<td>Respond to a priority maintenance work during high priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to a priority maintenance work during low priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs for a priority maintenance work during high priority hours.</td>
<td>A</td>
<td>8 hours</td>
<td>8 hours</td>
<td>4 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs for a priority maintenance work during low priority hours.</td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
<td>12 hours</td>
<td></td>
</tr>
<tr>
<td>4.4.39</td>
<td>ITS Maintenance Services ELMS CCTV</td>
<td>Continually monitor and maintain all ELMS CCTVs on the Project operational as detailed in Section 4-2.5.8 of the Technical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during high priority hours.</td>
<td>C</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during low priority hours.</td>
<td>C</td>
<td>60 minutes</td>
<td>60 minutes</td>
<td>30 minutes</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>8 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td></td>
</tr>
</tbody>
</table>

**URGENT WORK**
- Complete repairs for emergency maintenance work during high priority hours.
- Complete repairs for emergency maintenance work during low priority hours.
- Respond to an urgent maintenance work during high priority hours.
- Respond to an urgent maintenance work during low priority hours.
- Complete repairs for an urgent maintenance work during high priority hours.
- Complete repairs for an urgent maintenance work during low priority hours.
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>4.4.40</td>
<td>ITS Maintenance Services FMS CCTV</td>
<td>Continually monitor and maintain all FMS CCTVs on the Project operational as detailed in Section 4-2.5.8 of the Technical Requirements.</td>
<td>Respond to emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

**TABLE 4.4 – O&M VIOLATIONS**

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during low priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>URGENT WORK</td>
<td></td>
<td>Respond to an urgent maintenance work during high priority hours.</td>
<td>A</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respond to an urgent maintenance work during low priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for an urgent maintenance work during high priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M Violations

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT</td>
<td>Concessionaire</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reported Event</td>
<td>Reported Event</td>
</tr>
<tr>
<td>4.4.41</td>
<td>ITS Maintenance Services ELMS MVDS</td>
<td>Continually monitor and maintain all ELMS MVDS on the Project operational as</td>
<td></td>
<td></td>
<td>12 hours</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Priority</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>FDOT Reported Event</th>
<th>Concessionaire Reported Event</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>URGENT WORK</strong></td>
<td>Complete repairs for an urgent maintenance work during low priority hours.</td>
<td>A</td>
<td>8 hours</td>
<td>8 hours</td>
<td>2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete repairs for a priority maintenance work during high priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respond to a priority maintenance work during low priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete repairs for a priority maintenance work during high priority hours.</td>
<td>A</td>
<td>8 hours</td>
<td>8 hours</td>
<td>4 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete repairs for a priority maintenance work during low priority.</td>
<td>A</td>
<td>24 hours</td>
<td>24 hours</td>
<td>12 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRIORITY WORK</strong></td>
<td>Respond to an urgent maintenance work.</td>
<td>C</td>
<td>12 hours</td>
<td>12 hours</td>
<td>12 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.42</td>
<td>ITS Maintenance Services FMS MVDS</td>
<td>Continually monitor and maintain all FMS MVDS on the Project operational as detailed in Section 4-2.5.8 of the Technical Requirements.</td>
<td>URGENT WORK: Respond to an urgent maintenance work.</td>
<td>A</td>
<td>12 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.43</td>
<td>ITS Maintenance Services RSS</td>
<td>Continually monitor and maintain all RSS on the Project operational as detailed in</td>
<td>EMERGENCY WORK: Respond to emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>30 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Section 4.2.5.8 of the Technical Requirements.</td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to emergency maintenance work during low priority hours.</td>
<td>A</td>
<td>2 hours</td>
<td>2 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during high priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete repairs for emergency maintenance work during low priority hours.</td>
<td>A</td>
<td>8 hours</td>
<td>8 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to an urgent maintenance work during high priority hours</td>
<td>A</td>
<td>60 minutes</td>
<td>60 minutes</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respond to an urgent maintenance work during low priority hours.</td>
<td>A</td>
<td>4 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>Table 4.4 – O&amp;M Violations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Element No.</strong></td>
<td><strong>Element Category</strong></td>
<td><strong>Required Task</strong></td>
<td><strong>Minimum Performance Requirements</strong></td>
<td><strong>O&amp;M Violation Classification</strong></td>
<td><strong>Cure Period</strong></td>
<td><strong>Interval of Recurrence</strong></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>--------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for an urgent maintenance work during high priority hours.</td>
<td>A</td>
<td>8 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complete repairs for an urgent maintenance work during low priority hours.</td>
<td>A</td>
<td>16 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td><strong>4.4.44</strong></td>
<td>Service Patrols</td>
<td>Operations</td>
<td>Respond to a stranded motorist, either on the shoulders or travel lanes.</td>
<td>Service Patrol to arrive on site.</td>
<td>B</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Must maintain AVL / GPS / Tablet Service Patrol operator must not be under the influence of alcohol or any controlled substance or drug, except where prescribed by a physician while on duty</td>
<td>No malfunctioning AVL/GPS/Tablet</td>
<td>A</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Service Patrol operator found to be or accused of being under the influence of alcohol or any controlled substance or drug.</td>
<td></td>
<td>A</td>
<td>0</td>
</tr>
</tbody>
</table>
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>Service Patrol operator must not accept payment for services</td>
<td>Service Patrol operator must not be or accused of accepting payment for services</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Service Patrol operator must not sleep while on duty</td>
<td>Service Patrol operator must not be or accused of sleeping while on duty</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction Survey for Service Patrol Service</td>
<td>Maintain Customer Satisfaction Survey on a quarterly basis between 90-95% of respondents satisfied with service.</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>3 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain Customer Satisfaction Survey on a quarterly basis between 80-90% of respondents satisfied with service.</td>
<td>B</td>
<td>0</td>
<td>0</td>
<td>3 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain Customer Satisfaction Survey on a quarterly basis between 70-80% of respondents satisfied with service.</td>
<td>C</td>
<td>0</td>
<td>0</td>
<td>3 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain Customer Satisfaction Survey above 70% of respondents satisfied with service.</td>
<td>D</td>
<td>0</td>
<td>0</td>
<td>3 months</td>
<td></td>
</tr>
</tbody>
</table>
## TABLE 4.4 – O&M VIOLATIONS

<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.45</td>
<td>Deliverables</td>
<td>Deliver Monthly O&amp;M Report in electronic format available for submittal to the FDOT by the 10th working day each month.</td>
<td>Submit Monthly O&amp;M Report identifying all of the Planned Maintenance activities for the month, the actual maintenance performed for the period, and confirmation that the Concessionaire performed all maintenance in compliance with the Contract Documents.</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.4.46</td>
<td>FON</td>
<td>Maintain FON without damage.</td>
<td>Complete repairs in accordance with requirements set forth in the Contract Documents as detailed in Section 4-2.5.1 of the Technical Requirements.</td>
<td>C</td>
<td>45 days</td>
<td>90 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintain the communication infrastructure</td>
<td>Repair or replace the damaged communications infrastructure (Conduit, pull boxes, splice cabinets, hubs, etc.)</td>
<td>B</td>
<td>24 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.4.47</td>
<td>ITS Maintenance Services Blue Tooth (BLUETOAD) Receivers</td>
<td>Continually monitor and maintain all Blue Tooth (BLUETOAD) receivers on the Project operational as detailed in Section 4-2.5.8</td>
<td>Complete repairs and restore operation of Blue Tooth (BLUETOAD) Receiver system. Blue Tooth (BLUETOAD) receivers shall operate 24 hours per day, each day of the year, except for Planned Maintenance.</td>
<td>A</td>
<td>48 hours</td>
<td>48 hours</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period</td>
<td>Interval of Recurrence</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4.4.48</td>
<td>Precast Architectural Cladding on Toll Gantries &amp; Sign Structures</td>
<td>Perform inspection of the structural attachments which attach the architectural panels to the toll gantry or sign structure</td>
<td>Complete the inspection in accordance with FDOT Procedure 850-010-030</td>
<td>A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>4.4.49</td>
<td>Enhanced Paving Materials</td>
<td>Maintain modular concrete paver surfaces within sidewalk, crosswalk, plaza and other applications. Remove cracked, spalled or chipped concrete pavers and replace with new concrete pavers matching the original paver color. Fill cracked and/or spalled areas and re-paint/stain all colored surfaces a minimum of every 5 years. Replace enhanced pavement materials if damaged, or obliterated by milling and/or paving operations of like kind.</td>
<td>A</td>
<td>15 days</td>
<td>30 days</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintain special stamped/colored concrete and asphalt surfaces</td>
<td></td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

TABLE 4.4 – O&M VIOLATIONS
<table>
<thead>
<tr>
<th>Element No.</th>
<th>Element Category</th>
<th>Required Task</th>
<th>Minimum Performance Requirements</th>
<th>O&amp;M Violation Classification</th>
<th>Cure Period</th>
<th>Interval of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>4.4.50</td>
<td>Street Furniture and other Miscellaneous Pedestrian Structures Installed by Concessionaire as part of a Proposal Commitment</td>
<td>Continually monitor street furniture and other miscellaneous pedestrian structures for damage, theft or vandalism. In the event of damage or vandalism, (1) repair damaged or vandalized structures, or (2) replace damaged or vandalized structures with new structures of equal or better quality. In the event of theft, replace missing structures with new structures of equal or better quality.</td>
<td>A</td>
<td>15 days</td>
<td>30 days</td>
<td>24 hours</td>
</tr>
<tr>
<td>4.4.51</td>
<td>Aesthetic Lighting, including but not limited to pylon lantern lights, backlit signage, up-lighting, wall wash lighting, fountain lighting, RGB color-changing LED lighting, and LED linear band lighting</td>
<td>Continually monitor all aesthetic lighting</td>
<td>Aesthetic lighting shall be maintained such that 100% of the light sources are emitting light of a color, quality and intensity equal to the original manufacturer’s performance specifications. Aesthetic lighting necessary for pedestrian lighting to meet lighting design criteria shall operate during the same hours as the roadway lighting. Otherwise, aesthetic lighting shall operate from dusk to midnight each day of the year.</td>
<td>A</td>
<td>10 days</td>
<td>15 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintain the glass surfaces</td>
<td>Replace any cracked or broken glass panels.</td>
<td>A</td>
<td>30 days</td>
<td>30 days</td>
</tr>
<tr>
<td>Element No.</td>
<td>Element Category</td>
<td>Required Task</td>
<td>Minimum Performance Requirements</td>
<td>O&amp;M Violation Classification</td>
<td>Cure Period FDOT Reported Event</td>
<td>Concessionaire Reported Event</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>4.4.52</td>
<td>Pond Fountains, including but not limited to celestial, single jet, and cascade type fountains</td>
<td>Continually monitor fountains</td>
<td>Maintain fountain mechanical components, intake and discharge nozzles such that fountain discharge has a volume, pattern and height within the manufacturer’s performance specifications. Fountains shall operate 8 hours per day, each day of the year, except during Planned Maintenance.</td>
<td>A</td>
<td>5 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>
I-4 Volume II - Technical Requirements

Section 5 – Handback Requirements

Florida Department of Transportation
District 5

To Design, Build, Finance, Operate and Maintain

The I-4 Ultimate Project

EXECUTION VERSION

Financial Project Number: 432193-1-52-01
Federal Aid Project Number(s): 0041 228 I
Contract Number: E5W13
1. **HANDBACK RENEWAL WORK PLAN**

   Five (5) full Calendar Years prior to the end of the Term, Concessionaire shall submit a Handback Renewal Work Plan to FDOT for approval that sets out Concessionaire’s proposed processes for:

   A. Assessment of the condition, performance, and residual life of the Project assets at least 60 days prior to the Termination Date;

   B. Renewal Work through maintenance, repair, reconstruction, rehabilitation, restoration, renewal or replacement of Project assets such that the assets comply with the acceptance criteria that measures the condition, performance, and specified life of the respective Project assets remaining at the end of the Term;

   C. Plan for the transition of O&M Work responsibilities to FDOT and acceptance by FDOT of the Project assets and O&M responsibilities upon satisfaction of the acceptance criteria, to be provided in accordance with Section 1.3 of this Volume II, Section 5; and

   D. FDOT staff training on all O&M Manuals, systems, and procedures.

Concessionaire shall coordinate all aspects of the development of the Handback Renewal Work Plan with FDOT, including conducting O&M as agreed, independent or joint inspections of the assets and performance of the acceptance tests that measure the condition, performance, and specified life of the respective Project assets remaining at the end of the Term.

1.1. **Assessment of Condition and Performance**

   The Handback Renewal Work Plan shall detail the methods and tests that will be used during the condition and performance assessments, the acceptance criteria, and the acceptance measures or limits that must be satisfied. The Handback Renewal Work Plan shall also include the scope, schedule, detailed tests and inspection procedures, processes and evaluations required, acceptance criteria, and acceptance measures that will be used to verify and demonstrate to FDOT that all facilities, equipment and systems function as specified; and that all facilities, equipment and systems comply with the applicable codes and standards set forth in the Technical Requirements.

The test and inspection procedures detailed in the Handback Renewal Work Plan shall indicate any particular reference standards, or other information used to support the testing, inspection, and asset evaluation process, including updates to standards that occur during the Term.

At a minimum, the assets identified in Table 5.1 shall be included in the Handback Renewal Work Plan, together with any further assets incorporated into the Project as a result of Concessionaire’s design configuration and assets in place at the time of the Handback Renewal Work Plan’s preparation. Concessionaire and FDOT shall mutually develop a more detailed table based upon Concessionaire’s design configuration and Project assets in place at the time of the Handback Renewal Work Plan’s preparation.
1.2. **Handback Renewal Work Plan**

Concessionaire’s Handback Renewal Work Plan shall be developed:

- On the basis of the assessment of the operation and performance of the Project assets; and
- On the assumption that Concessionaire will perform its obligations for the remainder of the Term.

The Handback Renewal Work Plan shall contain Concessionaire’s proposed schedule for implementation of maintenance, repair, reconstruction, rehabilitation, restoration, renewal or replacement of Project assets.

The Handback Renewal Work Plan shall contain details of the cost of executing the Handback Renewal Work.

The Handback Renewal Work Plan shall identify any areas that are subject to the Concessionaire’s obligations under Section 4.10 of the Agreement due to Contaminated Materials or Undesirable Materials. For any such areas identified, the Handback Renewal Work Plan shall include documentation concerning Concessionaire’s compliance with its obligations under Section 4.10 of the Agreement. Concessionaire shall retain all responsibility and liability with respect to Contaminated Materials and Undesirable Materials as provided in the Agreement.

1.3. **Transition & Training Plan**

Concessionaire shall provide a comprehensive Transition and Training Plan to FDOT for FDOT’s approval at least twelve (12) months prior to the end of the Term.

Additionally, at least six (6) months prior to the end of the Term, Concessionaire shall provide a comprehensive O&M training session for FDOT’s staff. The training session shall include a review of certain Project records as well as all O&M Manuals, and other plans and procedures. The complete curriculum for this training session shall be contained in the Transition and Training Plan.

2. **PERFORMANCE OF THE HANDBACK RENEWAL WORK**

Upon receipt of approval of the Handback Renewal Work Plan by FDOT, Concessionaire shall perform the Handback Renewal Work in accordance with the Handback Renewal Work Plan and the Contract Documents. All requirements applicable to D&C Work in Section 3 of the Technical Requirements shall also apply to the relevant Handback Renewal Work, provided that with respect to Governing Regulations, the then current edition in effect shall apply as to the particular Handback Renewal Work being performed.

3. **ANNUAL HANDBACK RENEWAL WORK PLAN UPDATES**

The Handback Renewal Work Plan shall include provisions for Annual Handback Evaluation Reports of the Project assets for the remainder of the Term. After the preparation of the first
Annual Handback Evaluation Report and prior to the commencement of each year remaining in the Term, Concessionaire, upon consultation with FDOT, shall update the Handback Renewal Work Plan, as needed, to reflect changes in conditions of the Project assets or evaluation methodology determined following an inspection of the Project assets by FDOT or its designee. Each subsequent Handback Renewal Work Plan prepared after the first plan shall be subject to the approval of FDOT. As well as including the results from the last Annual Handback Evaluation Report, the Handback Renewal Work Plan shall include the estimated cost and schedule of implementation of the remaining Handback Renewal Work.

The successive versions of the Handback Renewal Work Plan shall incorporate the results from the last annual inspection report and include the estimated cost and a schedule of the Renewal Work (from the then-current date until the end of the Term). The Handback Renewal Work Plan shall include all Project assets, structures, systems and equipment.

4. **HANDBACK REQUIREMENTS**

Project assets, structures, systems and equipment shall meet the minimum Handback Requirements and criteria set forth in Table 5.1 below. Concessionaire shall prepare a revised table based upon Concessionaire’s actual design configuration and Project assets as part of the Handback Renewal Work Plan.
Performance and Measurement Table Baseline

Table 5.1 – Handback Requirements
### TABLE 5.1 HANDBACK REQUIREMENTS

<table>
<thead>
<tr>
<th>Asset Number</th>
<th>Asset Description</th>
<th>Asset Sub System Description</th>
<th>Handback Tasks</th>
<th>Handback Criteria</th>
<th>Corrective Tasks</th>
</tr>
</thead>
</table>
| 5.1.1        | Asphalt Pavement  | Pavement section within the O&M Limits (Operating Period). | - The Hot Mix Asphalt (HMA) shall be open to traffic a maximum of 96 months and a minimum of 36 months prior to the end of the Term.  
- Pavement shall be milled and resurfaced with a pavement design which is the greater of the following:  
  1. Approved FDOT pavement design per FDOT Flexible Pavement Design Manual (minimum 20 yr design life) or its successor based on pavement cores, Asphalt Pavement Condition Report, a minimum 95% reliability percentage, and projected traffic loadings as provided by FDOT;  
  2. Category 1 Pavement and Category 2 Pavement: mill and resurface 2 3/4 | For pavements from 36 to 60 months old, no 0.1 mile section of any lane shall have rut depth greater than 0.25 inches. For pavements from 60 to 96 months old, no 0.1 mile section of any lane shall have a rut depth greater than 0.30 inches. Measurements for rutting shall be in accordance with the FDOT Flexible Pavement Conditions Survey Handbook or its successor.  
For pavements from 36 to 60 months old, no 0.1 mile section of any lane shall have a ride number less than 4.0. For pavements from 60 to 96 months old, no 0.1 mile section of any lane shall have a ride number less than 3.7. Measurements for ride shall be in accordance with the FDOT Flexible Pavement Conditions Survey Handbook or its successor. | Completion of all corrective work in areas identified as deficient in the Asphalt Pavement Condition Survey or its successor. |
<table>
<thead>
<tr>
<th>Asset Number</th>
<th>Asset Description</th>
<th>Asset Sub System Description</th>
<th>Handback Tasks</th>
<th>Handback Criteria</th>
<th>Corrective Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>inches minimum of existing HMA. Request FDOT to perform Asphalt Pavement Condition Survey no later than six (6) months before the end of the Term.</td>
<td>cannot exceed a maximum depth of 0.5 inches. For pavements from 36 to 60 months old, the Project must have a pavement condition crack rating of 9.0 or greater. For pavements from 60 to 96 months old, the Project must have a pavement condition crack rating of 8.0 or greater. Measurements for cracking shall be in accordance with the FDOT Flexible Pavement Conditions Survey Handbook or its successor. No raveling or bleeding. No potholes or slippage.</td>
<td></td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------------------------</td>
<td>---------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Rigid Pavement</td>
<td>Pavement section within the O&amp;M Limits (Operating Period).</td>
<td>Complete the rehabilitation or reconstruction of the pavement 36 months before the end of the Term in accordance with the Rigid Pavement Design guide or its successor to obtain a Rigid Distress Rating per lane mile of greater than 8.5 and Rigid Ride Rating per lane mile of greater than 7.5. Request FDOT conduct PCC pavement survey not later than twelve (12) months before the end of the Term.</td>
<td>All rigid pavement slabs shall be free of cracking patterns that divide the slab into three or more segments.</td>
<td>Perform rehabilitation of the pavement to obtain a Rigid Distress Rating of greater than 8.5 and completion of all corrective work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>5.1.3</td>
<td>Guardrail</td>
<td>Guardrail systems within the O&amp;M Limits (Operating Period).</td>
<td>Jointly inspect all guardrail systems in accordance with FDOT Procedure 850-050-003 or its successor.</td>
<td>Entire guardrail system must meet MRP Standards or its successor.</td>
<td>Repair all deficiencies.</td>
</tr>
<tr>
<td>5.1.4</td>
<td>Attenuators</td>
<td>Attenuator systems within the O&amp;M Limits (Operating Period).</td>
<td>Jointly inspect all attenuators in accordance with FDOT Procedure 850-055-003 or its successor.</td>
<td>System is free of obstructions and fully capable of functioning as designed and intended; system components are free of damage which impairs the ability of the</td>
<td>Repair all deficiencies identified in the final inspection and correction of all work not met in the Handback Criteria as shown in this</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>attenuator to serve its function and meet MRP Standards or its successor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.5</td>
<td>Signs</td>
<td>Single-post, multi-post &amp; overhead within the O&amp;M Limits (Operating Period).</td>
<td>Inspection of all single-post, multi-post and overhead sign panels in accordance with FDOT Procedure 850-055-025 or its successor and conduct reflectivity test.</td>
<td>Final inventory and condition assessment shall be conducted within six (6) months before the end of the Term.</td>
<td>Completion of all deficiencies identified in the final inspection and correction of all work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>5.1.6</td>
<td>Pavement Markings and Striping</td>
<td>Striping, markings, lettering, and symbols within the O&amp;M Limits.</td>
<td>Inspect all pavement markings/delineation for reflectivity no sooner than four (4) months prior to the end of the Term.</td>
<td>All pavement markings and striping systems must meet a 150 millicandela (MCD) value or higher.</td>
<td>Completion of all deficiencies identified in the final inspection and correction of all work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>5.1.7</td>
<td>Raised Pavement Markers</td>
<td>Raised pavement markers within the O&amp;M Limits.</td>
<td>Replace all raised pavement markers no sooner than three (3) months prior to the end of the Term.</td>
<td>N/A</td>
<td>Replace all raised pavement markers.</td>
</tr>
<tr>
<td>5.1.8</td>
<td>Drainage Systems</td>
<td>Drainage systems elements (side/cross drains, roadside ditches, inlets, and miscellaneous drainage structures).</td>
<td>Within three (3) months prior to the end of the Term: 1. Provide a copy of a final video inspection of all drainage pipes conducted within such period, and provide FDOT with a video recording schedule prior to conducting such inspection; and 2. Inspect other drainage systems elements (side/cross drains, roadside ditches, inlets, and miscellaneous drainage structures) in accordance with the MRP or its successor.</td>
<td>No blockages in slots or grates. Defective materials cleaned and repaired or replaced as necessary. Slot drains cleaned; no spalled or cracked concrete that has damage to structural integrity. No component of a stormwater system that will be maintained by FDOT at handback shall be controlled by a pump or any other mechanical means. Update storm drain system inventory.</td>
<td>Completion of all deficiencies identified in the final video inspection and correction of all work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>5.1.9</td>
<td>Lighting Systems</td>
<td>Includes roadway, pedestrian, facility, under-deck, sign, and Tolling Point lighting within the O&amp;M Limits (Operating Period).</td>
<td>Final inspection shall be conducted within one (1) month before the end of the Term.</td>
<td>100% of lights must be operational and all lighting systems must meet MRP Standards or its successor.</td>
<td>Replacement of any luminaries and ballasts that are not operational and perform corrective work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>------------------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>5.1.10</td>
<td>Overhead Sign Structures/ Toll Gantry System</td>
<td>Structural components within the O&amp;M Limits (Operating Period).</td>
<td>Perform the testing and inspection of all overhead sign structures and toll gantries in accordance with National Bridge Inspection Standards (NBI) and procedure 850-010-030 (Bridge and Other Structures Inspection and Reporting) or its successor.</td>
<td>Overhead sign structures and toll gantry systems under the responsibility of Concessionaire are found to have an overall condition rating of NBI 6 or greater.</td>
<td>Completion of all deficiencies identified in the final inspection and making any and all repairs necessary to improve the condition rating of the overhead sign structure(s) and toll gantry system(s) to meet handback criteria.</td>
</tr>
<tr>
<td>5.1.11</td>
<td>Bridges</td>
<td>Within the O&amp;M Limits (Operating Period).</td>
<td>Testing of each bridge is the responsibility of Concessionaire. Perform inspection in accordance with the National Bridge Inspection Standards and procedure 850-010-030 (Bridge and Other Structures Inspection and Reporting) or its successor.</td>
<td>Have an overall condition rating of NBI 7 or greater for superstructure and substructure and a NBI 6 or greater for the deck.</td>
<td>Completion of all deficiencies identified in the final inspection and making any and all repairs necessary to improve the condition rating of the Bridge(s).</td>
</tr>
<tr>
<td>5.1.12</td>
<td>Fencing</td>
<td>Within the O&amp;M Limits, all fencing along or within the Project used to preserve a property boundary, control</td>
<td>Final inspection of all fencing shall be conducted within three (3) months before the end of the Term and be in accordance with the</td>
<td>All fence systems must meet MRP Standards or its successor.</td>
<td>Repair all deficiencies identified in the final inspection and correction of all work not met in the Handback Criteria as</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pedestrian and animal access, and maximize the safety and security of project users.</td>
<td>MRP or its successor.</td>
<td></td>
<td>shown in this Table 5.1.</td>
</tr>
<tr>
<td>5.1.13</td>
<td>Paint System on Aesthetic Features</td>
<td>Steel Structures within the O&amp;M Limits (Operating Period).</td>
<td>Conduct and inspect the paint system on all steel structures including steel bridges, overhead sign structures, toll gantries and roadway lighting.</td>
<td>Paint systems on steel structures cannot exceed 15ΔE’s from the original color per the CIE L<em>a</em>b* 1976.</td>
<td>Concessionaire shall repaint deficient steel structure(s).</td>
</tr>
<tr>
<td>5.1.14</td>
<td>Paint System on Aesthetic Features</td>
<td>Concrete elements within the O&amp;M Limits (Operating Period).</td>
<td>Conduct an inspection of the paint system on all concrete elements including, MSE walls, barrier walls, retaining walls, and sound walls.</td>
<td>No more than 50% of the paint system on concrete elements exceed 15ΔE’s from the original color per the CIE L<em>a</em>b* 1976.</td>
<td>Concessionaire shall repaint the entire deficient concrete element section(s).</td>
</tr>
<tr>
<td>5.1.15</td>
<td>Landscaping</td>
<td>Landscape elements within the O&amp;M Limits (Operating Period).</td>
<td>Conduct an inspection of all the landscaping components</td>
<td>1. No single tree or palm is missing, damaged, or dead.</td>
<td>Completion of all deficiencies identified in the final inspection and correction of all Work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2. No more than 10% of any understory planting bed is missing, damaged or dead.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. No more than 10% of any understory planting bed that has declined to an unhealthy condition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. No more than 10% of any mulch bed area</td>
<td></td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>ITS</td>
<td></td>
<td>Concessionaire shall furnish and install new devices meeting the then current Standard Specifications in the final year of the program and configure, test, deploy and deliver for handback. FDOT will retain manufacturer warranties (minimum of 4-year warranty) on the hardware.</td>
<td>N/A</td>
<td>95% of all ITS devices are operational from a system perspective.</td>
</tr>
<tr>
<td>5.1.16</td>
<td>Infrastructure Documentation.</td>
<td>Includes all ITS devices.</td>
<td>Concessionaire shall provide documentation of the location of devices, power supply, and fiber in accordance with FDOT’s guidelines in a form that can be imported into FDOT’s software.</td>
<td>N/A</td>
<td>100% of the data shall match from a QA/QC process and will need to verify the accuracy by a random survey.</td>
</tr>
<tr>
<td></td>
<td>Security Handover.</td>
<td></td>
<td>Concessionaire shall provide a document with all passwords, physical connections, and firewall settings that will need to be modified to remove their access to the system.</td>
<td>N/A</td>
<td>Receipt of the document with 100% of the passwords and other required documentation.</td>
</tr>
<tr>
<td></td>
<td>Equipment Labeling.</td>
<td></td>
<td>Concessionaire shall label field equipment</td>
<td>N/A</td>
<td>100% of equipment</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>------------------------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>within the project limits in accordance with FDOT’s labeling standard.</td>
<td>labeled. 100% of the data shall match from a QA/QC process and will need to verify the accuracy by a random survey.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inventory.</td>
<td>Concessionaire shall provide a full inventory of devices within the project limits in FDOT’s inventory management software.</td>
<td>Handback Criteria</td>
<td>N/A</td>
<td>100% of devices are inventoried. 100% of the data shall match from a QA/QC process and will need to verify the accuracy by a random sample.</td>
</tr>
<tr>
<td></td>
<td>Network Integration.</td>
<td>Concessionaire shall integrate the remaining devices into FDOT’s network in accordance with the standard operating procedure at the time of handback.</td>
<td>Handback Criteria</td>
<td>N/A</td>
<td>100% of devices are integrated.</td>
</tr>
<tr>
<td></td>
<td>Training.</td>
<td>Concessionaire shall provide training on the maintenance and operation of any specialized equipment FDOT does not currently have deployed.</td>
<td>Handback Criteria</td>
<td>N/A</td>
<td>FDOT staff able to perform routine maintenance on device for 1 month without the assistance of the Concessionaire.</td>
</tr>
<tr>
<td></td>
<td>Software programs.</td>
<td>Concessionaire shall deliver the software programs update to the most recent version</td>
<td>Handback Criteria</td>
<td>N/A</td>
<td>Software is licensed and available for FDOT use.</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------</td>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>5.1.17</td>
<td>Toll Equipment Building</td>
<td>Toll Equipment Building within the O&amp;M Limits (Operating Period).</td>
<td>Jointly perform an inspection of the Toll Equipment Building including but not limited to roof/fascia boards, gutters, exterior walls, windows and ceiling, door, floors.</td>
<td>Roof/Fascia Board: 90% of the roofs and fascia board on each building are clean and painted, with no debris or mildew present, and functioning as originally intended. Roof system shall be 100% free of leaks.</td>
<td>Completion of all deficiencies identified in the final joint inspection and correction of all work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>available from the vendor.</td>
<td>Gutters: 90% of the gutter system for each run is free of debris, peeling paint and mildew, and functioning as originally intended.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exterior Walls, Windows and Ceilings: 95% of the exterior walls, windows and ceilings (brick, tile, glass, painted surfaces) are free of graffiti, clean, painted, and functioning as originally intended.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Doors: 90% of the doors are clean, painted and functioning as originally intended. No parts or hardware are missing; all components are free of rust and are functioning as originally intended.</td>
<td></td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jointly perform an inspection of the air conditioning system including testing the system and providing all previous inspection reports in accordance with manufacturer specifications.</td>
<td>Air conditioning equipment: system is functioning as per manufacturer specifications and as originally intended.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jointly perform an inspection of the generator system including testing the system and providing all previous inspection reports in accordance with manufacturer specifications.</td>
<td>Generators: system is functioning per manufacturer specifications and as originally intended.</td>
<td></td>
</tr>
<tr>
<td>5.1.18</td>
<td>Emergency Access Gates</td>
<td>Emergency Access Gates within the O&amp;M Limits (Operating Period)</td>
<td>Jointly perform an inspection of the Emergency Access Gate system including testing the system and providing all previous inspection reports in accordance with manufacturer specifications.</td>
<td>Emergency Access Gate system: system is functioning as per manufacture specifications and as originally intended.</td>
<td>Completion of all deficiencies identified in the final joint inspection and correction of all work not met in the Handback Criteria as shown in this Table 5.1.</td>
</tr>
<tr>
<td>5.1.19</td>
<td>Barrier Wall</td>
<td>barrier walls within the O&amp;M Limits (Operating Period)</td>
<td>Jointly perform an inspection of the barrier walls including opaque visual barriers.</td>
<td>No spalled or cracked concrete damage affecting wall structural integrity.</td>
<td>Repair all deficiencies identified in the final joint inspection and correction of all work not met in the</td>
</tr>
<tr>
<td>Asset Number</td>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Tasks</td>
<td>Handback Criteria</td>
<td>Corrective Tasks</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>------------------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Handback Criteria as shown in this Table 5.1.</td>
</tr>
</tbody>
</table>