Introduction

As part of Central Florida Expressway Authority’s (CFX) continuing quality development effort, these Design Guidelines have been developed to provide consultants, reviewers, and management with a single source of design preferences. The guidelines serve to modify or add to the requirements included in the Florida Department of Transportation (FDOT) Design Manual January 2022 (FDM).

Additional guidance is available in the following documents located on the CFX Website:

- CFX Signing and Marking Details (2022)
- CFX ITS Design Details (2022)
- CFX Property Acquisition & Disposition Manual (September 2017)
- Specifications (January 2022)
- CFX Lighting Details (2022)
- CFX PD&E Study Documentation Guidance (2021)

The table of contents lists the FDM chapters and sections modified within this document. If a section has been modified the user should refer to the specific section in the Design Guidelines shown in the table of contents.

The Design Guidelines will be updated on an annual basis, following the official revision to the FDM. Interim updates to the Design Guidelines will be issued as Addenda to the annual revision.

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1.0 - Development and Process

2022 Design Guidelines
1.0 DEVELOPMENT AND PROCESSES

102 - Glossary of Terms

102.1 - General

Replace the last sentence with the following:

When definition of terms conflict with other publications (AASHTO, MUTCD, FDM, etc.), use the definitions provided in this chapter.

Add the following section:

102.3 - CFX Terms

Bridge Concept Memorandum (BCM): A brief report of practical superstructure, substructure and foundation alternatives for a bridge widening or new bridge design. Plan, Elevation and Typical Section drawings should be included. For a new bridge, a comparison of superstructure and substructure alternatives in regard to constructability, cost, and transport should be included to determine the type of bridge if not dictated by the scope. CFX utilizes a BCM in lieu of the Bridge Development Report (BDR). Change all references in the FDM from Bridge Development Report to Bridge Concept Memorandum.

Central Florida Expressway Authority (CFX): An agency of the State that builds and maintains a regional transportation network that connects Brevard, Lake, Orange, Osceola and Seminole counties.

Conceptual Signing Plan (CSP): Proposed guide signs and structure locations required for a project based on preliminary geometry. Does not include standard signing (regulatory, warning, route markers, etc.) other than post interchange signing along the mainline. The CSP is intended to provide a general layout of sign panel messages, existing and proposed, and does not dictate the final disposition of existing structures where structure re-use is subject to structural analysis and final design of the sign panel layout.

Constructability Review: A supplemental and specialized review of construction plans and specifications, which seeks to identify construction requirements that are impractical, unnecessarily costly, or difficult to build. Constructability reviews consider such items as contractor access, site constraints and relationship to other project work.

Construction Guide Signing Plan (CGSP): Existing, proposed, and temporary guide signing required during each phase of construction.

Design Deviations: CFX follows the design criteria and standards contained in the FDM except where noted in the Design Guidelines. When it becomes necessary to deviate from the FDM, the minimum criteria established by AASHTO will be used. CFX utilizes the term Design Deviations in lieu of the Design Variations and Exceptions. Change all references in the FDM from Design Variations and
Exceptions to Design Deviations. See Section 122.

**Engineer of Record (EOR):** “A Florida professional engineer who is in responsible charge for the preparation, signing, dating, sealing and issuing of any engineering document(s) for any engineering service or creative work.” F.A.C. CHAPTER 61G15-30. Throughout the Design Guidelines, the terms EOR and Designer are synonymous.

**Executive Director:** Whenever the FDOT-incorporated documents refer to the FDOT (the “Department”) or any FDOT offices or personnel (e.g., “Engineer”, “Estimates Engineer”, “Project Engineer”, “Inspector”), such words shall be taken to mean CFX’s Executive Director, or representative specifically and duly authorized to act on behalf of the Executive Director.

**General Engineering Consultant (GEC):** A consulting firm that provides professional services in connection with general planning, design, engineering, management, and other services for projects related to the development, determination of feasibility, planning, design, permitting, right-of-way acquisition, bidding, construction, and maintenance of CFX’s existing and future system.

**Phase submittals:** Throughout the FDM, Phases I, II, III & IV are equivalent with 30%, 60%, 90%, and 100% plans.

**Preliminary Design Review/Report (PDR):** A document that provides a brief project overview and project specific design issues (e.g. auxiliary lanes, geometric changes, drainage design approach, basic weave analysis, maintenance of traffic, pier protection, typical sections, ramp realignment, etc.) including:

- A brief description of the design issue, including a summary of the research performed to identify the design issue
- A description of each design alternative considered (with exhibits)
- An analysis of alternatives including benefits and impacts of each alternative considered; and
- A design recommendation

**Renewal and Replacement (R&R):** A CFX program designed to preserve their infrastructure assets and maintain the serviceability of the system by meeting the following standards:

- Routine Maintenance: Maintain an overall Maintenance Rating Program (MRP) of at least 90.
- Resurfacing: Ensure a minimum of 85% of its lane miles in good condition (rated 7 or above)
- Bridge Repair and Replacement: Ensure 95% or more of all bridges are in good condition.

CFX utilizes the term R&R in lieu of the Resurfacing, Restoration and Rehabilitation (RRR). Change all references in the FDM from Resurfacing, Restoration and Rehabilitation to Renewal and Replacement.
Responsible Agency: When the FDM identifies an approval or review process to be performed by either a State or District Office, they are not obligated to provide the same service for the CFX system. Change all references in the FDM that requires State or District approval to the CFX Chief of Infrastructure.

103 - Standard Forms

Delete FDM 103.

104 - Public Involvement

104.1 - General

Insert the following sentence after the last paragraph.

CFX is supported in these efforts through a Public Information Services contract. Design and Construction firms shall coordinate all public involvement efforts through this contract.

105 - Aesthetic Design

Add the following section:

105.7 - CFX Aesthetic Guidelines

CFX has developed aesthetic treatments for multiple corridors which are applied consistently throughout the system to mitigate the visual impacts of the expressway and provide context sensitive design features characteristic of the neighborhoods and areas it traverses. The future development along the right-of-way as well as the ultimate build out the corridors will impact the existing aesthetic treatments along the corridor. To maintain the existing level of treatments and communicate the current standards, CFX has developed general guidelines to define the potential impacts and provide standards for development of aesthetic treatments for the following corridors:

- SR 408
- SR 414
- SR 417
- SR 429
- SR 516
- SR 528
- SR 538
- Wekiva Parkway
In addition to the general Aesthetic Guidelines, SR 408 has specific aesthetic requirements. Along SR 408 between the interchanges of Kirkman Road and Chickasaw Trail, single post and multi-post sign assemblies (all posts, post attachment hardware, and back of sign panels) shall be painted black. The black paint shall be semi-gloss “thermoset powder paint finish”, Federal color #27038. The back of panel decal containing owner and fabrication information, shall be applied after the painting process is complete.

106 - Exempt Public Documents

106.3 - Distribution of Exempt Documents

Delete all paragraphs and replace with:

The process for the distribution of documents can be found at CFX’s website.

110 - Initial Engineering Design Process

110.2 - Initial Engineering Design

Delete activity (13) and add the following:

(13) Identify seasonal high-water elevations and determine base clearances.

(14) Identify applicable project drainage criteria and constraints. Determine impacts to project design and schedule.

110.5 - Support Services

In the second paragraph, replace (9) with:

(9) Intelligent Transportation Systems GIS Documentation

In the third paragraph, add the following functional areas:

(22) Toll Operations

(23) Environmental Permitting

(24) ITS

(25) Lighting/ Electrical

(26) Concepts

(27) Architecture
Material (pavement)

110.5.7 - Traffic Monitoring Sites

Delete the last sentence of the first paragraph and replace with:

Inquiries about monitoring sites should be addressed to the ITS Department at CFX.

110.6 - Preliminary Geometry

Delete item 8 from the last set of activities.

111 - Final Engineering Design Process

111.2 - Final Engineering Design

Add the following item to the list of major design activities:

(16) Toll facilities design

111.2.1 - Work Program Administration (WPA) System

Delete FDM 111.2.1.

111.3 - Contract Plans and BIM Files

Add the following item to the list of major component sets:

(9) Toll Facilities

111.4 - Standard Specifications and Special Provisions

Delete FDM 111.4.

111.5 - Standard Specifications and Special Provisions

Delete FDM 111.5 and replace with the following:

As the engineering plans are prepared, the quantities are calculated, tabulated, and summarized by Pay Item (of work) as stipulated by the Standard Specifications and the Basis of Estimates Manual. The summary of pay items is updated as quantities are determined and summarized.
111.6 - PS&E Package Submittal

*Delete FDM 111.6.*

111.7 - Project Documentation

*Delete all paragraphs and replace with:*

The submittal of project documentation is required for all projects. This section describes the required process for delivery of project documentation, and a list of documents that are to be provided.

Create a project documentation folder structure as shown in *APPENDIX A – CFX File Directory Structure.*

**General Requirements:**

All PDF files shall be compressed prior to submittal.

**111.7.1 - File Naming Convention**

*Delete all paragraphs and replace with:*

Although the filename is limited to 240 characters, the number of characters used should not exceed 48. Filename is not to contain spaces or special characters (!@#$%^&*+).

Filenames are not case sensitive; however, the use of uppercase letters to begin each word in the filename is encouraged.

The filename should be easily searchable within the folder. See APPENDIX B – CFX Document Naming for commonly used file names.

**111.7.2 - Documents**

*Delete FDM 111.7.2.*

112 - Update Engineering Design Process

*Delete FDM 112.*
113 - Right of Way Requirements

Add the following section:

113.4 - CFX Property Acquisition, Disposition, & Permitting Procedures Manual

The Central Florida Expressway Authority Property Acquisition, Disposition, and Permitting Procedures Manual (“Manual”) is intended to provide recommended procedures to CFX employees and consultants for:

1. Obtaining necessary rights of way, easements and other property rights for roadway improvement projects and other projects for which CFX may be authorized to acquire such property rights
2. Disposing of property rights deemed available for disposal by CFX.

The Manual is intended for use in all projects for which CFX is the acquiring agency, unless the project is required by law or contract to be governed by Florida Department of Transportation procedures or other procedures.

CFX Property Acquisition & Disposition Manual can be found on the CFX website.

114 - Resurfacing, Restoration and Rehabilitation (RRR)

Revise title of Section to Renewal & Replacement (R&R), replace all references of RRR to R&R, and replace the section with the following:

114.1 - General

Add the following paragraph:

Unless otherwise noted in this Chapter or unless otherwise approved by CFX or their GEC, projects not specifically designated as “R&R” are required to apply new construction criteria for all design elements.

114.1.1 - Proposed Improvements (Type of Work)

Delete the first sentence and replace with:

The following items must be included in each R&R project unless written authorization to deviate from this policy is obtained from CFX.

Add the following item to the list:

(8) Improvements to facilitate future maintenance operations.
114.3.1.1 - Office Reviews

After the first sentence in the first paragraph add the following:

In review of historical documents, the following information shall be obtained and evaluated:

- Determine the FDOT or AASHTO criteria used for the original design,
- Determine if the "old" criteria is current, and
- Document deficiencies and provide recommendation to correct.
- "Old" criteria will not be given an automatic approval to remain in place.

114.3.1.2 - Field Reviews

Replace Note (1) (g) and (j) with the following:

(g) Shoulder type, width, and condition

(j) Drainage (including erosion, siltation problems, or deficient surface conveyance systems)

114.3.1.3 - Identified Improvements

Add the following possible improvements:

(20) Add through lane capacity (requires use of new construction criteria).

(21) Correct shoulder gutter or inlet top deficiencies.

(22) Increase lengths of parallel acceleration/deceleration lanes at ramp terminals to meet current standards or to increase storage.

114.3.1.4 - Design Exceptions and Design Variations

Revise the title to Design Criteria Deviations (Modifications) and replace with the following:

R&R projects with existing features not meeting minimum criteria values require processing a Design Deviation for the feature to remain. Refer to Section 122 for the Design Deviation procedures.

114.3.3 - Drainage

Delete the second sentence and replace with:
Field reviews should inspect and evaluate the existing drainage and coordinate with GEC drainage staff.

**114.3.7 – Signals, Signing, and Pavement Markings**

*Add the following paragraph:*

The geometry (baseline, stationing, curve data, etc.) shown on the Signing and Pavement Marking Plans for milling and resurfacing projects shall match the original roadway construction plans and/or any revisions as a result of major roadway improvements, i.e. widening and adding/removing ramps, when survey is not scoped.

*Add the following section:*

**114.3.11 – Shoulder Pavement Resurfacing**

The EOR shall prepare a Technical Design Memorandum recommending needing to mill and resurface (or not to mill and resurface) existing shoulders on resurfacing projects. The Tech Memo shall evaluate the age, visual condition including noticeable deficiencies and geotechnical core evaluations. EOR shall consider construction cost, time savings and construction impacts (such as being adjacent to an aesthetic feature or sound wall). The Tech Memo, with a recommendation, shall be presented to the CFX Design and construction for inclusion or exclusion into the design.

**117 – Monitor Existing Structures**

**117.2 – Inspection and Settlement Monitoring**

*Delete the second paragraph.*

**120 - Design Submittals**

**120.1 - General**

*Delete the first paragraph and replace with:*

The design process will require various submittals to transfer technical information and decisions between the Engineer of Record (EOR) and GEC personnel. The GEC Project Manager is responsible for the adequacy of the submittals or requests and for the coordination of reviews between the GEC and the EOR. To the extent practical, the contract scope of work should list the information to be furnished by CFX functional areas and submittals (number and type) required of the EOR. *FDM Figure 120.1.1*, is a partial list of functional areas with typical submittals and requests.

**120.2 - Design Documentation Submittals**

*Add the following paragraph:*
Draft, pre-final, and final versions of all documents requiring CFX approval or concurrence must be submitted to the GEC Project Manager for review. Upon completion of the review process, the GEC Project Manager will proceed with obtaining the necessary approvals or concurrence.

120.2.2.2 - 18 Kip Equivalent Single Axle Loads (ESAL)

\textit{Delete the first paragraph and replace with:}

The GEC will provide the AADT forecasts for the year a project opens to traffic and for the design year. In addition to the AADT, together with percent trucks (24-hour period) and other factors, the GEC will provide to the EOR, the pavement loading (18kip ESAL) information to be used for the pavement design.

120.2.3 - Typical Section Package

\textit{Delete FDM 120.2.3 and replace with the following:}

Typical sections are prepared during the PD&E phase, as well as the PDR phase of design.

120.2.3.1 - Approval Process

\textit{Delete FDM 120.2.3.1 and replace with the following:}

When crossroads or other facilities are maintained by another agency, the EOR must provide correspondence from that agency confirming their concurrence. The design documentation shall include a copy of the local agency’s standard to document design conformance. The maintaining agency will not be required to upgrade their typical sections to meet higher FDOT or CFX criteria.

In addition, typical sections of ramp and mainline bridges over the initial and ultimate local roadway shall be included to confirm clear zones, future lanes and the proposed bridge length. All under bridge typical sections are to be included in the roadway plans.

120.2.3.2 – Cover Sheet

\textit{Delete FDM 120.2.3.2.}

120.2.3.3 - Typical Section Sheet

\textit{Delete the first sentence of the first paragraph.}
\textit{Delete subsection Project Controls.}
\textit{Delete note 3 in the Typical Section subsection.}

\textit{Add the following paragraph:}

The projects should facilitate the ultimate widening by designing for the future lane offsets and cross slopes where possible. A separate future typical section must be provided. Future lanes on existing or proposed crossroad typical sections must be dashed and labeled "Future, By Others".
120.2.4 - Preliminary Drainage Design

After the first paragraph delete Items 2, 3 & 5 and replace with:

(2) Determination of design high water elevations for pond locations.

(3) Documentation of preliminary drainage coordination with permitting agencies facilitated by the GEC staff.

(5) Evaluation and documentation of hydroplaning risk associated with the proposed roadway typical and critical sections.

120.2.5 - Preliminary Geometry and Grades

Add the following section:

120.2.5.1 - Preliminary Line and Grade Submittal

Submit preliminary (15%) alignment and grade sketches depicting the proposed geometric design. The submittal should include the following in preliminary status:

- Typical Section
- Roadway – Plan & Profile (Roll Plots)
- Interchange Layout
- Pond Locations

120.2.6 - Preliminary Traffic Control Plan

Add the following:

(5) A preliminary traffic control plan on roll plots shall be submitted at the (30%) phase for review. If required, a comment resolution meeting with the GEC and CFX staff must be scheduled following the review.

120.2.7 - Pavement Selection and Design

Revise the title to Pavement Design and replace with the following:

The pavement selection and design shall be completed as early in the process as possible. Pavement designs must meet the following minimum standards. Variations from these standards require concurrence from the GEC prior to the final pavement design being submitted to the GEC Project Manager.
Pavement Type Selection Reports are not required.

The GEC:

- Will provide the ESAL’s and traffic counts to the EOR
- Upon request will provide Rut, Ride and Crack reports to the EOR
- As directed by CFX, will provide the pavement layering for new construction to the EOR for their review and concurrence.
- As directed by CFX, will provide the pavement requirements to the EOR for toll plazas.

Design:

- All pavement designs on new construction must be calculated using a minimum reliability (%R) of 95%.
- All pavement designs on rehabilitation projects must be calculated using a minimum reliability (%R) of 97%.
- All pavement designs, with the exception of temporary pavement, must be calculated for a 20-year design life. The minimum design life and traffic (ESALd) for temporary pavements must be no less than the construction period for the project.
- Table 5.5 of the Flexible Pavement Design Manual contains the required minimum thickness for new construction and resurfacing projects.
- All travel lanes pavement must include PG 76-22 in the top structural lift and friction course regardless of traffic level.
- Use only Dark Granite for FC (Friction Course) Aggregate
- Limerock base LBR 100 and Type B 12.5 Black Base are the only two base materials to be used on CFX projects. Local roads associated with the projects will follow local design criteria standards.
- If new pavement is proposed to be joined to existing pavement such as widening auxiliary lanes, ramps, and turn lanes, a minimum 6-inch wide shelf must be created at the longitudinal joint by milling the existing pavement structure. The minimum depth of the milling equals the thickness of the final lift of structural plus the FC-5 thickness of the travel lanes.
- A detail of the longitudinal joint must be shown in the plans. The traffic control plan must accommodate the space necessary for this work in the phasing sequence plan notes and/or a table of dimensions must describe the limits of the milled shelf width and depth.
- Show proposed pavement layer details for milling and resurfacing, widening and
shoulders in the plan Typical Section details.

General Conditions:

- The references in the guidelines represent the minimum requirements, which must be met for flexible pavement design for new construction, pavement rehabilitation, and milling/resurfacing projects. It is the EOR’s task and responsibility to evaluate and apply the sound application of acceptable engineering criteria and standards.

- The reference documentation and preferences do not apply or cover all possible situations, when this occurs the EOR shall bring these conditions to the GEC for discussion and resolution.

- For specific projects prepare and submit a draft coring plan to the GEC for review and comment. This submittal and approval by the GEC shall take place before any physical coring takes place.

- Submit to the GEC for review the geotechnical coring report and recommendations.

- The 30% submittal package shall include a draft of the pavement design for review and comment

- Provide the final signed and sealed pavement design and report on or before the 60% plans submittal

- Upon acceptance by the GEC, submit all the signed and sealed pavement design reports to the GEC.

Add the following section:

120.2.7.1 - Pavement Selection at Toll Plazas and Intersections

Longitudinal joints through the toll loop pavement area must be placed along the center of the lane line as this approach is more beneficial with the toll equipment and placement of the loops. However, if there are challenges with the construction on the placement of the longitudinal joints at specific locations, CFX will evaluate and provide recommendations.
FC-5 and FC-12.5 Limits at Toll Plazas and Intersections

<table>
<thead>
<tr>
<th></th>
<th>Cash Plaza</th>
<th>No Plaza</th>
<th>ORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-Ramps</td>
<td>FC-12.5 300' in advance of the Toll Plaza concrete and FC 12.5 from the Toll Plaza to the local road</td>
<td>FC-12.5 500' from the local road intersection</td>
<td>FC-5 only through toll lane and FC-12.5 500' from the local road intersection</td>
</tr>
<tr>
<td>On-Ramps</td>
<td>FC-12.5 from the local road intersection to the Toll Plaza concrete pavement and 300' beyond the Toll Plaza concrete pavement</td>
<td>FC-12.5 500' from the local road intersection</td>
<td>FC-5 only through toll lane and FC-12.5 500' from the local road intersection</td>
</tr>
<tr>
<td>Mainline Cash Plazas</td>
<td>Cash Plaza</td>
<td>FC-12.5 shall be placed 300' on either side of the Toll Plaza concrete pavement.</td>
<td>ORT Lanes</td>
</tr>
</tbody>
</table>

Exceptions:

1. Loop Ramp friction course limits shall be determined on a case by case basis and approved by the GEC and CFX.
2. No pavement messages shall be applied on the interface between the FC-5 and FC-12.5 friction course. The FC-12.5 and FC-5 limits shall be adjusted as necessary to support the placement of required pavement messages.

Note: The terms “in advance” and “beyond” refer to the respective direction of travel.

Add the following section:

120.2.9 - Roadway Design Documentation

Roadway design documentation must be provided at phase submittals. The design documentation must include, but is not limited to, the following information as applicable:

(1) Section 1 - Summary

   (a) Narrative - summary of existing and proposed design

   (b) Location Map

(2) Section 2 - Design Documentation
(a) Roadway Design Criteria
(b) Horizontal and Vertical Alignments
(c) Design Calculations and Exhibits
   • Superelevation
   • Horizontal and Vertical Stopping Sight Distance
   • Vertical Clearance
   • Barrier – Length of Need
   • AutoTURN Analysis
   • Intersection Sight Distance Analysis
   • Cross Slope and Superelevation Analysis
(d) MOT
   • Lane Closure Analysis (Provided by GEC)
   • Pacing Analysis
   • Detour Analysis
   • Impacts to Toll Facilities
(e) Pavement Design Report (Final Signed and Sealed) (Include Pavement Design Calculations and Resilient Modulus Recommendations)
(f) Documented Design Deviations (Exclude Appendices)
(g) Meeting Minutes/Project Correspondence
(h) Comments and Responses

The design documentation must include all design notes, data, and calculations to document the design conclusions reached during the development of the contract plans.

120.4 – Plans Phase Reviews

Add the following paragraphs:

Verification at the 60% level that a field review of the proposed sign locations has occurred and
appropriate sign distances have been provided is required.

Verification whether governing agencies (other than FDOT) for roadways contained in the plans, which are not within CFX's jurisdiction, have established their own signing and pavement marking criteria. If the governing agency has its own criteria, a copy shall be provided to CFX with the 60% plans submittal.

121 - Bridge Project Development

121.1- General

Delete the first paragraph.

Delete the third paragraph and replace with:

Structural designs for repair or rehabilitation of bridges are generally developed under the direction of the GEC or CFX and may not include all the submittal types discussed in this chapter.

121.2 - Organization

Delete FDM 121.2.

121.5 - Responsibility

Delete FDM 121.5.

121.7- Bridge Project Development

Insert the following as the first paragraph:


Delete the second paragraph and replace with:

Bridge project development normally includes five phases of development:

- The first phase of development, bridge analysis, occurs during the Project Development and Environment (PD&E) process.

- After location design approval is granted, the second phase, Bridge Concept Memorandum is initiated. After approval of the BCM, the production plans phases of work will begin.

- The third phase is the 30% Structures Plans.
A 60% Structures Plans phase is required for Category 2 Structures between the third and fourth phases.

- The fourth phase includes the 90% Structures Plans and specifications.
- The fifth phase includes the 100% Structures Plans and specifications. For efficiency, one engineering firm (one design team) should be responsible for the BCM and the final plans and specifications.

121.8.1 - General
Replace “The District Structures Design Engineer” with “CFX and the GEC” and “BDR” with “BCM”.

121.9 - Bridge Concept Memorandum / 30% Structures Plans
Delete the fifth sentence of the first paragraph.

121.9.3 - Aesthetics
Insert the following after the last paragraph:

CFX has developed aesthetic treatments for multiple corridors, see Section 105.7 for additional guidance.

121.9.5 - Historical Significance Considerations
Delete FDM 121.9.5.

121.9.9 - 30% Structure Plans
In the first paragraph, second sentence, replace Bridge Development Report with 60% Roadway Design Plans.

121.10 - Bridge Concept Memorandum Submittal Checklist
Replace the section with the following paragraphs:

Each BCM is project specific and should be developed for its individual characteristics, however the referenced BCM is to serve as a guideline/example for all that is expected for a quality report.

The BCM shall contain the following for each bridge within the project limits:

1. A description of the existing bridge characteristics (e.g. length, width, deck thickness, superstructure beam type, foundation, skew, cross-slope, lane configuration, etc.), as applicable.
(2) A description of the proposed bridge design characteristics (e.g. length, width, deck thickness, superstructure type, skew, cross-slope, lane configuration, etc.), including specific components such as beam type and spacing, wall type, and foundation type.

(3) For a new bridge, a comparison of superstructure, substructure and foundation types (advantages and disadvantages). Configuration alternatives in regard to constructability, cost, and transport should be included to determine the type of bridge if not dictated by the scope.

(4) Proposed bridge typical sections.

(5) Proposed bridge profiles, including documenting horizontal and vertical clearances, span lengths, and facilities underneath the bridge, including water bodies, railroads, and roadway typical sections.

(6) Existing inspection report and existing load rating analysis, if applicable.

(7) Railroad requirements, if applicable.

122 - Design Exceptions and Design Variations

*Revise title of Section to Procedure for Design Deviations, delete FDM 122.1 through 122.4 and replace with the following:*

122.1 - General

CFX follows the design criteria and standards contained in the FDM except where noted in the Design Guidelines. When it becomes necessary to deviate from the FDM for the elements listed in Sections 122.2.1 and 122.2.2, the minimum criteria established by AASHTO will be used. Documentation for all deviations shall be identified within the Preliminary Design Report (PDR) submitted to the GEC for review and approval. The PDR shall call out to the GEC and reviewers any criteria deviation from the FDM.

As the design progresses, the designer will continue to provide early notification and documentation to the GEC on any design deviations that were not included in the PDR and do not meet FDM requirements.

There are two approval procedures used by CFX and shall be used by designers.

122.2 - Procedures

Procedure One:

If the design criteria does not meet FDM criteria but meets AASHTO, the designer shall:

- Notify the GEC and document the notification and condition within the PDR and design
The designer shall provide a complete narrative to the GEC PM, with possible solutions and recommendations that have been evaluated. Along with the AASHTO criteria that can be used or applied.

The designer shall provide any additional information that the GEC requests, and upon review and with a full understanding of the requested FDM deviation, the GEC with CFX concurrence may approve the deviation.

The designer shall document this approval and incorporate the approval at the next progress meeting. The meeting minutes shall provide sufficient background information, connecting the deviation to previous documentation.

Procedure Two:

If the design criteria does not meet FDM and/or AASHTO criteria, the designer shall:

- Notify the GEC in writing and document the notification and condition.
- Provide sufficient detail, explanations, possible solutions and recommendations to the GEC PM to justify approval.
- Evaluate the 10 Controlling Design Elements that are safety related. This justification may be used to defend design decisions made by the designer and approved by the GEC and CFX.
- Provide any additional information that the GEC requests, and upon review and with a full understanding of the requested FDM deviation, the GEC with CFX concurrence may approve the deviation.

122.3 – Justification for Approval

All deviations from criteria and standards must be uniquely identified, located, and justified; no blanket approvals are given. A strong case can be made if the following can be proven:

1. The required criteria are not applicable to the site-specific conditions.
2. The project can be as safe by not following the criteria and the level of safety will not be reduced due to criteria-based deficiencies.
3. The environmental or community needs prohibit meeting criteria.

Most often, a case is made by showing the required criteria are impractical and the proposed design wisely balances all design impacts. The impacts required for initial review, evaluation, and recommendation are:
(1) Safety and Operational performance
(2) Level of Service
(3) Right of Way impacts
(4) Community impacts
(5) Environmental impacts
(6) Costs
(7) Usability by all modes of transportation
(8) Long term and cumulative effects on adjacent sections of roadway

A case should not be made based solely on the basis that:

(1) The CFX can save money.
(2) The CFX can save time.
(3) The proposed design is similar to previous designs.

The designer will provide all supporting documentation as requested by the GEC during the review and approval process and is cautioned not to proceed with the design without the approval of the design criteria deviation.

Upon review of all supporting documentation the GEC and the CFX may approve the requested design deviation from the FDM/AASHTO criteria.

123 - Engineering Design Estimate Process

123.3 – Designer Interface for AASHTOWare Project Preconstruction

Delete FDM 123.3.

123.4.1 – Summary of Quantities

Delete the first sentence of the first paragraph, and replace with the following:

All quantities for pay items are tabulated and totaled on Summary of Quantity sheets in the plans. The summary boxes should be organized in pay item sequence for the project.
123.4.2 – Breakdown of Quantities

Delete FDM 123.4.2.

126 - Lane Elimination Projects

Delete FDM 126.

128 - Federal-Aid Project Certification

Delete FDM 128.

130 - Signing and Sealing Documents

130.2.1 - Digital Signing and Sealing

Add the following paragraph:

Digital certificates used to sign documents submitted to CFX must be acquired from one of the FDOT approved digital Certificate Authorities. The current FDOT requirement is that the digital certificate meets a National Institute of Standards and Technology (NIST) assurance level of three (3) or higher (NIST Special Publication (SP) 800-63-2 Electronic Authentication Guideline). However, NIST SP 800-63-2 was withdrawn and superseded in June 2017 (updated 12/1/2017) by SP 800-63-3 Digital Identity Guidelines (includes parts 800-63A, 800-63B and 800-63C). As part of SP 800-63-3, the definitions of assurance levels were revised from a scale of one to four to a scale of one to three. Based on NIST SP 800-63A, the required assurance level shall now be a two (2) or higher. (SP 800-63A assurance levels two and three replaced SP 800-63-2 assurance levels three and four, respectively). The list of approved Certificate Authorities can be found on the FDOT website.

130.2.1.1 - Single Digital Signature

Delete FDM 130.2.1.1 and replace with the following:

A Signature Sheet is required for all component plans that will be signed and sealed by one or more professionals. See FDM 303 for Signature Sheet requirements.

130.2.1.2 - Multiple Digital Signatures

Delete FDM 130.2.1.2 and replace with the following:

A Signature Sheet is required for all component plans that will be signed and sealed by one or more professionals. See FDM 303 for Signature Sheet requirements.
130.2.2 - Manual Signing and Sealing

Delete FDM 130.2.2.

131 - Plans Processing

Delete FDM 131
Revise the title to Plans, Processing, and Revisions and replace with the following:

131.1 - General

This section describes the critical activities required to process the contract plans, specifications and estimate for letting.

131.2 - Plans Processing

All CFX construction contracts are let utilizing CFX’s Procurement Resources, located on the CFX website.

131.2.1 - Bid Plans (Prior to Advertisement for Construction)

a. Submit bid plans with all digital signatures applied to the signature sheet(s) to CFX.

b. The bid plans will be reviewed by CFX and CFX’s GEC.

131.2.2 - Addendums (During Advertisement for Construction)

a. Plan changes during advertisement are to be issued as addendums.

   i. Addendum triangles, clouds, dates, and descriptions to describe the changes should be added to each revised sheet.

b. Submit addendums in clean pdf format (not signed and sealed) to CFX.

131.2.3 - Approved for Construction (AFC) Plans (After Award)

a. Do NOT reprint/pdf the entire plan set to create the AFC Plan set

b. The AFC plan set shall be comprised of the original pdf sheets generated for and included in the digitally signed and sealed Bid Plans with the following exceptions:

   i. Replace the key sheet

      1. Remove all addendum triangles, clouds, dates and descriptions.

      2. Update the plans submittal label from “Bid Plans” to “Approved for
Construction Plans" and the month and calendar year, i.e.: “October 2018”, to the month and calendar year that the AFC Plans are to be submitted.

ii. Replace sheets modified per addendum
   1. Remove all addendum triangles, clouds, dates and descriptions.

iii. Replace the signature sheet if any sheets were added or deleted as part of the addendums.

iv. Submit the Approved for Construction Plans with all digital signatures applied to the signature sheet(s) to CFX.
   1. The AFC Plans will be reviewed by CFX and the CFX GEC to verify that the AFC Plans adhere to the process outlined above.

131.2.4- Revisions

a. Prepare plans revisions in accordance with FDM Section 151.1 Revisions after Award
b. Prepare revision signature sheet in accordance with FDM Section 303 Signature Sheet, subsection 303.8 Revisions.
c. Sign and seal revisions in accordance with FDM Section 130.5 Signing and Sealing Revisions.
d. Submit plans revisions with all digital signatures applied to the signature sheet(s) to CFX and the Construction Engineering and Inspection (CEI) consultant.

131.2.5 - As-Built Plans

The as-built plans will be prepared and then signed and sealed by the CEI.

131.2.6 - Record Drawings

a. The record drawings will NOT be signed and sealed.

b. See CFX’s Record Drawings Guidelines dated December 2017, Revised April 2018 for CFX’s record drawings process. (See Appendix C)

132 - PS&E Submittal Package Revisions

*Delete FDM 132.*
140 - Lump Sum Projects

*Delete FDM 140.*

151 – Plan Revisions

151.2 – Final “As-Built” Plans Process

*Delete FDM 151.2.*

152 - Shop Drawing Submittals

152.1 - Introduction

*Add the following after the third paragraph:*

The CEI and or the EOR that attend the preconstruction meeting will describe and detail the Shop Drawing Process. The electronic submittal of shop drawings to the CEI and the procedures and routing will be included in the presentation. The presentation will also address the requirement for submission of CFX shop drawings, tracking of the submittal, and outlining the review and approval process.

*Delete the third note of the fourth paragraph and replace with:*

**Engineer of Record (EOR):** Consultant shall review standard regulatory and warning signs with respect to the elements specific to CFX’s design requirements, i.e. sheeting, color, size, thickness, etc. The Consultant shall review the fabricator’s details for attachment of single post mounted panels to the horizontal brackets. The use of mechanical fasteners is limited to each end of the bracket. See VHB Special Provision. Holes shall not be “punched” at standard increments through the full width of the sign. The Consultant shall review panel and hardware fabrications for single and multi-post assemblies to ensure compliance with aesthetic criteria when applicable. The Consultant shall ensure the structure manufacturer has included the capability of future cantilever arm length adjustment(s) when required in design and that the structure manufacturer has provided for mounting mainline toll plaza approaching signs, i.e. single line DMS/static combination and adjacent static panel, on the same vertical plane.

*Delete the tenth note of the fourth paragraph and replace with:*

**CFX Shop Drawing Review:** The GEC assigned by CFX will be responsible for performing CFX shop drawing reviews for sign panels and structures, aesthetics for certain bridge and noise wall elements, and proprietary lighting items when specified as a CFX preference. The GEC will be responsible for documenting, tracking, and maintaining tracking records for the specific shop drawings as previously noted, disposition and distribution of Shop Drawings to other disciplines within the GEC organization for review as well as distribution back to the EOR.

*Delete the eleventh note of the fourth paragraph and replace with:*
**Final Review Office:** The CEI is responsible for performing the final review and final distribution of shop drawings which have been reviewed.

*Replace within whole section:*

It shall be understood that any references stated within the *FDM 152*, to the Department or the FDOT Shop Drawing Review Office shall be replaced with CFX or the CFX Shop Drawing Review Office.

**152.2 - Shop Drawing Submittals Not Required**

*Delete this section and replace with:*

Material certifications, welding procedures, paint procedures and concrete mix designs are typically submitted by the Contractor to the Engineer (CEI) who forwards the certifications to the EOR. These items do not need to be submitted for shop drawing review and approval. For non-standard items, the Engineer (CEI) will typically request approval by the EOR regarding applicability. Material certification for items on the Approved Product List (APL) is typically submitted by the Contractor to the Engineer (CEI).

**152.3 - Contractor Information Required**

*Replace first paragraph with the following:*

A shop drawing submittal which omits any of the minimum requirements listed in FDOT Standard Specifications, Sections 5-1.4.4.1, 5-1.4.4.2 and 5-1.4.6.1 must be returned for resubmittal.

**152.4 - Submittals Requiring a Specialty Engineer or Contractor’s Engineer of Record**

*In the first paragraph replace the word Department with CEI.*

**152.5 - Transmittal of Submittals**

*In the first paragraph delete the last sentence and add the following information:*

One copy of each sign panel shop drawing submittal shall be transmitted to CFX’s GEC for a concurrent oversight review. Comments will be provided by CFX’s GEC to the EOR for incorporation into the shop drawing (unless the EOR notifies CFX’s GEC otherwise). The EOR shall not return the shop drawing submittal to the CEI prior to receiving and incorporating CFX’s GEC concurrent review comments.

*Delete the first sentence in the second paragraph.*
152.5.1 - Requirements for Department EOR

Delete FDM 152.5.1.

152.5.2 - Requirements for Consultant EOR (Full Services)

Delete FDM 152.5.2.

152.5.3 - Requirements for Consultant EOR (Design Services Only)

Delete FDM 152.5.3.

152.5.4 - Requirements for Architectural or Building Structures

Delete FDM 152.5.4.

152.5.7 - Miscellaneous Requirements and Assistance

Replace this section with the following:

For items not specified above or for which questions may arise as to shop drawing requirements, the Contractor should be advised to contact the CEI or the appropriate CFX Shop Drawing Review Office personnel. Regardless of submittal type, a letter of transmittal must always accompany a shop drawing submittal.

152.6 - Disposition of Submittals

Replace title with the following:

152.6 - Disposition of Shop Drawing Submittals

After the first paragraph add the following:

The GEC has the responsibility to review and comment on specific shop drawings as specified in Section 152.1 or other shop drawings as directed and assigned by CFX. When assigned the GEC will proceed as follows:

- Upon receipt of the shop drawing(s) from the EOR, review and mark the shop drawings with comments, questions or clarifications.

- Call the EOR for discussions and electronically transmit a copy of the marked-up shop drawing(s) to the EOR. The EOR will review and determine the final resolution.

- The GEC is not responsible to stamp the shop drawing for approval, disapproval, resubmit or not approved. The GEC can make a recommendation to the EOR however
these actions are the responsibility of the EOR. The GEC may mark and date their copy of the shop drawing as “dated and reviewed”.

• For those cases where the GEC requests a resubmittal or recommends not approving the shop drawing, the EOR shall discuss and resolve all issues brought forth by the GEC prior to proceeding and shall not approve or approve as noted any shop drawing without the full concurrence of the GEC.

• The GEC shall maintain a historical record of all activity, from receipt to return, devoted to an individual submittal for all shop drawings that the GEC is directly assigned.

Delete the last paragraph.

152.7 - Distribution of Submittals

Delete the first three paragraphs and replace with:

*CFX Figure 152-1* illustrates the submittal and distributional flow of shop drawing for reviews performed by the EORs and the GEC.

152.9 - Submittal Activity Record (Logbook)

Delete bullet (1) and replace with:

(1) CFX Project Number (if assigned)
152.11 - Shop Drawing Flow Diagrams

Replace Figures 152.11.1 through 152.11.4 with:

CFX Figure 152-1 illustrates the submittal and distributional flow of shop drawings

- Contractor
  Submits Shop Drawing Item List to Engineer (CEI).

- Engineer (CEI)
  Submits Shop Drawing Item List to EOR for review/verification of technical components required. Submits items to GEC for concurrent review as needed.

- Engineer of Record (EOR)
  Verifies list and coordinates any deficiencies with the CEI and/or Contractor. Reviews GEC comments and makes final approval. Returns to CEI.

- GEC
  Reviews concurrently and provides comments to ECR.

- CEI
  Maintains a record of all shop drawings.

- GEC
  Maintains a historical record of all activity for each submittal that GEC is responsible for.
2.0 DESIGN CRITERIA

200 – Context Based Design

200.1 - General

Add the following sentence at the end of paragraph two:

CFX roadways use Interstate criteria unless approved by the CFX Chief of Infrastructure.

201 - Design Controls

201.5.1 - Design Speed Selection

Delete the eighth paragraph.

Table 201.5.2 Ramp Design Speeds

Delete Express Lane Direct Connections.

201.5.1.2 - Express Lanes

Delete FDM 201.5.1.2.

201.5.2 – Post-Construction Speed Study

Delete FDM 201.5.2.

201.5.3 - RRR Projects

Apply this section to CFX R&R Projects.

Delete the second, third, and fourth paragraphs.

210 - Arterials and Collectors

210.6 – Roadside Slopes

Delete all bullets in the second paragraph and replace with:

Sod must be used throughout the entire limits of CFX projects. Coordinate with the GEC for the type of sod to be used on each specific project.
210.10.3 - Vertical Clearances

Replace the second sentence in (6) with:

This clearance shall be measured from the highest point of the entire roadway width, including shoulders, for all span trusses.

Add the following:

(9) The minimum VC for single line DMS / static panel combination used in toll plaza approach signing shall be 19'-6". For all other DMS/static sign installations vertical clearance shall be measured to the bottom controlling element.

211 - Limited Access Facilities

211.1 - General

Delete the second paragraph.

In the fourth paragraph beginning with “The following manuals” add:

• Standard Highway Signs and Marking Book (SHS)

In the fourth paragraph beginning with “The following manuals” delete:

• Turnpike Design Handbook (TDH) and

Delete the sixth paragraph and replace with the following:

Specific requirements for placement of the toll site infrastructure (e.g., tolling equipment structures, equipment buildings, utilities) is provided in the General Tolling Requirements and amended per the CFX ITS Design Standards. The CFX ITS Design Standards can be located on the CFX website.

211.2.2 - Pavement Cross Slopes

Delete the first paragraph and replace with the following:

Standard pavement cross slopes are shown in FDM Figure 211.2.1. An analysis of the surface drainage is required when more than three lanes are sloped in one direction.

211.2.2.1 - Existing Pavement Cross Slopes

Delete the first sentence of the third paragraph and replace with the following:
When cross slope correction is necessary, work closely with the GEC PM to determine the appropriate method of correction.

211.2.3 - Hydroplaning Risk Analysis

Delete the last two sentences in the first paragraph and replace with:

The analysis should be completed during the PDR phase because the typical section cross slopes and superelevation rotation points could impact the roadway geometry. Evaluate key areas where there can be potentially problematic cross slopes such as sections with additional auxiliary and/or ramp lanes that are in superelevation. CFX corrects deficient cross slopes and superelevations. Modifications to cross slopes or superelevations should be discussed with the GEC Project Manager before completing each phase submittal. Travel lanes with existing cross slopes that are found to be non-compliant must be corrected to meet standard pavement cross slopes. The following information is offered to assist with this analysis:

- Travel lanes one direction, FDM Figure 211.2.1 (211.2.3) and FDM Table 210.9.1
- Sample section information:
  - Hydroplaning analysis indicate station of the section being analyzed.
  - Lane 1 should always be labeled as the inside lane.
  - Hydroplaning analysis is not applicable through areas of superelevation transition. Provide Hydroplaning analysis of the full superelevation section and the typical section
  - Utilize the FDOT Hydroplaning Tool, released in April 2020. It is available on the FDOT website.
  - If the predicated drivers speed is greater than the calculated hydroplaning speed on existing travel lanes evaluate the crash data provided within the project area to determine whether there is a correlation between collisions.
  - Provide a hydroplaning analysis summary for the minimum corrective cross slope to address the hydroplaning issues identified.

211.3 - Medians

Add note (2) to FDM Table 211.3.1.

(2) For CFX roadways (without barrier), provide a median width which will accommodate future lanes when planned. (106-ft median width for 4 lane sections planned to be future 8 lane section with special use lanes and 4-ft buffers)
211.3.2 - Median Crossovers

Delete the last sentence in the second paragraph.

Delete the fourth paragraph and replace with:

Crossover locations that do not meet the above criteria require approval by the CFX Chief of Infrastructure.

211.3.2.1 - Existing Crossovers

Delete criterion (2) and (3) and replace with:

(2) Crossover locations that do not meet the AASHTO Green Book criteria or the additional FDOT criteria require approval by the CFX Chief of Infrastructure to remain.

211.3.3 - Managed Lanes Separation

Delete FDM 211.3.3 and Figures 211.3.1 thru 211.3.4.

211.4 - Shoulders

Add the following paragraphs:

It is CFX preference to provide a wider useable shoulder for emergency use and to accommodate stopped or disabled vehicles. For new (2-Lane) or widened facilities (3-Lane or more), provide 14 ft. wide inside and outside shoulders with a 12 ft. paved width.

Per AASHTO Chapter 10.9.6, the left and right shoulder widths may be reversed if needed to provide additional sight distance.

Delete Managed Lanes from Table 211.4.1.

Add the following to the NOTES with shoulder gutter in Table 211.4.1:

(2) Where no guardrail, shoulders shall extend 4 ft beyond the outside of shoulder gutter with 0.06 cross slope back toward the gutter. The 4 ft backslope shall include 3 ft of misc. asphalt adjacent to shoulder gutter and 1 ft of sod.

211.4.1 - Managed Lanes Shoulders

Delete FDM 211.4.1 and the rows for Managed Lanes from Table 211.4.1.
211.4.2 - Shoulder Cross Slopes

Replace Figure 211.4.1 Shoulder Superelevation with CFX Figure 211.4.1 Shoulder Superelevation

CFX Figure 211.4.1 Shoulder Superelevation
Replace Figure 211.4.2 Special Ramp Shoulder Superelevation with CFX Figure 211.4.2 Special Ramp Shoulder Superelevation

**CFX Figure 211.4.2 Special Ramp Shoulder Superelevation**

![Special Ramp Shoulder Superelevation Diagram]

**FULL WIDTH SHOULDER**

Add the following section:

### 211.4.2.1 – Shoulder Rocking

CFX preference is to use trench drain in areas of substandard gutter grade. When trench drain is not feasible or cost effective, consult CFX prior to utilizing shoulder rocking.

Roadway shoulder may be rocked up and down to provide the minimum longitudinal slope of 0.3% along the outside of shoulder / gutter line. The Shoulder Rocking may vary from a minimum 3% cross slope to a maximum 7% cross slope in areas of tangent roadway sections. Where Shoulder Rocking occurs outside of tangent roadway sections, shoulder cross slopes may range from a minimum of matching the adjacent travel lane cross slope to a maximum cross slope of 7% break over from the travel lane. The cross-slope difference between adjacent low points and high points of Shoulder Rocking shall not exceed 4%.

Shoulder Rocking shall be depicted on the Roadway Profile Sheets and shall include a gutter line profile (station and elevation of all low points and high points, and longitudinal slopes of the gutter line) and a topo of barrier wall profile. Where shoulder rocking occurs on both sides of a median barrier wall, a gutter line profile for each side of the median barrier wall and a profile for the top of barrier wall shall be required. The top of barrier shall follow the adjacent profile grade. In lieu of gutter line profiles, a table may be provided in the plans that includes, at a minimum, necessary information to construct the shoulder rocking and the longitudinal gutter grades. Shoulder cross slopes at each low point and high point of shoulder rocking shall be included in either the Shoulder Rocking table on the plans or in separate shoulder rocking calculations in the Drainage Report.
211.4.3 – Limits of Friction Course on Paved Shoulders

*Delete the second paragraph and Figure 211.4.3 and replace with the following:*

For all locations where the shoulder slopes toward the travel lane, the shoulder pavement shall be flush with the travel lane friction course that extends 8” outside the travel lane. This will address any concerns for trapping water on the shoulder as demonstrated in CFX Figure 211.4.3.

**CFX FIGURE 211.4.3**

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211.4.4.1 - Ground-in Rumble Strips

*Add the following paragraph:*

The minimum thickness of proposed structural asphalt on shoulders with ground-in rumble strips must be no less than 2.0 inches. On existing shoulders without rumble strips that call for new rumble strips to be placed, the minimum thickness of combined existing structural asphalt and proposed asphalt must be no less than 2.0 inches.

211.4.7.1 - Existing Curb

*Delete the third sentence.*
211.7 - Horizontal Alignment

*Add the following paragraph:*

Spiral curves should not be used on mainline curves equal to or less than 1.5 degrees and on ramp curves equal to or less than 3 degrees. Avoid the use of spirals on bridges and R/W lines.

211.8 - Superelevation

*Add the following paragraph:*

Zero percent cross slopes are to be avoided within 150 ft. of the high point or low point of crest and sag vertical curves, respectively, especially at gore areas and bridges.

211.9.1 - Grades

*Add the following sentence to the last paragraph:*

The minimum distance between VPIs on curbed roadways is 250 feet. (FDM 210.10.1.1) The minimum distance required between VPIs on an expressway used to develop the profile grade line should be 5 x Design Speed.

Table 211.9.2

*Delete Note (2).*

Table 211.9.3

*Add the following note to the Table:*

Notes:

1. This table provides general guidance for minimum vertical curve lengths. If a curve meets K value, stopping sight distance, decision sight distance, and provides positive drainage control, then a reduction in vertical curve length may be approved by the CFX Chief of Infrastructure.

211.10 - Sight Distance

*Delete the last paragraph and replace with:*

Do not place decision points e.g. ingress or egress within the limits of reduced sight distance.

211.11 - Structures

*Add the following sentence:*
The width of all CFX-owned bridges must equal the paved width of the approach roadway including the paved width of shoulders.

**211.13 - Ramp Terminals**

*Add the following paragraphs:*

For single lane ramp terminals, it is CFX’s preference to use the taper-type design for exit ramps and the parallel-type for entrance ramps. Per AASHTO, “the advantages in efficient traffic operations and low crash frequencies of long acceleration lanes provided by parallel type entrances are well recognized. A long acceleration lane provides more time for the merging vehicles to find an opening in the through-traffic stream. An acceleration lane length of at least 360 m [1,200 ft.] plus the taper is desirable wherever it is anticipated that the ramp and freeway will frequently carry traffic volumes approximately equal to the design capacity of the merging area.”

A parallel-type exit ramp will be considered in locations where both the main line and ramp carry high volumes of traffic. In this case, the deceleration lane provided by the parallel-type exit provides storage for vehicles that would otherwise undesirably queue up on the through lane or shoulder. See AASHTO for additional guidance for two-lane ramp terminal designs.

**211.14 - Managed Lanes Access Points and Access Types**

*Delete FDM 211.14.*

*Delete Exhibits 211-3 through 211-12*

**215 - Roadside Safety**

**215.2.6 - Roadside Slope Criteria**

*Add the following paragraphs:*

To reduce future erosion and maintenance issues, utilizing a maximum slope of 1:3 is preferable. In constrained conditions, flattening, maintaining or shielding the existing slopes should be evaluated. Where the slopes are greater than 1:2 and maintenance is difficult to perform, consider placing concrete pavement on slopes.

In areas where guardrail is adjacent to the roadway, provide a maintenance/landscaping berm behind the guardrail. The berm should be 10 ft. wide (3 ft. minimum), measured from the back of the miscellaneous asphalt and slope towards the roadway. The back of the berm (break point) shall be maintained at an elevation equal to the outside edge of travel. This design is intended to prevent roadway runoff from bypassing treatment as well as preventing runoff from staging into the travel way in the event of a drainage structure malfunction/clog during a storm event. See *CFX Figure 215.2.16* for additional information.
CFX Figure 215.2.16 Grading Behind Guardrail

Table 215.2.3

For front slope with height greater than 20 ft., delete the rate and replace with:

1:3 with guardrail and maintenance/landscaping berm.

215.2.8 - Aboveground Utilities

Delete the last sentence in the first paragraph.

215.3.2 - Canal Hazards

Delete 215.3.2 (Figures 215.3.1 and 215.3.2 to remain), rename the section to Water Body/ Canal Hazards and replace with the following:

Water body is defined as a natural or manmade feature, such as a pond, lake, ditch, canal, river, wetland, etc. that has a depth of water 3 feet or more for an extended period of time (24 hours or longer) as measured from the bottom elevation of the water body.

Minimal lateral offsets for water body hazards exceed standard clear zone width criteria. Water body hazard lateral offsets are measured from the edge of travel lane, auxiliary lane or ramp to the top of the water body side slope nearest the road. Minimum required distances are illustrated in Figures 215.3.1 and 215.3.2 and summarized as follows:
• Not less than 60 feet for flush shoulder and curbed roadways with design speeds of 50 mph or greater.

• Not less than 50 feet for flush shoulder roadways with design speeds of 45 mph or less.

• Not less than 40 feet for curbed roadways with design speeds of 45 mph or less.

When new water body or roadway alignment is required, provide distances greater than those above to accommodate future widening of the roadway.

On fill sections, provide a flat berm (1:10 or flatter slope) no less than 20 feet in width between the toe of the roadway front slope and the top of the water body side slope nearest the roadway.

When the slope between the roadway and the "extended period of time" water surface is 1:6 or flatter, the minimum distance can be measured from the edge of the travel lane, auxiliary lane, or ramp to the "extended period of time" water surface and a berm is not required.

In sections with ditch cuts, provide a minimum of 20 feet between the toe of the front slope and the top of the water body side slope nearest the roadway.

• If the minimum lateral offset can be met, additional water body protection criteria may still apply and are summarized as follows:

• No crashes within a 5-year period in which a vehicle departs from the roadway towards the waterbody.

• There shall be no non-traversable slopes (rough terrain, obstructed, or slopes steeper than 1:3) between the roadway and the water body

• If design speeds of 45 mph or less on roadway adjacent to water body, the distance between where a vehicle leaves the roadway along the outside of a horizontal curve and the edge of waterbody shall not be less than runout path length of 435 ft (based on a 50 mph stopping distance).

• If design speeds of 50 mph or greater on roadway adjacent to water body, the distance between where a vehicle leaves the roadway along the outside of a horizontal curve and the edge of waterbody shall not be less than the runout path length of 615 ft (based on a 70 mph stopping distance).

Shield the water body hazard with an approved roadside barrier when the required minimum lateral offset cannot be met, or the water body protection criteria above cannot be met. Use the following criteria for water body hazard protection:

• Locate the barrier as far from the traveled way as practical and outside of the clear zone where possible.

• Locate guardrail no closer than 6 feet from the water body front slope.

• Locate High Tension Cable Barrier no closer than 15 feet from the water body front slope.
**Outside Horizontal Curve** – Waterbody is located along the outside of a horizontal curve where an errant vehicle may encroach.

**Roadside Safety Analysis Program (RSAP)** – Cost effective analysis for evaluation of roadside safety improvements. The encroachment-based approach uses a series of conditionally independent probabilities representing vehicle roadside encroachment events, the conditional probability of a crash given a roadside encroachment has occurred, the probable severity of crashes that are likely to occur and the expected benefit cost ratios of various roadside design alternatives. EOR to provide recommendation from results and present to CFX GEC for approval.

### 215.4.1.1 – Flexible Barrier

*Add the following paragraph:*

HTCB installations shall utilize a 3-wire system matching Trinity Highway CASS TL-3 or CFX approved equal.

### 215.4.2.1 - Guardrail End Treatments

*Delete the third sentence of the first note of the first paragraph and replace with:*

Approach terminals are classified by a Test Level (TL-2 for Design Speeds ≤ 45 mph or TL-3, which is acceptable for all design speeds). All guardrail and end treatments on CFX’s System shall be TL-3.
215.4.3.2 - Temporary Crash Cushions

_Delete the first paragraph and replace with:_

Only redirective non-gating crash cushions are permitted for use as temporary crash cushions on CFX roadways unless otherwise approved.

_Delete the third paragraph._

215.4.6.1 – Barrier Offset

_Delete “shoulder gutter segments” from the third sentence in the third paragraph. Delete the last sentence of the third paragraph._

216 - Earthwork

216.1 - General

_Add the following sentence to paragraph 3:_

Landscape work may require excavation to remove and replace soils unsuitable for plant growth and finish grading for drainage and aesthetic purposes.

221 - Utilities

221.1 - General

_Add the following to the last paragraph:_

Guidance for accommodating utilities within CFX R/W can be found in CFX’s Property Acquisition and Disposition Procedures Manual.

230 - Signing and Pavement Marking

230.1 - General

_Delete the last sentence of paragraph two and replace with:_

Signs and Pavement Markings not included in the CFX Signing and Marking Details, the FDM, or the FDOT Standard Plans are to be detailed in the plans.

_Add the following paragraphs:_

CFX recognizes Comm (community) as an approved abbreviation. The MUTCD approved abbreviation...
Int'l (International) is restricted to signing for International Airports.

Sign R5-10b shall be placed on all entrance ramps near the cross street.

Regulatory sign R3-8 shall not be used on the mainline in advance of a lane drop at a two lane exit with optional lane without prior approval from CFX

Signs of different shapes or sizes shall not be mounted back to back.

Trailblazer sign assemblies shall:

- Be placed 1 mile or less from the CFX facility, in an urban area
- Be placed 2 miles or less from the CFX facility, outside an urban area
- Be placed such that the motorist will make no more than one turn to reach the facility
- Be placed at strategic locations which make it easy for a motorist to find a new facility or new alignment
- Not be placed at intersections that would direct traffic through neighborhoods

Signs are to match the CFX Aesthetic Guidelines Section 105.7.

230.2.2 - Overhead Signs on Limited Access Facilities

Delete all paragraphs and replace with:

All exit direction signs shall be mounted overhead.

All advanced guide signs shall be mounted overhead. Multi-post advanced guide signs shall not be permitted.

Alternatives to sign placement shall have written justification approved by CFX and include the following:

- Right edge of sign panel aligned with the outside edge of travel
- Left edge of sign panel aligned with the skip stripe for the outside lane.

Crossroad signing shall be overhead to extent possible.

Span mounted panels shall be centered over the entire width of the roadway.

Cantilever mounted panels shall be centered over the entire width of the roadway.

Panels containing NEXT RIGHT or NEXT LEFT are considered lane specific signs and shall be centered over the applicable lane.
Panels less than ½ mile from the exit direction assembly are to read “NEXT RIGHT”.

“Overhead” category in MUTCD applies to all signing along the mainline. Interstate, U.S., and State Route Shields shall be reduced from the “overhead” criteria to the next smallest size for Interchange Sequence Signs.

Multiple panels on an overhead structure shall be designed having the same overall height if panels face the same direction of travel and after using standard design criteria, the difference in panel heights is 24 inches or less.

The overall panel width shall be equal to or greater than the overall height unless otherwise directed by CFX.

Hyphens shall only be used if the destination and/or street name is hyphenated with the governing agency.

Temporary panels must be fully designed and detailed in the plans.

230.2.3 - Local Street Names on Guide Signs

Delete the last sentence and replace with:

The decision to use a local name should be coordinated with CFX.

230.2.4 - External Lighting of Overhead Signs

Delete all paragraphs and replace with:

Provide external lighting for all CFX overhead signs. LED type lighting shall be used for overhead signs.

Luminaires shall not be mounted to the top of sign panels. Luminaires shall be grey or silver. Refer to FDM 231, Table 231.2.1 for information related to sign lighting criteria.

230.2.5 - Signs on Barriers and Traffic Railings

Add the following to the first paragraph:

Crossroad street name signs shall be mounted flush to traffic railing barrier on roadway bridges crossing over the mainline. The CFX logo signs shall be mounted flush to the traffic railing on mainline bridges crossing over surface roadways.

Delete the second paragraph and replace with:

Utilize Standard Plans, Index 700-013 when attaching permanent sign supports to a median traffic railing.
Delete the first sentence in the third paragraph and add the following:

Utilize the Barrier Mounted Sign Details as shown in the CFX Signing and Marking Details Appendix for all outside traffic railing sign installations.

230.2.7 - Object Markers and Delineators

Delete the second paragraph and replace with:

The CFX Signing and Marking Details illustrate the use of delineators along the edge of limited access traffic lanes and interchange ramps.

Do not place delineators behind guardrail.

Add new section:

230.2.7.1 – Linear Delineation

3M Linear Delineation System, Series 340 is to be specified on barrier walls and guardrail into and along the high side of loop / partial loop ramp curves and other locations as determined by CFX. Panels are to be thirty-four (34) inches long and six (6) inches wide on barrier walls and guardrail. Panels are typically spaced eighteen (18) inches apart on barrier walls and centered at 2 feet above the gutter line elevation. However, spacing may require adjustment depending on the total length of each wall such that all panels are 34” long. Sheeting color shall match adjacent edge line.

230.2.10 - Internally Illuminated Street Name Signs

Delete the first paragraph and replace with:

Do not exceed ten feet in width for any internally illuminated street name sign installed on CFX-maintained signals. On mast arm supports, the sign shall be free swinging from the arm. If the sign cannot be free swinging from the arm, it shall be placed on an arm below the signal mast arm. The sign is never to be placed above the mast arm.

Delete the first sentence in the second paragraph and replace with:

Unless directed otherwise by the local agency responsible for the cross street at an interchange, design the street name sign in accordance with the TEM, Section 2.2.

Add the following section:

230.2.10.1 – Traffic Signal Mounted Signing

Submit a written recommendation addressing all traffic signal related signing including, but not limited to, street name signs (internally illuminated or static), turn prohibition, etc. Signal related signing shall
include proposed overhead panels (span wire, mast arm, pole, etc.) as well as single post ground mounted assemblies

### 230.2.11 - Tourist-Oriented Directional Signs

*Delete FDM 230.2.11.*

*Add the following sections:*

#### 230.2.13 – ClearView Font

ClearView Font is the standard font for use in guide sign design and fabrication. Traditional Series shall be used for negative contrast copy. Traditional Series and CV shall not be used on the same panel for positive contrast.

“TRANSOFT GuidSIGN” is the only software currently approved by CFX. However, the Consultant may use an alternative program or format provided examples have been submitted and approved prior to 60% plans submittal.

For mainline and ramp guide signs, CV standard upper-case heights will match the MUTCD table but the lower-case heights may not. Do not adjust the lower-case letters to match the MUTCD. Only the upper-case letter height is to be shown on the guide sign worksheets.

#### 230.2.13.1 – Letter Spacing for Panel Design

Interword spacing (the horizontal space between words) shall be 1.25 times the UC letter height (rounded to the nearest tenth of an inch) when the destination contains two words, (i.e. Goldenrod Rd) and 1.0 times the UC letter height when the destination contains three or more words, (Winter Garden Vineland Rd). When two- and three-word destinations are on the same panel, use 1.0 times the UC letter height for all lines of destination copy.

Interline spacing (the vertical space between lines of copy) should be 0.75 times the average of the UC letter heights in the adjacent lines of copy. For example, using 16” UC in one line and 12” UC in the adjacent line, the interline space would be 10.5” or (0.75*(16+12)/2)).

Spacing may be slightly adjusted to achieve a total panel height in an even 6” increment.

#### 230.2.14 – Crossroad Street Name Signs

Crossroad street name signs for roadways that do not have an interchange with a CFX facility shall be provided. If design constraints require two lines of text, CFX approval is required. Locations for these signs shall be as follows:

- Crossroad over toll road: Mount panels on the bridge girder for view by toll road traffic.
• Toll road over crossroad: Install multi-post assemblies in the median behind bridge approach guardrail depending on existing or proposed landscaping. If median installation is prevented by landscaping or other design related elements, install the multi-post assembly along the outside travel lane. Roadside mounted assemblies shall be located as close to the bridge as practical.

230.2.15 – Partial Overlay Designs

Partial overlays shall completely cover all existing copy to be revised by the overlay, match positive contrast copy style, i.e. CV or Traditional, which is to remain visible when overlay is positive contrast, and provide sufficient information such that the Contractor can correctly align the proposed copy (not the overall overlay) with the existing copy which is to remain visible.

230.3 - Pavement Markings

*Delete the first sentence in the first paragraph and replace with:*

Pavement marking design are to comply with the CFX Signing and Marking Details, Standard Specifications, Standard Plans, TEM, MUTS, and the MUTCD.

230.3.1 - Selection of Pavement Marking Material

*Delete the first sentence in the first paragraph and replace with:*

For local roadways impacted by construction or maintenance of a CFX facility use the flowchart, shown in FDM Figure 230.3.1, as a tool to assist in determining the appropriate pavement marking material.

*Add the following paragraphs:*

3M Company Standard Preformed Patterned Retroreflective Pavement Marking Tape (PPRT), Series 380AW is to be specified for all solid lane lines, edge lines, skip striping, Do Not Stop pavement messages and gore markings on asphalt and concrete pavement on facilities within CFX’s jurisdiction.

At ramp terminal return radii, where the radius is smaller than manufacturer’s recommend radius for PPRT installations, Consultant may request to utilize thermoplastic marking materials in lieu of PPRT.

Stop bars, crosswalks, messages, directional arrows, and option arrows will be preformed thermoplastic.

For lane lines leading to a ramp terminal, determine if existing markings show a significant amount of crossover from the vehicles. If so, use thermoplastic for the lane lines, otherwise use PPRT. Coordinate decision with CFX GEC.

9" Contrast (PPRT, black/white) shall be specified for all solid lane lines, 10’- 30’ skip striping, and white edge of pavement lines within CFX’s jurisdiction.
230.3.4 - Work Zone Pavement Markings

*Delete the second paragraph and replace with:*

Use Removable Tape for all temporary pavement markings on final asphalt or concrete surfaces. Removable Tape shall be 3M Brand Scotch-Lane Removable Tape Series 710, 711, and 715 or CFX Approved Equal.

230.3.5 - Raised Pavement Markers (RPMs)

*Add the following to the last paragraph:*

... and the CFX Signing and Marking Details. All RPMs installed within CFX’s jurisdiction shall be 3M Company Series 290 or CFX’s approved equal.

230.4.1 - Exit Ramp Intersections

*Add the following to note (3):*

(3) …for any static wrong way panels. Otherwise, Wrong Way Signing shall be coordinated with the ITS Consultant and/or CFX’s General System Consultant to include the Wrong Way Detection System as directed by CFX.

*Delete the first sentence in note (7) and replace with:*

(6) Include a straight arrow and “RAMP” pavement message in left-turn lanes extending from the far-side ramp intersection through the near-side ramp intersection to prevent premature left turns.

*Delete note (9).*

230.5 - Signing and Pavement Marking Coordination

*Delete the second and fourth paragraphs.*

*Add the following paragraphs:*

Unless constrained by other roadway design elements, signs shall be placed in advance of the nearest light pole in order to provide optimum visibility (as viewed in the direction facing the sign). The Consultants for signing and pavement marking and lighting are responsible for adjusting one or both plan components if proposed signing or lighting changes during plan development.

Multi-post assemblies shall be placed in advance of the nearest light pole when both are behind guardrail or wall.
ITS EOR shall provide locations for Dynamic Message Signs to ensure locations do not conflict. ITS EOR shall coordinate the placement of the Wrong Way signage and Wrong Way detection.

231 – Lighting

231.1 – General

Add the following paragraphs:

LED fixtures shall be used for new installation and the retrofit of existing lighting systems.

231.1.4 - Voltage Drop Criteria

Delete the FDM 231.1.4 and replace with the following:

When determining conductor sizes for lighting circuits, the maximum allowable voltage drop from the service point on any circuit shall not exceed 5% on combination of service, feeder, and branch circuit.

The voltage drop calculations for design of lighted signs shall be based on the worst-case scenario.

231.1.5 - Grounding

Delete note (3).

231.3.6 – Underdeck Bridge Lighting

Delete the second sentence of the first paragraph.

Add the following sections:

231.3.7 - Luminaires

- All luminaires shall be produced by the same manufacturer.

- The models currently accepted by CFX for new installation and the retrofit of existing facilities are:
  
  - Roadway: Signify/Philips RoadFocus Series supplied with Dimming driver, 22KA Surge Protection Device and 7-Pin photocell receptacle.
  
  - Sign Lighting: Signify/Philips DuraForm luminaire with remote LED drivers and remote 22KA Surge Protection Device.
  
  - Underdeck: Visionaire BSX series luminaire with 7-pin photocell receptacle,
equipped with decorative shield for wall mounted underdeck luminaires, capability of remote driver and remote 22KA surge protection device.

231.3.8 - Remote LED Driver Cabinets

All fixtures must be able to accommodate a smart driver that will allow remote performance of diagnostics, adjustment of lighting levels and control with intelligent systems.

Remote mounted LED driver cabinets shall be utilized for all sign and pendant hung underdeck luminaires providing illumination of CFX facilities. Remote driver cabinets for pendant hung underdeck luminaires shall only be provided when the underdecks are illuminating CFX toll roads. Underdecks illuminating non-toll facilities shall be provided with integral drivers and surge protection devices eliminating the requirement for remote driver cabinets on these non-toll facilities.

231.7 - Lighting Design Analysis Report

Delete the section and replace with:

The design of all electrical systems for lighting must comply with FAC 61G15-33, Responsibility Rules of Professional Engineers Concerning the Design of Electrical Systems. These responsibilities are applicable for all new projects and any major modifications.

Prepare a Lighting Design Analysis Report (LDAR) that provides horizontal illumination photometric analysis, using AGI32 Lighting Software, for the mainline section, ramp section, interchange, signalized intersections including vertical illumination, overhead signs, structure with underdeck lighting, and veiling luminance for typical sections.

Provide load analysis, voltage drop calculations for combination of feeder and branch circuits, short circuit current analysis and device coordination, and arc flash hazard analysis.

The LDAR should include an evaluation of various lighting design alternatives which consider factors such as pole configurations, pole heights, arm lengths, luminaire wattages, and optics. A single alternative should be implemented on the project. The evaluation should be based on safety, constructability, maintainability, economics, and consistency with the adjacent projects.

In addition, the LDAR should include all correspondence with the local power company, coordination with other authorities having jurisdiction, meeting minutes, documentation on all gathered field data, FAA coordination, and any other related information.

232 – Signalization

232.1 - General

Add the following paragraph:
Make every reasonable effort to incorporate the design preferences of the local maintaining agency. These preferences may include but are not limited to pole types, conduit routing, specific equipment, signal timing methods, etc. Meet with the maintaining agency to ascertain their preferences and obtain all other pertinent information. Submit to the GEC for review and final approval. All documentation of preferences and correspondence with the local agencies shall be included in the signalization design documentation.

232.2 – Lane Configuration

*Delete the last three sentences of the second paragraph and replace with:

Consultant is responsible for obtaining current turning movement counts.

232.5 – Vehicle Detection

*Delete last sentence of first paragraph and replace with:

Video shall be the preferred detection type.

232.8.1 - Mast Arm Policy

*Delete all paragraphs and replace with:

Mast arms shall be installed for all new or reconstructed signals.

232.9 - Span Wire Assemblies

*Delete this section.

232.10 - Traffic Signal Project Coordination

*Delete the third paragraph and replace with:

Utilities - The Utility Coordinator provides the coordination between the designer and the various utilities that may be involved in the project. The Utility Coordinator may assist in identifying or verifying conflicts with overhead and underground utilities. The designer should coordinate with the utility company providing power for the preferred location for the electrical service.

*Delete the sixth paragraph.
233 - Intelligent Transportation Systems (ITS)

233.1 - General

Delete the first paragraph and replace with the following:

The CFX ITS Design Details establishes guidelines for the preparation of ITS Plans for CFX facilities.

Delete the third and sixth bullet from the second paragraph. Add the following to the list:

- CFX Design Guidelines
- CFX Signing and Marking Details
- CFX Lighting Details

Add the following after the last paragraph:

Change all references of the District ITS/TSM&O Engineer to CFX Manager of Traffic Operations.

233.1.3 - ITS Device Approval and Compatibility

Delete the last bullet point and replace with:

- Reference the CFX ITS Specifications that apply to each device to provide a uniform and compatible system.

233.3.2 – Local Back Up and Alternative Power Sources

Delete the last part of the first paragraph and the last sentence of the third paragraph and replace with:

…the CFX Manager of Traffic Operations.

233.3.8 - Grounding and Lighting Protection

Add the following paragraph.

The CFX ITS Design Details establishes guidelines for the grounding and lighting protection for ITS devices.

233.3.9.1 – Generator Design Requirements

Delete the last sentence of the fifth paragraph and replace with the following:

Coordinate with the CFX Manager of Traffic Operations to determine if remote monitoring is required.
233.7.3 – Equipment Shelter

*Delete the first sentence of the first paragraph and replace with the following:*

Coordinate with the CFX Traffic Operations Manager to determine if co-location is possible.

233.8.4 – Wireless Communication System

*Delete the last paragraph.*

233.10 – Closed Circuit Television Systems

*Delete the eighth bullet in the second paragraph and replace with the following:*

Identify locations for vegetation removal in the plans or propose closer spacing upon approval from the CFX Traffic Operations Manager and the CFX Landscape Architect representative.

233.11.1.1 - Express Lanes DMS

*Delete FDM 233.11.1.*

233.11.2 – Highway Advisory Radio (HAR)

*Delete FDM 233.11.2.*

233.13 – Maintenance of ITS Devices and Communication

*Delete the first sentence of the first paragraph and replace with the following:*

Coordinate with the CFX Traffic Operations Manager to determine if maintenance of ITS devices and communications during a construction project is required.

Delete the last paragraph and replace with the following:

The maintenance of ITS devices and communications plans must be approved by the CFX Traffic Operations Manager.

240 - Transportation Management Plan

240.1 - General

*Delete FDM 240.1.*
240.1.2 TMP Components

Delete the second sentence of the first paragraph.

240.2 – Temporary Traffic Control Plan

Add the following paragraphs:

Project specific conditions associated with milling and resurfacing require development of project specific notes for the plans. Generally, these notes are part of the TTCP. Stormwater ponding conditions during milling and resurfacing is prohibited. The Temporary Traffic Control Plan may require alternate stages/notes within a milling and resurfacing phase to meet this requirement. The plan may require the contractor to alternate stages or pave multiple lifts during the same work period to comply with the prevention of ponding requirement and drop off restrictions.

A TTCP is comprised of, but not limited to, specific plan sheets, typical sections and phasing notes, critical cross sections, detour and pacing details, temporary pavement details, and references to FDOT Standard Plans layouts describing how traffic will be controlled through a work zone.

TTCP plan sheets detail the proper delineation of traffic through the work zone during all construction phases. The complexity of the TTCP varies with the complexity of the project.

A TTCP generally provides the following information:

1. The location of all advance warning signs
2. Temporary pavement markings, (including raised pavement markers (RPMs)
3. Location of temporary barriers and end treatments
4. Temporary drainage design
5. Channelizing devices at special locations
6. Locations for special devices such as portable changeable message signs (PCMS), arrow panels, radar speed display units (RSDU), portable regulatory signs (PRS), and temporary signals
7. PCMS messages for each phase
8. Signal timing for each phase, including temporary actuation, to maintain all existing actuated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract (Check with Traffic Operations Engineer)
9. Location and geometry for transitions, detours, and diversions
10. Typical sections for each phase of work with notes describing the general intent of work to be performed in each phase
11. The proposed regulatory speed(s) for each phase
12. References to specific MUTCD Typical Applications or Standard Plans Index sheets
(13) Appropriate pay item notes
(14) Provisions for the elimination of any conflicts between existing, permanent, and temporary (work zone) signing and pavement markings
(15) CFX Standard TTC General notes
(16) Project Specific Notes
(17) Work area access plan

240.2.1 - TTCP Details

240.2.1.1 – Emergency Shoulder Use

Delete FDM 240.2.1.1.

240.2.1.2 – Work Zone Speed

Replace paragraphs two and three with the following:

Work zone speed should be the existing posted speed. The existing posted speed is defined as the posted speed prior to the start of any work zone activity. A reduction from the existing posted speed should only be made when all other temporary design alternatives have been exhausted. Include the justification for reduction in existing posted speed in the project documentation. The TTCP and the project documentation will suffice as a traffic and engineering investigation. All proposed reductions in work zone speed must be approved by CFX prior to the 90% Plans submittal. Work zone speed reductions are limited to 10 MPH (max) below the existing posted speed, except as directed by CFX.

240.2.1.3 – Tapers

Delete the last paragraph and replace with the following:

Except where temporary barrier wall is installed along the inside of a mainline/ramp horizontal curve at an offset to the travel lane of four (4) feet or less, refer to FDM 211 for required sight distance using the work zone speed.

240.2.1.5 - Lane Widths

Add the following paragraph:

The standard lane width for work zone travel lanes on CFX facilities is 12 feet for all mainline lanes. Prior to the 60% submittal, if the EOR finds or determines that the 12-foot lane width requirement cannot be met, the EOR shall evaluate the traffic control typical section and make a request to the GEC and CFX with a recommendation to reduce lane widths. The EOR is cautioned not to proceed with the design without approval from CFX.
240.2.1.6 - Lane Closure Analysis

*Delete this section and replace with the following paragraph:*

Upon request, the GEC will analyze the traffic and provide the hours of closure to the designer. This request can also be made for traffic pacing design hours.

240.2.1.7 - Traffic Pacing

*Delete the second sentence of the first paragraph and replace with the following:*

CFX prefers the use of road closures and detours but will approve the use of traffic pacing on a limited basis.

*Delete the third paragraph.*

240.2.1.8 - Detours, Diversions, and Lane Shifts

*Delete the second and third bullet from the fourth paragraph (Special Detour).*

240.2.1.9 - Bicycle, Pedestrian, and Transit Accommodation

*Add the following to the beginning of the first sentence:*

For temporary traffic control along local (non-CFX) facilities,…

**Location of Temporary Routes for Pedestrians and Bicyclists**

*Delete 2(a), 2(b), 3(b)iii, 3(b)iv, and 3(b)v.*

240.2.1.15 - Bridge Construction

*Delete the paragraph and replace with:*

To facilitate the development of an optimal design minimizing traffic disruption and construction costs, the roadway engineer and structures engineer must collaborate with each other prior to completion of the Bridge Concept Memorandum (BCM). For very complex urban projects, this collaboration should begin as early as the PD&E

*Add the following sections:*

240.2.1.16 - Emergency Pull Off Area

For all capacity improvements (widening, reconstruction, etc.) or interchange projects that are greater than 2 miles in length and where the outside mainline shoulder width is less than eight feet, provisions
for an emergency pull off area should be considered. The emergency pull off area should be located to
the right of the outside travel lane for use by customers and emergency management personnel.

240.2.1.17 - Temporary Drainage

Design all temporary drainage facilities necessary during all construction phases. This includes but is
not limited to designing temporary ditches, the size and length of pipes, placement of inlets and where
necessary, calculating inlet hydraulics and spread where water may pool along temporary barrier wall
or curbing adjacent to a lane. All temporary drainage items must be shown in the plans.

240.2.1.18 - Standard MOT General Notes


240.2.1.19 - Paving Milled Surfaces Prior to Opening to Traffic

The temporary traffic control plan must ensure that all milled surfaces are paved prior to opening to
traffic.

240.2.1.20 – Overhead Structures Used in Multiple Phases

Sign structures used in multiple phases of a project shall be designed to accommodate the worst-case
scenario. Temporary panels must be fully designed and detailed in the plans.

240.2.2.1 - Signs

Add the following to the third paragraph:

…and a “Speeding Fines Doubled” sign.

Add the following paragraphs:

Prepare details for nonstandard TTC signs that do not have a standard MUTCD or FTP number.
Provide the details on guide sign worksheets in the plans.

Include the special design “TCP-1” (Your EPASS Tolls At Work) sign and sign details on all projects
that include widening, mainline reconstruction, interchange modifications, or as directed by CFX.
Placement of the TCP-1 sign shall be shown on the Advance Signing Detail or appropriate TTC Plan
Sheet in advance of the work zone.

240.2.2.2 - Work Zone Pavement Markings

Add the following sentences to the first paragraph:

Resurfacing is the preferred method for obliterating existing pavement markings on asphalt. Water
blasting and grinding will not be permitted for the removal of gore or lane transition pavement markings. Temporary markings on concrete pavement e.g., bridge decks and toll plazas, shall be 3M brand Scotch-Lane Removable Tape Series 710, 711, and 715 or CFX approved equal.

**240.2.2.7 - Portable Changeable Message Signs**

*Add the following paragraph:*

For planned lane closures and detours, a PCMS must be placed and display an advanced notification message one week prior to a travel lane or ramp closure or detour. Time may be extended if deemed necessary but should not extend to more than 14 calendar days.

**240.2.2.9 – Type III Barricades**

*Add the following paragraph:*

An R11-2 (Road Closed) sign panel shall be provided on a minimum of one (1) of the Type III barricades at each closure location.

**240.2.2.11 - Law Enforcement Officers**

*Delete second sentence and bullets of the first paragraph.*

**Speed and Law Enforcement Officers**

*Delete this section.*

*Traffic Control Officer*

*Add the following sentence to the first paragraph:*

A Traffic Control Officer is required for all CFX lane closures on CFX facilities, including ramps.

**240.2.2.15 - Temporary Highway Lighting**

*Replace the first three sentences of the first paragraph with the following:*

Existing highway lighting is to remain in service during all phases of construction or until new lighting is installed and placed in service. Temporary highway lighting is not required where it is necessary to remove existing lighting before new lighting is placed in service, i.e. replacement of light fixtures on an existing pole or replacement of light poles at the same location as existing.

**240.2.2.18 - Temporary ACROW Panel Bridge**

*Delete FDM 240.2.2.18.*
240.3 – Transportation Operations Plan

Delete FDM 240.3

240.4 – Public Information Plan

Delete the first two paragraphs and replace with the following:

Public information during construction is coordinated by CFX through the Authority’s public relations consultant.

250 - Hydraulic Data and Agency Permits

250.1 - General

Add the following paragraph:

15% (roll plot) submittals for projects with bridges over water bodies should depict the existing and proposed bridge pile alignments (substructures) to indicate any impact or change to the hydraulics.

251 - Stormwater Pollution Prevention Plan (SWPPP) Development

251.1 – General

Delete the first paragraph and replace with:

A Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented for each CFX construction project that disturbs one or more acres of total land area or as directed by the GEC and discharges to waters of the United States. The State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharges from Large and Small Construction Activities, herein referred to as the DEP Generic Permit, applies to projects where multiple, separate, and distinct construction activities may be taking place at different times and at different schedules under one contract plan. In these situations, the DEP Generic Permit will apply.

Delete the third paragraph and replace with:

The Contractor must prepare a plan that assures compliance with the terms and conditions of the DEP Generic Permit and any other State or Federal permits.

Delete the ninth paragraph and replace with:

The EOR will evaluate the site and describe the basic controls during the design phase which will be documented in the SWPPP sheets. The SWPPP sheets should be prepared in consultation with the
GEC. The SWPPP sheets must be placed in the Roadway Plans, or other lead component. Refer to FDM 320 and the CFX Guidelines for assistance in preparing the SWPPP sheets.

Add the following section:

252 - Drainage Design Documentation

252.1 - Introduction

This outline is not all-inclusive and the designer should anticipate that there may be circumstances when information is not included in this outline that should be prepared to provide adequate explanations/documentation for project specific issues. Unless specified by the scope or directed by CFX, the report shall include the following components.

252.2 - General Information

(1) Project Location

• Overall project location (county, city, section/township/range, etc.).
• Datum used for this project. Provide datum conversion.

(2) Purpose.

• Brief description of the intent of the report and purpose of the project.

(3) Existing Drainage Patterns.

• General drainage patterns in the vicinity of the project, on a regional basis.
• Address offsite areas draining toward the CFX right-of-way.
• Review KMZ file containing Drainage Connection Permits for projects that discharge to the project’s right-of-way.
• Describe if project is in open and/or closed basins.
• Brief description of receiving water bodies and their classification (Outstanding Florida Water, etc.).
• Brief description of proximity to potable well fields and well field protection zones.
• Describe whether the project discharges to an impaired water body and what TMDL’s are associated with it.

(4) Tailwater
• Discuss tailwater elevations used in the design for all cases such as ponds, storm sewers, ditches, underdrain, etc. Include pertinent information such as, previous studies from state or local agencies, etc. References should be made to the appropriate Appendix and/or Document for calculations and information related to tailwater determinations.

• Refer to the FDOT Drainage Manual and CFX Supplement to the FDOT Drainage Manual for tailwater requirements.

(5) Floodplain Impacts and Mitigation/Floodway Involvement

• Describe whether or not the project impacts adjacent floodplain areas. If so, describe how it is being mitigated.

• Describe whether or not the project will have any floodway involvement and if a no-rise certification is needed.

(6) Rules & Regulations/Regulatory Agency Coordination

• Describe all stormwater and right of way occupancy permits needed to construct this project.

• Summarize drainage criteria specific to this project.
  a. Describe water quality and quantity criteria applicable to this project.
  b. Describe all stormwater recovery requirements applicable to this project.

• Describe any Special Basin Criteria that may apply to the project such as Outstanding Florida Waters or Wellfield Protection Zones.

All maps and figures should be included in Appendix A. These include the Project Location Maps, USGS Quadrangle Maps, Soils Maps, FEMA Maps, WMD Basin Maps and Wellfield Protection Zone Maps

252.3 - Pre-Development Analysis

The intent of this section is to provide a brief narrative describing the existing condition of the project site as it relates to stormwater management. The narrative should include information on the number of drainage basins with their respective outfalls, as well as the type of existing stormwater management systems currently in use. Tables summarizing pre-development analysis should be included in this section. All supporting calculations, documentation, and the pre-development drainage map, for the pre-development analysis, should be presented in Appendix B.

Refer to the FDOT Drainage Manual and the FDOT Drainage Design Guides Chapter 9 for guidance.

For each basin, the documentation should include the following:
• Basin name.
• Begin and end station limits.
• Existing drainage patterns (i.e., time of concentration flowpaths).
• Land uses (i.e., curve numbers).
• Describe soils and hydrologic grouping.
• Ultimate outfall location for discharge comparison (open or closed basin?).
• Document/justify tailwater (provide source of information).
• Identify hazardous materials, utilities, archeological, historical, and environmental information affecting the design of the stormwater facility.
• Identify offsite areas draining towards the road and how offsite runoff is currently conveyed through the project.
• Existing permitted stormwater management system, if applicable.
• Previously permitted/required water quality, if applicable (is there surplus volume and/or discharge available).

252.4 - Post-Development Analysis

The intent of this section is to provide a brief narrative describing the proposed condition of the project site as it relates to stormwater management. The narrative should include information on the number of drainage basins with their respective outfalls, as well as the type of recommended stormwater management systems to be used for the basin. Tables summarizing post-development analysis should be included in this section. Discharge rates may be compared at the ultimate outfall locations if more than one basin shares the same downstream outfall. All supporting calculations and documentation, including the post-development drainage map, for the post-development analysis should be presented in Appendix C.

Refer to the FDOT Drainage Manual and the FDOT Drainage Design Guides Chapter 9 for guidance.

For each basin include the following:

• Basin name.
• Begin and end station limits.
• Proposed drainage patterns (flowpaths in ditches and swales for example, time of
concentration, etc.).

- Land uses (i.e., curve numbers).
- Discuss direct discharge to Outstanding Florida Waters, TMDLs or facilities within a Wellfield Protection Zones, if any.
- Describe soils and summarize results from the geotechnical investigation.
- Ultimate outfall point.
- Discuss any Special Basin Criteria that may apply to the project basin.
- Document/justify tailwater, seasonal high-water table, control, and weir elevations.
- Identify offsite areas draining towards the road and describe how it is to be conveyed through the project.
- Recommended stormwater management system.
- Total required and provided water quality (includes previously permitted, if applicable, as well as anything new) meet criteria.
- Treatment volume recovery meets criteria.
- Permanent pool volume meets criteria, if applicable.
- If compensating or over treatment to be used, provide detailed description of area of new impervious not being treated, area of existing pavement to be treated, etc.
- Retention system(s) infiltration rates certified by a Geotechnical Engineer.
- Post-development discharge rates compared to the pre-development discharge rates (meets critical duration criteria, as stated in Chapter 14-86, F.A.C.).
- Post-development stages provide for freeboard as stated in the FDOT Drainage Manual.

252.5 - Floodplain Analysis

The intent of this section is to provide a brief narrative describing the floodplain conditions at the project site and should include the following information. Tables summarizing floodplain impacts, locations, and compensation should be included in this section. All supporting calculations and documentation for the floodplain analysis should be presented in Appendix D.

- Brief narrative. Floodway involvement? No-rise certification required?
- Statement describing impacts have been avoided or minimized.
• Describe limits of impacts and final cut/fill quantities, if applicable.
• Describe where compensation is to occur, if applicable.

252.6 - Base Clearance Analysis

The intent of this section is to provide a brief narrative describing site specific base clearance issues as well as issues involved in determining the base clearance water elevation. Tables summarizing the calculated base clearances should be included in this section. All supporting calculations and documentation for the base clearance analysis should be presented in Appendix E.

Refer to the FDM 210.10.3 and the Flexible Pavement Design Manual for base clearance water elevation guidance.

• Describe how the base clearance water elevation was established.
• Describe limits of project which do not meet FDM base clearance requirements.
• Describe how sections that do not meet base clearance are to be handled.

252.7 - Cross Drain Analysis

The intent of this section is to provide a brief narrative discussing existing cross drains along the project alignment, how these structures will be impacted by the proposed design and discuss the need for any new cross drain structures along the project alignment. A table summarizing the pre-vs- post condition flows and stages should be included in this section. All supporting calculations and documentation for the cross-drain analysis should be presented in Appendix F.

Refer to the FDOT Drainage Manual and the FDOT Drainage Design Guides Chapter 4 for guidance.

For each cross drain, include the following:

• Brief narrative.
• Cross drain name, size, shape, material.
• Location (include stationing).
• Describe the contributing drainage area for the cross drain.
• Describe the condition of the cross drain, including, but not limited to, age, erosion issues, maintenance issues, structural deficiencies and if an extension or replacement is proposed.
• Document/justify tailwater used in the design and provide source of tailwater information.
• Document the pre-development and post-development flows and stages.

• Provide a statement verifying that stages on off-site properties are not increased in the proposed condition and that the allowable high-water conditions are met.

252.8 - On-Site Conveyance Analysis

The intent of this section is to provide a brief narrative discussing the proposed methods of conveyance for drainage from the project. All supporting calculations and documentation for the on-site conveyance analysis should be presented in Appendix G.


• Brief narrative describing methods of conveyance for proposed drainage basins within the project (ditch flow, storm sewer, side drains, etc.) Include existing conveyance systems being utilized.

• Document/justify tailwater used in the design and provide source of tailwater information.

• Describe critical ditch sections (such as sign post obstructions, narrow sections, steep slopes) and lining requirements, if applicable.

• Discuss areas of superelevation transitions, bridge end-treatments, sag inlets, etc.

• Discuss design frequencies used for the analysis of each method of conveyance. Reference the software used.

• Include verification of wall zones for Wall Zone Pipes as outlined in the FDOT Drainage Manual Section 3.11 and Appendix D and follow the requirements set forth in section 430-4.1 of FDOT Standard Specifications.

252.9 - MOT Drainage

The intent of this section is to provide a brief narrative discussing the proposed methods of conveyance for project drainage for the temporary condition (during construction). All supporting calculations and documentation for MOT drainage should be presented in Appendix H and coordinated with the Traffic Control and Roadway EORs. Refer to the FDOT Drainage Manual for design frequencies and the FDOT Drainage Design Guides Chapter 10 for design guidance.

252.10 - Hydroplaning analysis

The intent of this section is to evaluate and document the hydroplaning risk associated with the proposed roadway typical and critical sections, particularly key areas where there can be potentially problematic cross slopes such as sections with additional auxiliary and/or ramp lanes that are in
superelevation. All supporting calculations and documentation associated with this analysis should be presented in Appendix I. Refer to FDM 211.2.3 and FDOT Drainage Manual Chapter 3.9.4 for guidance.

252.11 - Structure Analysis for Loaded Pipes

The intent of this section is to provide a structural pipe analysis anytime reinforced concrete pipe or ADS Class 2 Polypropylene pipe (HP Storm) is designed and installed under deep fill embankments in excess of 14’ of cover, special loading conditions or wall zones. All supporting calculations and documentation associated with this analysis should be presented in Appendix J. Refer to the FDOT Drainage Design Guides Chapter 8 for guidance.

252.12 - References

At a minimum, the reference information should contain the pertinent information to the design and analysis of the systems located in the project.

- Survey information used to determine Tailwater (example: Photos showing stain lines)
- Geotechnical Information
- Existing Permit(s) and Calculations

252.13 - Appendices

Appendix A – Figures

- Project Location Maps
- USGS Quadrangle Maps
- Soils Maps
- FEMA Floodplain Maps
- WMD Basin Maps
- Maps
- Other

Appendix B – Pre-Development Calculations and Documentation including:

- Pre-development drainage map with aerial background. (Do not include storm sewer – only cross drains, ponds, and outfalls).
• If the stormwater management facility (SMF) is existing and permitted to accommodate the proposed improvements without modification, provide the relevant permit excerpts. Otherwise provide the information below:

(a) Supporting pre-development stormwater facility calculations; Tc, CN, Areas, etc.

(b) Pre-development ICPR Input and Output Data

(c) Pre-development nodal diagram. Reference specific structure numbers and pond names as shown in the construction plans.

Appendix C – Post-Development Calculations and Documentation including:

• Post-development drainage map with aerial background. (Do not include storm sewer – only cross drains, ponds, and outfalls).

• If the SMF is existing and permitted to accommodate the proposed improvements without modification, provide the relevant permit excerpts. Otherwise provide the information below:

• Supporting post-development stormwater facility calculations; Tc, CN, Areas, etc.

(a) Post-development ICPR Input and Output Data

(b) Post-development nodal diagram. Reference specific structure numbers and pond names as shown in the construction plans.

(c) Post-Development recovery analysis

Appendix D – Floodplain Encroachment/Compensation Calculations and Documentation

Appendix E – Base Clearance Calculations and Documentation

Appendix F – Cross Drain Calculations and Documentation

Appendix G – On-site Conveyance Calculations and Documentation:

• Ditch calculations – Document tailwater used in design. Describe critical ditch sections (narrow sections, steep slopes, etc.) and lining requirements. Include hydraulic worksheet and check freeboard.

• Storm sewer tabulations – Document tailwater used in design and check HGL clearance and outfall erosion protection needs.

• Spread calculations – Include spread worksheet. Make note of areas of superelevation
transition, bridge end treatment, sag inlets, auxiliary lanes etc.

- Should shoulder capacity calculations – Include shoulder gutter conveyance worksheet.
- Noise Wall drainage analysis

**Appendix H – MOT Drainage Calculations and Documentation**

- Spread calculations; verify sufficient shoulder width in MOT plans.
- Shoulder gutter capacity calculations
- Storm tabs
- Ditch calculations
- Maintenance of flow, if needed, such as canal relocation or cross drain extension

**Appendix I – Hydroplaning Calculations**

- See **CFX Exhibits 252-1 thru 252-4** for sample Hydroplaning Risk Analysis spreadsheets.

**Appendix J – Structural Analysis Calculations and Documentation**

- Run FDOT Culvert Service Life Estimator software (use latest version available).
- Include copy of geotechnical table of soil chemistry.
- Check CSLE results against Drainage Manual Appendix C for maximum and minimum fill heights and material availability (max cover check now included in the CSLE program).

**Appendix K – Correspondence, Excerpts from Previous Permits and Studies**
### CFX Design Guidelines

**Hydroplaning Analysis Tool**

**General Inputs**
- **FPID**: CFX
- **District No.**: CFX
- **County**: Osceola
- **Roadway Section Number**: CFX Typical
- **Station**: Mainline+Gate+Ramp
- **Direction**: EB

**Analysis Options**
- **Select Analysis Option**: Deterministic (Default)
- **Show Intermediate outputs? (e.g., Drainage Path Length)**: Yes
- **Risk Analysis? (Per FDOT’s Design Guidance)**: Yes

**Pavement Inputs**

**Deterministic Analysis**
- **Longitudinal Grade (%):** 0.3
- **Surface Type**: Open Graded Friction Course
- **Permeability (in/hr)**: 0

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**Risk Analysis Results**
- **(Based on Galloway WFT and PAVDIRN HPS Models)**

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2.0 – Design Criteria

2-41
Hydroplaning Analysis Tool

General Inputs
- FPID
- District No.
- County
- Roadway Section Number
- Station
- CFX Typical
- Mainline+Gore+Ramp
- Direction
- EB

Analysis Options
- Select Analysis Option: Deterministic (Default)
- Show Intermediate outputs? (e.g., Drainage Path Length)
- Yes

Pavement Inputs

Deterministic Analysis

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Pavement Texture (Please Select MTD or MPD below)
- Mean Texture Depth (in.)
- 0.067

Risk Analysis Results
(Based on Galloway WFT and PAVDRN HPS Models)

Predicted Driver Speed (mph)

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Predicted Hydroplaning Speed (mph)

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</table>

Increase cross slope
Acceptable
Not Acceptable

2.0 – Design Criteria
2-42
Hydroplaning Analysis Tool

General Inputs

FPID
District No.
County
Roadway Section Number
Station
Direction

Analysis Options

Select Analysis Option
Deterministic (Default)
Risk Analysis?
(Per FDOT's Design Guidance)

Pavement Inputs

Deterministic Analysis

Longitudinal Grade (%)
Surface Type
Permeability (in/hr)

Plane Number
Description
FTSR
Lane 1
Lane 2
Lane 3
Lane 4
Gore
Ramp 1
Ramp 2
Design Speed (mph)
Cross Slope (%)
Width (ft.)

Risk Analysis Results

(Predicted Driver Speed (mph)

Plane Number
Intensity (in/hr)
Shoulder
FTSR
Lane 1
Lane 2
Lane 3
Lane 4
Gore
Ramp 1
Ramp 2

Predicted Hydroplaning Speed (mph)

Plane Number
Intensity (in/hr)
Shoulder
FTSR
Lane 1
Lane 2
Lane 3
Lane 4
Gore
Ramp 1
Ramp 2

Increase cross slopes
Acceptable

Not acceptable

CFX Exhibit 252-4
Hydroplaning Example

CFX Design Guidelines
March 2022

2.0 – Design Criteria

2-43
260 - Bridge Structures

260.1.1 - Partial Bridge Sections

Revise FDM Figure 260.1.1 with the following:

260.6 - Vertical Clearance

Add the following paragraph:

Existing bridge vertical clearances between 16 and 16.5 feet must be maintained.

261 - Structural Supports for Signs, Signals, Lighting, and ITS

261.2 – Sign Support Structures

Note the following:

CFX does not adhere to the FDOT limitation of fifty (50) feet for overall cantilever length.

The main panels on overhead structures are to be designed with an overall height sufficient to completely cover the structural cross member as viewed in the direction of travel. The overall height shall also be sufficient to completely cover the hanger extensions necessary for installation (3” top and bottom, 6” total), i.e., no portion of the cross member or hangers shall be visible above or below the main panel.

Increase sign panel depth by 20% to accommodate future modifications.

All support columns for overhead sign assemblies shall be painted.
Add the following paragraphs:

(1) Tri-chords shall be used for all structures unless special conditions dictate the need for a box truss. All designs shall utilize single tubular uprights.

(2) Box truss designs shall only be allowed for toll plaza related static/single line DMS combination panels that are facing both directions of travel and are co-located on the same structure; or multi-line DMS (walk-in) boxes that are facing both directions of travel and are co-located on the same structure. All designs shall utilize a single tubular upright.

(3) Double column uprights with cross bracing for each support shall not be allowed for either tri-chord or box truss designs.

(4) Cantilever arms shall be designed and detailed in plans such that future arm lengths are accommodated by adding or removing a portion of the arm. Additions or removals of arm sections shall not impact the integrity of the structure.

(5) Span structures with panels in one direction shall be designed to accommodate a future panel, including exit number, in the opposite direction. Refer to CFX Signing and Marking Details for dimensions of future panel.

261.7.2 - Category 2 Analytical Evaluation

Delete all paragraphs and replace with:

Sign panels, sizes, and/or locations may be modified on existing overhead sign structures that were designed to CFX's overdesign criteria in effect at time of the original design.

- Existing structures may be utilized subject to the following:
  - The sign structure shall be less than 35 years old.
  - If the new panel configuration is equal to or smaller than the originally upsized sign panel (20% overage)
    - It is the Consultant's responsibility to document the original and proposed sign modification and certify the proposed sign panels do not exceed the original upsized sign panel.
    - A detailed analytical evaluation is not required.

- Existing structures recommended for re-use shall be in good condition per the latest inspection records and site observation. CFX will review and approve based on the merits of each case.

- It is the Consultant's responsibility to request the approved shop drawings for existing sign structures.
• When possible, existing mainline toll plaza approach structures containing a single line DMS/static panel combination with an adjacent static panel are to be adjusted such that all static signs are mounted on the same vertical plane with the front of the DMS box.

• Existing structures (with additional loading) may be utilized subject to:
  • If the new panel configuration is greater than the originally upsized sign panel or if the approved shop drawings for the existing structure are unavailable, provide a detailed analytical evaluation of the existing structure with the proposed additional loading and new structure criteria in accordance with the Structures Manual Volume 3, Section 18.3. The analysis including calculations of the Demand/Capacity (D/C) ratios, Combined Stress Ratios (CSRs), and the EOR’s recommendations shall be submitted to CFX’s GEC for review.
  
  • CFX’s approval will be based on the analysis, the EOR’s recommendation, and CFX’s GEC review results.
  
  • CFX will review and approve based on the merits of each case.

• Bridge mounted sign panels shall be evaluated on a case-by-case basis and adhere to the following:
  • Existing bridge mounted sign replaced with same size panel: sign is at least 1'-6" from the face of the traffic railing at the nearest point
  • Existing bridge mounted sign replaced with larger panel or new bridge mounted sign:
    o Bridge is oriented over the lower roadway such that the proposed sign is skewed away from the bridge and that the midpoint of that sign is at least 5' from the face of the traffic railing
    o Sign is at least 1'-6" from the face of the traffic railing at the nearest point
    o Sign panel does not cantilever above the mounting beams by more than 5 feet
    o Sign does not unduly add additional wind loading to the bridge
    o For sign panel replacements, sign panel does not extend vertically over the traffic railing more than the existing panel
  • Once these evaluations have been completed and reviewed by CFX and GEC, then the sign can be approved by CFX as warranted. If a sign cannot meet this approval, then it shall be placed on a separate structure, as appropriate.

• Sign structures supporting single direction multi-line (walk-in) or single line DMS panels shall be designed such that the DMS is installed on the front vertical plane of the truss tri-chord. The Consultant shall verify the design dead load weight for each type of DMS with the CFX GEC or GSC prior to beginning design.
  
  • The cross sections showing DMS signs shall have a note indicating the weight
and eccentricity of the DMS used in structural design.

- Consultant must coordinate the location of the DMS vertical supports and the truss diagonal locations with DMS manufacturer. The connection between truss and DMS must be such as to allow for easy installation.

### 262 - Retaining Walls

#### 262.1 - General

*Add the following to the first paragraph:*

Design retaining walls in accordance with *FDM 105*.

#### 262.2 - Retaining Wall Plans Submittal Procedures

*Add the following paragraph:*

If any wall system is proposed to be connected to an existing MSE wall, and the existing soil reinforcement provides resistance for the new wall, an analysis must be submitted for review with the 90% Plans. Internal and external wall stability analyses must use the lowest soil friction angle, as determined by direct shear tests in accordance with FM 3-D3080 to model existing MSE wall backfill.

### 263 - Geosynthetic Design

#### 263.1 - General

*Add the following to the second paragraph:*

Prior to selecting Reinforced Soil Slopes, coordinate with CFX to assure that geosynthetic reinforcement is compatible with beautification goals and planned landscape projects.

### 264 - Noise Walls and Perimeter Walls

#### 264.2.2.2 - Reasonableness

*Add the following paragraph:*

Maintenance access points must be provided for noise walls constructed along the CFX system. The spacing between openings or the ends of the noise wall must be no greater than one-half mile. Coordinate all maintenance openings with the CFX Maintenance Department.
3.0 PLANS PRODUCTION

300 - Production of Plans

300.3 - Base Sheet Format

Delete the first two paragraphs and replace with:

All plan sheet formats are contained in the FDOT CADD Software and amended by CFX’s Sheet Cell Library (to be provided by the GEC). Sheet borders include a project information block to place the CFX Project Name, state road designation, CFX’s Project Number, and CFX’s logo as shown below:

Replace the last paragraph with:

Plans sheets may use photography (aerial or other) when approved by the GEC. Using photography for Drainage Maps or SWPPP supplemental site maps does not require approval.

301 - Sequence of Plans Preparation

301.2 - Phase Submittals

Delete the third paragraph and replace with:

Standard submittal phases are: 15%, 30%, 60%, 90%, 100%, Pre-Bid, Bid, and Approved for Construction (AFC).

Delete the fourth paragraph and Table 301.2.2 and replace with:

Preliminary Line and Grade (15%) Submittal

Unless otherwise directed by CFX, the following elements are required for a 15% submittal:

TYPICAL SECTIONS

- Mainline and crossroad typical sections
- R/W lines
PLAN VIEW (ROLL PLOT)
- North arrow and scale
- Baseline of survey, equations
- Curve data (including superelevation)
- Existing topography
- Preliminary horizontal geometrics/dimensions
- Existing & proposed R/W lines (if available)
- Centerline of construction (if different from the baseline of survey)
- Begin and end stations for the project, bridges, bridge culverts and exceptions
- General locations of proposed retention/detention ponds

PROFILE VIEW (ROLL PLOT)
- Scale
- Preliminary profile grade line
- Equations
- Existing ground line with elevations at each end of sheet
- Begin and End Stations for the Project, bridges, bridge culverts and exceptions

INTERCHANGE DETAIL (ROLL PLOT)
- Schematic of traffic flow
- Preliminary configuration and geometrics
- Quadrant Identification
- Ramp Labels

DRAINAGE DESIGN DOCUMENTATION
- Preliminary Hydroplaning Analysis
Table 301.2.1 - Summary of Phase Submittals

Replace Table 301.2.1 with the following table:

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Status Key: P - Preliminary C - Complete but subject to change F - Final
* Projects with structures plans component must submit the 30% set with the 60% roadway submittal.
** Submittal will include a roll plot at an appropriate scale for the entire project

Delete the last paragraph in the section.

301.2.1 - 30% Submittal

Add the following section:

DRAINAGE DESIGN DOCUMENTATION

- Existing Conditions Analysis with Recommendations
- Pre-Development Treatment Computations
- Pre-Development Bridge and Cross Drain Analysis
- Hydroplaning Analysis, based on available information
- Reference Material

301.2.2 - 60% Submittal

Delete section: OPTIONAL MATERIALS TABULATION and add the following sections:

DRAINAGE DESIGN DOCUMENTATION

- All items outlined as part of CFX Design Guidelines Section 252 as relevant to the project.
- Bridge Hydraulic Recommendation

TOLL FACILITY

- Site/Civil
- Architectural
- Structural
- Electrical
- Mechanical
301.2.3 - 90% Submittal

Add the following sections:

DRAINAGE DESIGN DOCUMENTATION

- All items outlined as part of CFX Design Guidelines Section 252 as relevant to the project.

STRUCTURAL DESIGN DOCUMENTATION (i.e. calculations)

TOLL FACILITY

- Site/Civil
- Architectural
- Structural
- Electrical
- Mechanical
- Plumbing
- Communications
- Systems

301.2.5 - PS&E Phase Submittal

Revise title of this section to Pre-Bid Submittal and replace this section with the following:
After changes to the Final Plans, Specifications Package, and Summary of Pay Items Report, have been completed and verified, deliver the Bid Submittal consisting of the following:

(1) Signed and Sealed Plans
(2) Clean set of Plans – Not signed and sealed
(3) Bid Form
(4) CADD Files

Add the following section:

301.2.6 – Approved for Construction (AFC) Submittal

Once the bid phase is complete, incorporate all revisions and addendums into the bid set and provide the revised sheets. Replace the revised sheets from the original Bid Submittal to create the Approved for Construction Submittal.

302 - Key Sheet

302.1 - General

Delete the last sentence of the first paragraph and replace with:

The Key Sheet cell can be found in the CFX cell library (provided by the GEC).

Delete the second paragraph and replace with:

See CFX Exhibit 302-1 for an example of a lead Key Sheet. See CFX Exhibit 302-2 for an example of a component Key Sheet. See CFX Exhibit 302-3 for an example of the structures and geotechnical sheet border.

302.2 - Financial Project ID, Federal Funds, County Name and State Road Number

Revise the title to CFX Project Number, Project Name, and State Road Number and replace this section with the following:

Place the Project Name immediately under the heading "CONTRACT PLANS" in the top center of the sheet. A description of the project limits shall be placed next; e.g., “Falk Avenue to Plant Street”. This shall be followed by the state road number. The CFX Project Number is the main number identifying each individual project within CFX. Place the CFX Project Number below the state road number.

302.3 - Construction Contract Number, Fiscal Year and Sheet Number

Revise the title to Fiscal Year and Sheet Number and replace this section with the following:

Show the fiscal year for which the letting is scheduled in the “Fiscal Year” box; i.e., enter “19” in the box for a project that has a Letting date during the July 1, 2018 to June 30, 2019 fiscal year. Show the sheet number in the lower right corner. The sheet number shall always be shown as a three-digit number, i.e. "001".
302.4 - Project Location Map and North Arrow
*Delete the last paragraph and add the following paragraph:*

Show a small-scale inset of counties under CFX’s purview in the upper right portion of the lead component Key Sheet and indicate the location of the project thereon. Under the Engineer of Record’s contact information add the name of the designated CFX Project Manager. The counties map shall also be shown on the component Key Sheets.

302.6 - Index of Roadway Plans
*Add the following Note to end of the Section:*

Each sheet in the plan set must have a unique sheet number. Do not duplicate sheet numbers within the plan set.

302.7 - Professional Responsibility
*Delete paragraph three, including notes one and two and replace with:*

Place the name of CFX’s Project Manager below the EOR information.

302.8 - Governing Standard Plans and Standard Specifications
*Add the following sentence after the first sentence in the first paragraph:*

CFX currently utilizes FDOT’s January 2022 Standard Specifications. Place the following note on the lead component Key Sheet:

Governing Standard Specifications:
Florida Department of Transportation, January 2022 Standard Specifications For Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

302.11 - Strung Projects
*Delete FDM 302.11.*
303 - Signature Sheet

303.1 - General

*Replace the second paragraph with the following:*

See CFX Exhibit 303-1 for an example of a Signature Sheet.

*Delete the last paragraph and replace with the following:*

Projects are to be delivered as individual Signed and Sealed components of the contract plans; e.g., Roadway Plans, Signing and Pavement Marking Plans, Structure Plans. A Signature Sheet is required for component plans that are to be Signed and Sealed by one or more licensed professionals.
304 - Summary of Pay Items

Delete FDM 304 and replace with:

304.1 - Summary of Pay Items Sheet

The summary of pay items sheet(s) lists all pay items and quantities for all components for the project, or projects, in a contract. Place the summary of pay items sheets directly behind the lead signature sheet.

A summary of pay items sheet without quantities is required at the 60% submittal, and a complete summary of pay items sheet with quantities is required at the 90%, 100%, and Bid submittals.

Pay item numbers shall be displayed in a 4-3-3 format. Both hyphens (-) and preceding zeros are to be included. For example, the pay item number format for Maintenance of Traffic, 102-1, shall be formatted as 0102-001-000. The exception to the 4-3-3 formatting are the 638 pay item numbers for ITS conduit, which are currently formatted as 4-4-4. These ITS pay items will be updated to the 4-3-3 format at a later date.

Quantities are to be displayed to three (3) decimal places. For example, a quantity of 35.1 TN will be displayed as 35.100 TN. This requirement is intended mitigate rounding errors in quantities often hidden in spreadsheets. Precision and rounding of quantities as defined in chapter 2 of the FDOT Basis of Estimates (BOE) Manual remain unchanged. Quantities shall also be right justified and columns for plan and final quantities are to be included.

Pay items are to be placed in numerical order and not be separated by component. If two component sets share a common pay item (e.g.: pull boxes, conductors, etc.), total all quantities under a single line item. See Exhibit 304-1 below.

Exhibit 304-1

<table>
<thead>
<tr>
<th>PAY ITEM NO.</th>
<th>PAY ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PLAN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FINAL</td>
</tr>
<tr>
<td>0101-001-000</td>
<td>MOBILIZATION</td>
<td>LS</td>
<td>1.000</td>
</tr>
<tr>
<td>0102-001-000</td>
<td>MAINTENANCE OF TRAFFIC</td>
<td>LS</td>
<td>1.000</td>
</tr>
<tr>
<td>0102-001-BRC</td>
<td>MAINTENANCE OF TRAFFIC FOR ROADWAY REPAIR CONTINGENCY</td>
<td>ED</td>
<td>5.000</td>
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<tr>
<td>0102-99C-000</td>
<td>PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY (CONTINGENCY)</td>
<td>ED</td>
<td>110.000</td>
</tr>
<tr>
<td>0104-020-000</td>
<td>EROSION CONTROL</td>
<td>LS</td>
<td>1.000</td>
</tr>
<tr>
<td>0110-001-001</td>
<td>CLEARING &amp; GRUBBING</td>
<td>LS</td>
<td>1.000</td>
</tr>
<tr>
<td>0120-001-000</td>
<td>REGULAR EXCAVATION</td>
<td>CY</td>
<td>1010.600</td>
</tr>
<tr>
<td>0343-001-BRC</td>
<td>ROADWAY REPAIR, EMERGENCY BASE REPAIR CONTINGENCY</td>
<td>TN</td>
<td>500.000</td>
</tr>
<tr>
<td>0430-004-008</td>
<td>VIDEO EXISTING STORM DRAIN PIPES</td>
<td>LF</td>
<td>225.000</td>
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<tr>
<td>0560-003-000</td>
<td>EXISTING OVERHEAD SIGN STRUCTURE UPRIGHT PAINTING</td>
<td>EA</td>
<td>2.000</td>
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<tr>
<td>0570-001-002</td>
<td>PERFORMANCE TURF, SOD</td>
<td>SY</td>
<td>2534.300</td>
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<tr>
<td>0713-101-536</td>
<td>PAVEMENT MARKING - PREFORMED TAPE, CONTRAST, SKIP, 9&quot;</td>
<td>GM</td>
<td>16.321</td>
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<tr>
<td>0999-001-000</td>
<td>ALLOWANCE FOR DISPUTES REVIEW BOARD</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>0999-002-000</td>
<td>WORK ORDER ALLOWANCE</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
305 - Drainage Map and Bridge Hydraulic Recommendation Sheet

305.1 - Drainage Map

Replace the second sentence in the first paragraph with the following sentence:

Drainage maps must be developed using an aerial base map and must be included in the construction plans.

305.1.1 - Plan View

Add the following to Number (4):

(4) Show and label (in acres) pond drainage basins on maps and include pond basin names.

Add the following plan view requirements:

(8) General location of landfills or contamination sites must be indicated on the plan view of the drainage maps.

(9) Wellfield Protection areas, if any, must be shown on the plan view. Include the wellfield name and associated regulatory agency.

(10) FDEP impaired water body basin boundaries, if any, must be shown on the plan view. Include the impaired water body name.

(11) Place the datum conversion from NAVD to NGVD on the drainage map. For example, NAVD 88 EL. 1.00 = NGVD 29 EL. 2.50.

(12) Section, Township, and Range lines labeled with their respective directions.

(13) Show the drainage area boundaries using a very heavy, broken line, with the area (in acres or square miles) shown within the boundary. The proposed structure location should be shown. Existing structures over the same water body and those structures that affect the hydraulics of the proposed structure should be located and numbered and corresponding existing structure information listed in the appropriate columns.

(14) Depressional areas (if closed basin)

305.1.2 - Profile View

Add the following profile requirements:

Seasonal high-water information within roadway limits as determined from the geotechnical report.
305.2.3 – Location Map and Drainage Area

*Delete Section 305.2.3.*

306 - Typical Sections

306.2 - Typical Section Sheet

*Add the following sentence to the last paragraph:*

See CFX Exhibits 306-13 through 306-14 for illustrations of various typical sections.

306.5 - Standard Notes for Typical Section Sheets

*Add the following standard note:*

(4) Embankment slope requirements are as follows:

- 1:6 for fill to 5’
- 1:6 to edge of clear zone & 1:4 for fills 5’ to 10’
- 1:6 to edge of clear zone & 1:3 for fills 10’ to 20’
- 1:3 with guardrail for fills over 20’ and must include shoulder gutter
- Shoulder gutter is required in areas of guardrail where embankment slopes are steeper than 1:4 and any pavement is sloped toward the embankment
TYPICAL SECTION
4 LANE NEW ALIGNMENT
TYPICAL SECTION NO. 1

NEW CONSTRUCTION
OPTIONAL BASE GROUP B WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C1) (PS 75-22)
AND FRICTION COURSE FC-5 (PS 75-22)

TRAFFIC DATA
CURRENT YEAR = TBD ART = TBD
ESTIMATED OPENING YEAR = TBD ART = TBD
K = TBD, J = TBD, T = TBD (KM/H)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

SHOULDER PAVEMENT
OPTIONAL BASE GROUP A WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C1) (PS 75-22)

CFX Exhibit 306-13
4 Lane Expressway
TYPICAL SECTION

8 LANE NEW ALIGNMENT

TYPICAL SECTION NO. 2

NEW CONSTRUCTION

TRAFFIC DATA

CURRENT YEAR
Est. Design Year
Estimated Design Year

SHOULDER PAVEMENT

Type Sp Structural Course
Traffic Classified

NOTE TO DESIGNER:

HYDROPLANING ANALYSIS MUST BE PERFORMED BY THE DESIGNER ON THESE WINDSHIELD-NOSED VEHICLES USING THE FDOT HYDROPLANING TOOL.

SPECIAL WORDING ANALYSIS FOR TWO LANE SECTIONS 85 AND 105 AS PER FDOT STANDARDS AND A TO MPH CONVERSION CHART CAN BE FOUND ON CFX EXHIBIT 306-14 PAGE 22.

CXX Design Exhibit

8 Lane Expressway

+ 2 Special Use Lanes w/ Buffer

3.0 – Plans Production

3-17
307 - Summary of Quantities

Delete FDM 307 and replace with the following:

307.1 - General

The Summary of Quantities sheets contain plan summary boxes for all work to be performed on the project with the exception of work provided for on the Summary of Drainage Structure sheet(s). Document the quantities by location in the plan summary boxes. The Summary of Quantities sheets is the only location where quantities are to be documented. Do not place plan summary boxes in any other location in the plan set. Chapter 8 of the Basis of Estimates Manual contains guidance on plan summary boxes. Refer to the 2021 FDOT Basis of Estimates Manual.

The Summary of Quantities sheets are to be placed after the numbered Plan Sheets. Number the Summary of Quantities sheets prefixed by the letter “SQ”; e.g., SQ-1, SQ-2, SQ-3.

Include with phase submittals the electronic shape file (QTDSRD.dgn) and other documentation (i.e., calculations, sketches, or spreadsheets) that support the quantities shown in the summary boxes, beginning with Phase III.

307.1.1 - Tabulation of Quantities Sheets

When signing and pavement marking, lighting, signal, ITS, or landscape improvements are shown in the roadway plan set, in lieu of a component plan set, place the Tabulation of Quantities sheet for those improvements behind roadway Summary of Quantities sheets. Number the Tabulation of Quantities sheet in sequence with the Summary of Quantities sheets using the prefix “SQ”.

307.2 - Plan Summary Boxes and Format

The plan summary boxes are provided in the FDOT CADD Software. Boxes should be placed on the sheets in order of pay item numbers. A continuation of a box onto subsequent plan sheets may be necessary. On contracts with multiple Financial Project ID numbers or federal aid and non-federal aid quantities, make provisions to tabulate and summarized their respective quantities. Refer to Chapter 8 of the Basis of Estimates Manual for further guidance.

307.2.1 - Standard Notes

Place the following standard note below the Summary of Earthwork box:

Earthwork has been calculated using the _______ base option.

Place the following standard note below the Summary of Monitor Existing Structures box:

This list includes existing structures (as determined by CFX) located outside the limits specified in Article 108-2 of the FDOT Specifications that are required to be monitored. This list should not be
considered all-inclusive and does not contain existing structures to be monitored that are located within the distances specified in Article 108-2.

307.2.2 - Pay Item Notes

*Delete all paragraphs and replace with:*

Place the following applicable pay item notes on the first Summary of Quantities Sheet;

(1) 102-1  
THE LUMP SUM PAYMENT INCLUDES ALL COSTS ASSOCIATED WITH WORK, PERSONNEL, MATERIALS, AND EQUIPMENT NECESSARY TO MAINTAIN TRAFFIC WITHIN THE CONSTRUCTION LIMITS OF THE PROJECT AS SPECIFIED UNDER SECTION 102 OF THE CFX TECHNICAL SPECIFICATIONS. LITTER REMOVAL SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

(2) 102-99C  
A CONTINGENCY ITEM, TO BE INCLUDED AS DIRECTED BY THE ENGINEER.

(3) 285-7XX  
ALL BASE MATERIAL SHALL BE LIMEROCK, UNLESS OTHERWISE NOTED.

(4) 327-70-XX  
INCLUDES RETAINMENT OF 500 TONS OF MILLINGS, OWNED BY CFX. MATERIAL IS TO BE STORED AT THE CONTRACTOR’S FACILITIES FOR TWO YEARS FOLLOWING FINAL ACCEPTANCE OF THE PROJECT. WHEN NEEDED BY CFX, THE CONTRACTOR SHALL LOAD THE MATERIALS INTO CFX TRUCKS AT NO ADDITIONAL COST.

(5) 436-1-1  
MDH 12-12" ID TRENCH FORMER SYSTEM WITH E-COATED FRAME AND UNCOATED GRATE (HI-INTAKE) OR APPROVED EQUAL. INCLUDES ALL ITEMS NEEDED TO FURNISH AND INSTALL TRENCH DRAIN AS SHOWN IN THE PLANS. INCLUDES BUT NOT LIMITED TO, CONCRETE TRENCH DRAIN, 12" PIPE, GRATE, CONCRETE JACKETS, SPECIAL DESIGN CONCRETE SHOULDER GUTTER AND CONCRETE SHOULDER GUTTER TRANSITION SEGMENTS.

(6) 570-1-2  
SOD QUANTITES INCLUDE THE AREAS IDENTIFIED TO RECEIVE PINE BARK NUGGET MULCH. ALL COSTS ASSOCIATED WITH THE PINE BARK NUGGET MULCH SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

307.3 Box Culvert

The structural design of any size concrete box culvert may be performed utilizing computer programs.
as described in FDM 265.13. The LRFD Box Culvert Program complements the details shown on Standard Plans, Index 400-289.

Complete the Box Culvert Data Table (cell is included in the Structures workspace of the FDOT CADD Software) and the Reinforcing Bar List. Place the table and list on plan sheets in the Structures Component Plan Set.

For box culverts without FDOT assigned bridge numbers (typically ≤ 20-foot spans measured along the centerline of the roadway from face-face (inside) of the extreme abutments or sidewalls), place quantity totals in a Summary of Box Culverts box on a “BQ-” numbered plan sheet in the Structures Component Plan Set. Do not include the quantities in the Summary of Structure Quantities table. Load these planned quantities into AASHTOWare Project™ Preconstruction or Designer Interface in the Roadway Category.

For box culverts with FDOT assigned bridge numbers (bridge culverts), place quantity totals in the Box Culvert section of the Summary of Structure Quantities in the Structures Component Plan Set. Load these planned quantities into AASHTOWare Project™ Preconstruction or Designer Interface in the Structures Category under the assigned bridge number.

307.4 - Litter Removal and Mowing

Delete all paragraphs and replace with:

All elements of CFX’s transportation system enjoy a high maintenance standard that provides a safe, efficient and effective facility for its customers. Litter removal shall occur once per week and in advance of each mowing cycle. As such, litter removal shall be incidental to the Maintenance of Traffic pay item.

307.5 - Monitor Existing Structures

Monitor Existing Structures includes settlement, vibration, and groundwater monitoring of existing structures during construction as described in Section 108 of the Standard Specifications. Structures requiring consideration for monitoring typically include buildings, bridges, and retaining walls which are adjacent to construction activities. When there is a concern regarding vibration, structures to be monitored may also include historic features and buildings in which sensitive business operations are conducted; e.g., eye surgery, medical treatments, rehabilitation operations, recording and broadcasting operations, places of worship, antique shops, or museums.

When appropriate, include a note on the General Notes sheet that:

1. Restricts hours of construction operations.
2. Restricts the type of construction equipment to be used.

Pay item 108-1 is to be used to mitigate the risk for damage occurring to an existing structure due to settlement.
Pay item 108-2 is to be used to mitigate the risk for interfering with the intended use of an existing structure. This pay item is not typically used for residential properties.

Pay item 108-3 is to be used only when recommended by a geotechnical firm and concurred with by the District Geotechnical Engineer. The use of this pay item is not common.

### 307.5.1.1 - Miscellaneous Structures

Activities that may cause harm to existing structures include the construction of foundations for mast arm signal poles, strain poles, cantilever signs, overhead truss signs, high mast light poles and ITS.

Based on visual field observations, the EOR will identify existing structures that are recommended to be monitored during these activities. CFX will make the final determination of the existing structures to be monitored.

### 307.5.1.2 - Structures other than Miscellaneous Structures

Activities that may cause harm to existing structures include the construction of retaining walls, noise walls, sheet pile walls, deep excavations and foundations for bridges and other structures.

1. If any existing structure is within the distances specified in Section 108-2 of the Standard Specifications, include pay item 108-1 in the Summary of Monitor Existing Structures summary box. Use a distance of 250 feet as the limit for pile driving. Do not list or identify these structures in the Contract Plans.

2. Based on visual field observations, the EOR may recommend monitoring existing structures located beyond the distances specified in Section 108-2 during these activities. CFX will make the final determination of the existing structures to be monitored.

### 307.5.1.3 - Roadway Compaction Operations

Activities that may cause harm to existing structures include embankment and asphalt vibratory compaction.

1. If an existing structure is within the distances specified in Section 108-2 of the Standard Specifications, include pay item 108-1 in the Summary of Monitor Existing Structures summary box. Do not list or identify these structures in the Contract Plans.

2. Based on visual field observations, the EOR may recommend monitoring existing structures located beyond the distances specified in Section 108-2 during these activities. CFX will make the final determination of the existing structures to be monitored.
307.5.2 - Vibration Monitoring
Activities that may cause harm to existing structures include pile driving, sheet pile and casing installation, and embankment and asphalt vibratory compaction. Based on visual field observations, the EOR will identify existing structures that are recommended to be monitored during these activities. CFX will make the final determination of the existing structures to be monitored.

307.5.3 - Groundwater Monitoring
Based on visual field observations, the EOR will identify existing structures that are recommended to be monitored during anticipated dewatering operations. CFX will make the final determination of the existing structures to be monitored.

308 - Summary of Drainage Structures and Optional Materials Tabulation

308.1 - General

Delete paragraph 2.

308.2 - Optional Materials Tabulation

Delete FDM 308.2 Optional Materials Tabulation and replace with:

Unless otherwise approved, it is CFX preference to utilize reinforced concrete pipe (RCP) or ADS Class 2 Polypropylene pipe (HP Storm) for all storm sewer pipes. ADS single wall HDPE meeting AASHTO M294 standards and bituminous coated corrugated metal pipe (BCCCMP) are approved for gutter drains. Culvert extensions are to match the existing culvert material. HP Storm is required to be installed with an RCP end section. For the case of wall zone pipes, HP Storm should be utilized. In areas where conditions warrant, steel pipe may be used in lieu of HP Storm for wall zone applications. Pipes to be installed via jack and bore shall utilize the steel casing as the carrier pipe. The steel casing should extend from structure to structure, where reasonable. All drainage pipe must be produced from an FDOT approved production facility.

311 - General Notes

311.2.1 - Required General Notes

Delete with 311.2.1 and replace with:

See CFX Exhibit 311-1 for required standard general notes and CFX Exhibit 311-2 for project specific general notes.
312 - Roadway Plan-Profile

312.2.2 - Horizontal Curves

*Add the following paragraph:*

Horizontal curve information must also be shown on its own individual sheet(s) known as “Curve and Coordinate Data” and must contain all horizontal curve information as identified in the FDM as well providing the “Northing/Easting” information for the PC, PI, PT, and CC of the curves.

The Design Speed (DS) of the curve shall also be identified.

312.2.6 - Plan Layout

*Add the following label requirement:*

(14) Plot the locations of roadway soil borings in the roadway plan view using a target symbol and boring number label.

312.3.4 - Superelevation and Special Profiles

*Add the following sentence the beginning of the first paragraph:*

For standard superelevated sections, superelevation transitions shall be plotted above the roadway profiles, with stationing labels indicating the beginning and ending points of the superelevation transitions as well as the location of zero cross slope.
# Standard Roadway General Notes

1. **Benchmark Elevations Shown on the Plans are National Geodetic Vertical Datum of 1988 (NVD 88) or the North American Vertical Datum of 1988 (NAVD 88) to 1900 ft (579 m). All Surface Information was Obtained from a Licensed Florida Professional Surveyor and Mapped and Utilized as Supporting Data in the Production of Design Plans and Construction.** The Professional Surveyor and Mapper of Record is:

   **Surveyor Name:**
   **P.O. Box:**
   **Company Name:**
   **City:**
   **State:***

2. **The Locations of the Utilities Shown on the Plans (Including Those Designated “Y” and “Y”) Are Based on Limited Investigation Techniques and Should be Considered Approximate Only. The Verified Locations/Elevations Apply Only at the Points Shown. Interpolations Between These Points Have Not Been Verified.**

3. **Utility/Agency Owners:**

   **Company:**
   **Contact:**
   **Telephone Number:**

   **Sprinkler/Florida Inc.:**
   **Cheryl Flowers**
   **(954) 555-1234**

   **C.F.X.:**
   **Steve Vice**
   **(203) 690-2335**

   **C.F. Fiber:**
   **Pat Coburn**
   **(203) 690-1306**

4. **Special Event Days for this Project Include:**

   *(List all special event days, e.g., QCT* for Sporting Events)*

5. **Any Road 29 or 30 ft wide or narrower within the Limits of Construction is to be Protected in the Event of Damage or Theft:**

6. **Maintain the Integrity of the Limited Access Fencing at All Times:**

7. **Do Not Bring Any Hazardous Materials onto the Project, including Such Materials as Will Be Required for Performing the Contract Work. Such Materials Should Be Handled in Compliance with All Applicable Regulations.**

8. **All Materials and Equipment Listed in the Specifications shall be Available for Use.*

9. **A C.F.X. Fiber Optic Owner Representative shall be Present During Construction in the Vicinity of C.F.X. Fiber Facilities.**

10. **Use of Service Buried Utilities Within the Limits of Roadway Excavation shall be Removed.**

11. **Limits of Construction as Shown on the Typical Sections Represent the Limits of Standard Clearing and Grading. Additional Areas are Shown on the applicable Plan and Profile Sheets.**

12. **All Waste Materials shall be Removed from CFX Rights of Way and Properly Disposed of in Areas Provided by the Contractor.**

---

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Responsible Engineer of Record Full Name, P.E.</th>
<th>Responsible Engineer of Record Company Street Address</th>
<th>Contractor Name</th>
<th>Contract Title</th>
<th>Project Name</th>
<th>Contract No.</th>
<th>Contract Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/08/2023</td>
<td>1.0 – Plans Production</td>
<td>Central Florida Expressway Authority</td>
<td>SR 600</td>
<td>CFX</td>
<td></td>
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</tr>
</tbody>
</table>
29. Tape pavement markings shall not be placed over conditional friction course joints.
30. All disturbed areas within the limits of construction shall be graded and seeded, unless otherwise noted.
31. All permanent grass areas, except road bottoms, shall receive a 6" finish soil layer meeting the requirements of CFX Technical Specification Section 162.
32. All A-V material shall be stockpiled and used as embankment or finish soil layer in accordance with Index No 120-101 & 120-201.
33. All permanent and temporary crash cushions or CFX’s system shall be reconditioned and recharged. All temporary crash cushions used in CFX’s system shall be designed at the original posted speed but at the reduced TCP speed.
34. (new alignment) the station/crosses at right of way boundaries and corners refer to the R/W line and not the fence location and are based upon centerline construction stationing.
35. (new alignment) permanent turnouts and driveway connections to private property that lie outside the limits of limited access right-of-way and where access rights have not been acquired shall be constructed in accordance with the turnout details and state standard specifications referenced on the key sheet of these plans. Do not isolate adjacent railroad from the remainder of the property unless access rights are acquired. Access shall be provided to such property where the construction interferes with the existing means of access.

NOTES TO DESIGNERS:
1. Engineer of record to determine additional notes as required.

STANDARD NOTES AS SHOWN ARE APPLICABLE TO THE MAJORITY OF PROJECTS ALONG THE CFX SYSTEM.
WHERE A NOTE DOES NOT APPLY, IT SHALL BE REVISUAL TO “NOT USED” SUCH THAT THE NUMBERING OF STANDARD NOTES DOES NOT CHANGE.
ADDITIONAL NOTES MAY BE ADOPTED UNDER “PROJECT SPECIFIC GENERAL NOTES” AS DETERMINED BY THE SECTION ENGINEER.
DELETE THIS BOX AND ALL “NOTES TO DESIGNERS” PRIOR TO SUBMITAL OF PLANS FOR REVIEW.

STANDARD NOTES FOR ROADWAY PROJECTS

3.0 – Plans Production

3-25
313 - Special Profile and Back-of-Sidewalk Profile

Add the following section:

313.4 - Treatment/Attenuation Swales

Identify treatment swales in the profile view of the plans and include the following:

Begin Treatment/Attenuation Swale @ Sta. XXX LT (or RT) Construct Ditch Block; Sta. XXX LT (or RT); Top Elevation xx.xx
End Treatment/Attenuation Berm Sta. XXX LT (or RT); Top Elevation, if required DHW and SHWT elevations

For plan sets that do not have a profile view, the stations and elevations above must be summarized in a table that uses the same naming convention.

Note that treatment/attenuation berm locations need to be specified only if a special longitudinal berm is constructed above natural ground to increase storage in the swale. If the outside boundary of the treatment/attenuation swale is the intersection between the backslope and natural ground confirm that the design high-water does not exceed 0.5 feet below the elevation of the intersection point and that no special berm information is necessary in the plans.

314 - Intersection and Interchange Layout and Details

314.3.2 - Ramp Terminal Details

After the first paragraph add the following:

(14) A combined Plan and Profile Sheet is preferred
(15) Use 1”=2’, 1”=4’ or 1”= 5’ for the vertical scale.
(16) At a minimum the Plan/Profile sheet should provide coverage for 100 ft. in advance of the ramp EOP flare to 100 ft. beyond the 17 or 19 ft. physical gore.
(17) Show elevations at 25 ft. incremental stations (i.e. 1+25, 1+50, 1+75, 2+00, etc.), in profile only, at all roadway edges, plus break lines.
(18) Provide a section through the 17 or 19 ft. physical gore.

315 - Drainage Structures

315.2 - Required Information

Delete paragraph nine and requirement in the non-conventional projects and replace with:
Include soil boring and SHWT elevation at the nearest station to the soil boring. For Cross Drains, include HW and tailwater elevations for the design storm as calculated per Section 252.7 of the CFX Design Guidelines. For Outfall structures shown on the plans, include tailwater elevations used in the storm sewer calculations.

320 - Stormwater Pollution Prevention Plan (SWPPP)

320.1 - General

Delete the second paragraph and replace with:

For an example of SWPPP sheets on construction projects, see CFX Exhibits 320-1 and 320-2. Additional guidance for developing a SWPPP may be found in the DEP SWPPP template, found on the DEP web page.

320.2 - Narrative Description

Delete the first paragraph and replace with:

The SWPPP sheets include a narrative that refers to other documents such as but not limited to the Standard Specifications or the Standard Plans as necessary. Use the following outline to prepare the narrative:

320.4 - Controls

Delete the first paragraph and replace with:

The SWPPP must include a description of the controls that will be implemented at the construction site. For each of the major activities identified in the narrative, describe the timing of the implementation of control measures during the construction process. Also describe the stormwater management measures that will be installed during construction to control pollutants in the stormwater discharges that will occur after construction.

Delete the third and fourth paragraph.

320.5 - Maintenance, Inspection and Non-Stormwater Discharges

Delete the first and second paragraphs and replace with:

Include a narrative describing any additional maintenance and inspection requirements that are not stated in the standard specifications or amended by CFX. Include the inspection requirements, which will be either requirements of the DEP or the applicable requirements of another regulatory agency. If special procedures have been developed to minimize turbidity associated with normal construction dewatering, the designer will include a description of those procedures.
Special monitoring requirements described in the DEP Generic Permit may apply where the project discharges to waters listed in Section 303(d) of the Clean Water Act. Consult with the GEC environmental permitting staff to determine if the monitoring requirements are applicable. If applicable and at the direction of the GEC, the EOR will describe the special monitoring requirements in the inspection section of the narrative.
THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS PROVIDED TO ASSIST THE CONTRACTOR IN DEVELOPING THE REQUIRED SITE SPECIFIC EROSION CONTROL PLAN AND OTHER ITEMS NECESSARY TO OBTAIN COVERAGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION GENERIC PERMIT (CGP). REFER TO THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL FOR ADDITIONAL REQUIREMENTS.

1. SITE DESIGN:

2. NATURE OF CONSTRUCTION ACTIVITY:

   THE PROJECT IS THE TYPE OF CONSTRUCTION ACTIVITY OF ______ WIDERNA __ in ______ COUNTY. THIS INVOLVES ______ MAJOR ACTIVITIES SUCH AS CONSTRUCTING ROADWAY SURFACE, CURB AND GUTTER, SIDEWALK, STORMWATER MANAGEMENT FACILITIES, ETC. THE PROJECT EXTENDS A DISTANCE OF ______ MILES.

3. INTENDED SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES:

   IN THE CONTRACTOR’S SITE SPECIFIC EROSION AND SEDIMENT CONTROL PLAN, PREPARE A DETAILED CONSTRUCTION SCHEDULE TO INCLUDE DATES OF MAJOR GRADING ACTIVITIES AND SEQUENCES OF TEMPORARY AND PERMANENT SOIL DISTURBING ACTIVITIES ON ALL PORTIONS OF THE PROJECT. FOR ADDITIONAL INFORMATION, REFER TO SECTION 47 OF THE MIES CGP.

   LIST OF INTERRUPTED ACTIVITIES:

   (1) (2) FOR EACH CONSTRUCTION PHASE, INSTALL PERIMETER CONTROLS PRIOR TO CLEARING AND GRADING OR ANY OTHER CONSTRUCTION ACTIVITIES. REMOVED PERIMETER CONTROLS ONLY AFTER ALL UPTSTREAM AREAS ARE STABILIZED AND PERMANENT VEGETATION IS ESTABLISHED.

   (1.2) TIME CONSTRUCTION ACTIVITIES TO LIMIT IMPACT FROM SEASONAL CHANGES OR WEATHER EVENTS.

   (1.3) THE CONTRACTOR WILL PROVIDE POLLUTION CONTROL BY IMPLEMENTING DUST CONTROL DURING ALL PHASES OF CONSTRUCTION.

   (1.4) OPPOSITE DIRECTIONS SHOULD BE alternated on the construction area. IF POSSIBLE, THIS ADDITIONAL TIME IS NOT REQUIRED DUE TO THE NATURAL CYCLE OF THE EROSION CONTROL.

   (1.5) MORE FREQ UENT MAINTENANCE AND LIMITING EFFECTS OF EROSION AND SEDIMENT CONTROLS.

4. PROJECT AREA ESTIMATES:

   TOTAL SITE AREA: ______ ACRES.

   TOTAL AREA TO BE DISTURBED: ______ ACRES.

5. RUNOFF DATA:

   RUNOFF COEFFICIENTS BEFORE Cw (B), DURING Cw (D) AND AFTER Cw (A) CONSTRUCTION:

   RUNOFF COEFFICIENTS FOR:

   GRADED SHOULDERS ADJACENT TO ROADWAY: Cw=0.40

   IMPERVIOUS ROADWAY AND PAVED SHOULDER: Cw=0.25

   DISTURBED AREAS, EXPOSED SOIL ETC. DURING CONSTRUCTION: Cw=0.40

   WEIGHTED RUN-OFF COEFFICIENT:

   BEFORE: Cw (B) = ______ DURING: Cw (D) = ______ AFTER: Cw (A) = ______

   THE RUN-OFF COEFFICIENT Cw (D) IS CALCULATED ASSUMING THAT THE MAXIMUM ALLOWABLE AREA OF SOIL IS DISTURBED DURING CONSTRUCTION AND THE REMAINING AREA IS THE EXISTING IMPERVIOUS AND GRADED SHOULDER AREAS.

6. SOIL DATA:

   FOR ADDITIONAL INFORMATION, REFER TO THE RESULTS OF SOIL SAMPLES TAKEN IN THE ROADWAY AND ITS SURROUNDING AREAS. THE RESULTS OF SOIL SAMPLES TAKEN IN THE ROADWAY ARE SHOWN IN THE SHEET OF SOIL SAMPLES TAKEN IN THE ROADWAY AND ITS SURROUNDING AREAS. THE SHEET NUMBERS FOR THESE ARE IDENTIFIED ON THE KEY SHEET OF THESE CONSTRUCTION PLANS.

   IN GENERAL, THE SOILS ARE:

   SOIL TYPE HYDROLOGIC GROUP DEPTH TO SHORE
   S - ASTYULA SAND A 55' 120'

   CFX Exhibit 3201 SWPPP Sheets

   STORMWATER POLLUTION PREVENTION PLAN
3.0 Plans Production

3.0.3 Structural Practices

In the Contractor's SPS specific erosion and sediment control plan, describe the proposed structural practices to control or trap sediment and otherwise prevent the discharge of pollutants from exposed areas of the site. Sediment controls shall be placed on the following:

Temporary Devices:

* Salt fence
* Staked turbidity barriers
* Soil tracking prevention devices at construction entrances/exits
* Floating turbidity barriers
* Inlet protection systems including synthetic silt and sandbags
* Sediment basin/container systems
* Chemical treatments such as polycationics and alum

Permanent:

* Stormwater ponds
* SOD (may also be used for temporary controls)
* Velocity dissipation devices such as riprap or others

3.0.5 Water Quality Monitoring

3.0.5.1 Water quality monitoring shall be conducted in accordance with the special conditions of any environmental permit, or by the contractor upon the observation that water quality standards may be violated by the contractor's activities. Monitoring locations may be specified in the environmental permit or designated by the contractor and approved by the engineer.

3.0.5.2 The engineer will be responsible for monitoring any activities for violation of water quality standards. Turbidity readings shall be recorded on the construction inspection report and compared with turbidity readings taken before and after the project. Turbidity readings shall be recorded on the construction inspection report and compared with turbidity readings taken before and after the project. Turbidity readings shall be recorded on the construction inspection report and compared with turbidity readings taken before and after the project. Turbidity readings shall be recorded on the construction inspection report and compared with turbidity readings taken before and after the project.

3.0.5.3 Water quality standards are violated, construction shall be stopped immediately. The engineer will be responsible for remedial action to prevent further violations. Remedial actions may include corrective measures such as increased sedimentation basins, increased sedimentation basins, increased sedimentation basins, or increased sedimentation basins. Remedial actions may include corrective measures such as increased sedimentation basins, increased sedimentation basins, increased sedimentation basins, or increased sedimentation basins.

3.0.6 De-watering Controls

De-watering controls shall include a description of the BMPs that will be used to ensure that de-watering operations do not cause or contribute to violations of state water quality standards.

CFX Exhibit 320-2 SWPPP Sheets Cont.
321 - Temporary Traffic Control Plan

321.3 - Required Information

Add the following sentence:


Add the following paragraph:

When a system-to-system or complicated interchange will be partially open to traffic during construction, the Consultant shall provide a fully developed construction guide signing plan (CGSP) for each phase of construction.

The CGSP shall clearly identify the construction phase in which:

- A proposed structure is required for temporary and/or permanent signing.
- An existing structure is needed for temporary signing.
- An existing structure could be relocated for temporary use (CFX approval required prior to including in plans).
- A temporary ground mount guide sign is to be installed.
- Relevant VMS are to be used and proposed text.

321.4.2 - Level II

Replace note (7) with:

Special Details, as necessary; e.g., temporary drainage, slope requirements due to diversions, temporary signalization, railroad work; intersection details, construction guide sign plan and worksheets, overhead sign structure cross section sheets for different phases

Add the following section:

321.4.3 - Level III

Project Type: Complex projects.

Components of the TTC Plan:

(1) General Notes
(2) Phase Notes (including any references to the applicable Standard Plans Index)
(3) Phase Typical Section(s)

(4) Detailed Plan Sheets

(5) Cross Sections

(6) Temporary Signalization Plans (if required)

(7) Special Details, as necessary; e.g., temporary drainage, slope requirements due to diversions, temporary signalization, railroad work; intersection details, construction guide sign plan and worksheets, overhead sign structure cross section sheets for different phases
STANDARD TTC GENERAL NOTES

1. ALL TRAFFIC CONTROL PROCEDURES AND DEVICES SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (3RD EDITION), 2009 EDITION, THE TTC標準 PLANS INDEX 102-600 SERIES, AND THE FOLLOWING NOTES AND DETAILS INCLUDED IN THIS PLAN.

2. DURING OPERATIONS, SCOOTERS SHALL BE CLOSE OR MORE THAN 2 HOURS. A LANE MAY NOT BE CLOSED OVERNIGHT EXCEPT AT AN ACTIVE WORK ZONE. IN THE EVENT OF AN UNFORESEEN EXTENDED STOPPING OF WORK EXCEEDING 24 HOURS, ELEVATION OF ADJACENT LANES SHALL NOT EXCEED 5-1/2 INCHES.

3. LANE CLOSURES OR OTHER TRAFFIC CONTROL FOR MALLEABLE, RELOCATABLE, OR REVERSIBLE BARRIERS SHALL BE EXECUTED IN ACCORDANCE WITH TTC標準 PLANS INDEX 102-600 SERIES.

4. TERMINAL PAVEMENT SHALL BE AT A MINIMUM 2" THICK ASphaltmix OF PORTLAND CEMENT CONCERN. TYPE OF ASPHALT MAY BE MODIFIED FOR THE TYPE 8 ASPHALT FOR ANY ADDITIONAL COMPLICATIONS.

5. MAINTENANCE OF DRAINAGE AND STORMWATER COLLECTION SYSTEMS IS REQUIRED TO PREVENT GROUNDWATER FLOW TO ROADWAY OR FEATURES EXISTING UNDER CONSTRUCTION OR RECONSTRUCTION. PROVIDE A TEMPORARY DRAINAGE MEASURES AS REQUIRED TO DISCONNECT THE DRAINAGE BASIN AND PREVENT OVERFLOW.

6. ADDITIONAL DRAINAGE AND STORMWATER COLLECTION SYSTEMS ARE REQUIRED TO MAINTAIN DRAINAGE BASIN AND PREVENT OVERFLOW. THE REMOVAL OF THE PERMANENT DRAINAGE BASIN SYSTEMS SHALL BE INCORPORATED INTO THE FINAL PLAN.

7. DRAINAGE BASIN SYSTEMS MAY NOT BE CONSTRUCTED TO INCREASE SURROUNDING AREA BEYOND THE STATED REQUIREMENTS WILL REQUIRE TEMPORARY COVERS THAT ALLOW DRAINAGE FLOW AND PROTECT THE INLET DURING TYPHOON PERIODS AND SHALL BE CONSIDERED INCIDENT TO THE ITEM NUMBER 7

8. REGULATORY SPEED LIMITS FOR VS __ DURING CONSTRUCTION SHALL BE MAINTAINED AT __ MPH UNLESS OTHERWISE NOTED IN THE PLANS.

9. COMPASS WITH MORE THAN ONE MEASUREMENTS STATED IN THE LOCAL HIGHWAY OR TRAFFIC ENGINEERING MANUALS. METHODS TO MAINTAIN HIGHWAY LEVELS WITHIN ACCEPTABLE LIMITS SHALL BE PROVIDED AND NOT LIMITED TO TEMPORARY NO-SHOW BARRIERS, ENCLOSURES AND PROCEEDING THROUGH THE ROADWAY.

10. TRAFFIC CONDITIONS, ACCIDENTS, AND ANY UNFORESEEN EMERGENCIES MAY REQUIRE RESURRECTION OR REMOVAL OF LANE CLOSURES. MAKE THE NECESSARY ADJUSTMENTS WITHOUT DUAL AT THE DIRECTION OF THE TTC CONSTRUCTION ENGINEER.

11. A TRAFFIC CONTROL OFFICER IS REQUIRED FOR ALL MAINLINE AND RAMP LANE CLOSURES AND SHALL BE CONSIDERED INCIDENT TO ITEMS NO. 201.4 MILEAGE OF TRAFFIC.

12. REQUEST PERMISSION FOR ANY CONSTRUCTION AREA IN THE CLOSURE FROM THE TTC CONSTRUCTION ENGINEER OR REPRESENTATIVE. COORDINATE DETAILS WITH ALL ADJACENT CONSTRUCTION PROJECTS INCLUDING PROJECTS AT ADEQUATE INTRACOMMUNICATIONS.

13. COORDINATE ALL LANE CLOSURES, DIVERSIONS, OR OTHER MAINTENANCE OF TRAFFIC OPERATIONS WITH TTC CONSTRUCTION ENGINEER AT LEAST 72 HOURS PRIOR TO THE ACTIVITY.


15. MULTI-LANE CLOSURES ARE LIMITED TO THE LANTS OF:
   SA __ __ PM TO __ AM
   SB __ __ PM TO __ AM
   SC __ __ PM TO __ AM
   SD __ __ PM TO __ AM

16. TRAFFIC FACING A PROFESSIONAL OF STANDARD PLANS INDEX 102-605 ARE LIMITED TO THE LIMITS OF:
   MA __ __ PM TO __ AM
   MB __ __ PM TO __ AM
   MC __ __ PM TO __ AM
   MD __ __ PM TO __ AM

17. MAINTAIN ROADWAY CLOSURES WITH TEMPORARY BARRIERS ON THE LIMITS OF:
   OA __ __ PM TO __ AM
   OB __ __ PM TO __ AM
   OC __ __ PM TO __ AM
   OD __ __ PM TO __ AM

18. MAINTAIN ROADWAY CLOSURES WITH TEMPORARY BARRIERS ON THE LIMITS OF:
   OA __ __ PM TO __ AM
   OB __ __ PM TO __ AM
   OC __ __ PM TO __ AM
   OD __ __ PM TO __ AM

19. WHEN CONSTRUCTION EQUIPMENT IS USED TO TRANSPORT OR DRAIN ON OPEN TRAFFIC LINES, COMPLY WITH THE DRAINAGE REQUIREMENTS FOR EQUIPMENT, UNIFORM STANDARDS, AND WORK ZONE PROTECTION AS SPECIFIED IN STANDARD PLANS INDEX 102-600.

20. ALTERNATE TRAFFIC CONTROL PLANS AND CHANGES MADE TO THE TRAFFIC CONTROL PLAN SHALL BE NOTIFIED AND SEEN BY THE TRAFFIC CONTROL ENGINEER AND THE TTC CONSTRUCTION ENGINEER PRIOR TO IMPLEMENTATION.

21. A CERTIFIED TRAFFIC CONTROL SUPERVISOR (TCS) SHALL BE ON-SITE WHILE CONTRACTOR IS WORKING AND SHALL BE ON CALL FOR EMERGENCIES. PROVIDE THE SUPERVISOR WITH A 24-HOUR OR CALL NUMBER.

22. AIRPORTS ___ SHOWN IN THESE PLANS DENOTE NUMBER OF LANE CHANGES AND DIRECTION OF TRAFFIC CHANGES AND DO NOT INDICATE PAYMENT MARKERS.

23. ACCEPTABLE LOCATION AND CONDITION OF CONSTRUCTION VEHICLES WITHIN THE TRAFFIC LANE IS PROMINENT DURING ALL PHASES OF TRAFFIC CONTROL. WAKE WARNER FOR CONSTRUCTION IMPORTANCE, INCLUDING MATERIALS DELIVERY.

24. TRAFFIC SHALL NOT BE BLOCKED IN A MILE-GRADED AREA. DURING MILLING AND RESURFACING OPERATIONS, ALL MILEAGE LANES SHALL BE RESTORED AND BRING BOUND WITH 1-1/2 OPTION TO THE ADJACENT TRAFFIC LANE IN ACCORDANCE WITH STANDARD PLANS INDEX 102-600.

25. MILLED, RESURFACING, AND PEDESTRIAN OPERATIONS ARE TO BE PLANNED SUCH THAT A CLEAR-UPDATES WITH STANDARD PLANS INDEX 102-600. A MUST BE COMPLETED PRIOR TO THE TEMPORARY SIGNALS. WATER BLASTING, AS A MEANS OF REMOVING MILLING MATERIALS, SHALL BE CONSIDERED INCIDENT TO THE ITEM NO. 32.

26. PAVEMENT CAREful WORKING WHICH IS TO BE REMOVED AND RE-APPLIED AS PART OF THE TRAFFIC CONTROL PLAN SHALL BE MILEAGE AND RESTORED PRIOR TO PLACING THE TEMPORARY MILEAGE. WATER BLASTING AS A MEANS OF REMOVING MILLING MATERIALS, SHALL NOT BE PERMITTED WITHIN THE WORK AREAS.

27. ALL TEMPORARY RAMP-WALL TRANSITION SHALL COMPLY WITH STANDARD PLANS INDEX 102-600. IMPACT ATTENUATORS SHALL BE INSTALLED PER STANDARD PLANS INDEX 102-600 AND AS SHOWN IN THE PLANS.

28. MAINTAIN EXPERIENCE ROADWAY LIGHTING LEVELS DURING ALL PHASES OF TRAFFIC CONTROL.

29. MAINTAIN EXISTING ROADWAY LIGHTING LEVELS DURING ALL PHASES OF TRAFFIC CONTROL AS APPLICABLE.

30. PERIODIC ANALYSIS OF TRAFFIC CONTROL DEVICES AND WORK ZONE SIGNS UPON COMPLETION OF THEIR USE. POST-MOUNTED SIGNS MAY BE COVERED OR TURNED TO FACE AWAY FROM TRAFFIC.

31. UNLESS OTHERWISE DIRECTED BY TTC, ALL CHANNELIZING DEVICES USED SHALL BE REMOVED.

32. WITH THE EXCEPT OF PRIMARY ROUTE AND FINAL *************************** WORK MAY BE CONSTRUCTED CONCURRENTLY PROVIDED THE WORK DOES NOT AFFECT THE TRAFFIC PATTERNS SHOWN IN APPLICABLE TTC PHASE.

33. PRIMARY ROUTE AND FINAL *************************** ARE TO BE PLACED DURING PHASES AS SHOWN IN THE APPLICABLE TTC PLAN SHEETS.

34. OBTAIN PERMITS FROM THE LOCAL MAINTENANCE AGENCY PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN THE LOCAL MAINTENANCE AGENCY'S ROAD RIGHT-OF-WAY.
1. SECTION ENGINEER TO DETERMINE ADDITIONAL NOTES AS MANDATED

NOTES TO DESIGNERS:

STANDARD NOTES AS SHOWN ARE APPLICABLE TO THE MAJORITY OF PROJECTS ALONG THE CFX SYSTEM.

WHERE A GENERAL OR PAY ITEM NOTE DOES NOT APPLY, IT SHOULD BE REVISED TO "NOT USED" SUCH THAT THE NUMBERING OF STANDARD NOTES DOES NOT CHANGE.

ADDITIONAL NOTES MAY BE ADDED UNDER "PROJECT SPECIFIC TTC GENERAL NOTES" AS DETERMINED BY THE SECTION ENGINEER.

DELETE THIS BOX AND ALL "NOTES TO DESIGNERS" PRIOR TO SUBMITTAL OF PLANS FOR REVIEW.

PROJECT SPECIFIC TTC GENERAL NOTES

1. SECTION ENGINEER TO DETERMINE ADDITIONAL NOTES AS MANDATED

TTC PAY ITEM NOTES

1. PAYMENT FOR TRAFFIC CONTROL WILL BE PER PAY ITEM NO. 102-1, MAINTENANCE OF TRAFFIC (LUMP SUM)

2. THE FOLLOWING LIST IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND IS NOT INTENDED TO BE THE SOLE BASIS OF THE CONTRACTOR'S BILL.

- TEMPORARY SHUTOFF OF MAIN TRENCH DRAINAGE STRUCTURES TO BE PERMITTED.
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322 - Utility Adjustments

322.2 - Required Information

Replace the first and second sentences of the fourth paragraph with the following:

Place the following notes in the General Notes (see CFX Exhibit 311-1):

325 - Signing and Pavement Marking Plans

325.1 - General

Delete the last sentence and replace with the following:

Comply with the requirements in the CFX Design Guidelines Section 230 in the selection of permanent pavement marking materials to be used.

325.1.1 - Signs Mounted on Signal Installations

Add the following paragraph

When Signalization Plans are not included in the project and signal-mounted signing modifications are proposed see the CFX Signal Details for direction.

325.4 – Tabulation of Quantities and Pay Item Notes

Prepare the Tabulation of Quantities sheet using the standard plan format showing quantities, standard sign numbers, pay item numbers (except for pavement markings pay items) and size of sign for all pay items. The sign size and standard sign number is not required if shown in the plan sheets. List pay items in numerical order and tabulate quantities per sheet or by station. When the number of pay item columns exceed one page, the additional sheet is to be labeled using an alphabetic suffix; e.g., S-3 and S-3A, S-4 and S-4A. Provisions must be made to show the original and final quantities.

On contracts with multiple Financial Project ID numbers, or Federal Aid and non-Federal Aid quantities, provisions must be made to tabulate and summarize their respective quantities.

Pay item numbers and quantities for painted pavement markings shall not be shown.

When there is not a roadway component, see CFX Design Guidelines 307.1 for placing Summary of Quantities sheets in the Signing and Pavement Marking plan set.

Add the following section:
### 325.4.1 – Pay Item Numbers

The pay item number for the Option Lane Directional Arrow shall be counted as two arrows, Option Lane Arrow and Directional Lane Arrow.

0700-001-0AB: Single post signs mounted to either bridge railing or outside barrier walls, use A=2 or 3 (dependent on location). Revise description to read “Barrier Wall Mount- Special Design” or “Bridge Mount- Special Design”

0700-003-ABB: Supplemental Panels attached to a main panel shall be coded using the appropriate non-lighted range and associated number for BB and add the special design sign number to the description.

0700-003-ABB: Crossroad street name signs and CFX Logo 2 that are mounted to overpassing bridges that do not require steel support structures shall use A=2, BB= applicable SF range, and revise the description to read Sign Panel (F&I) (Bridge) (Flush Mount).

0700-004-ABC: Use the correct linear feet range, disregard “span only” and add the unique structure number to the description.

0705-011-1AA shall be used for surface mounted roadside delineators and the description shall read Surface Mounted Delineator (Flat Flexible) (Flexstake).

0705-11B-000 (LF): 3M Linear Delineation System description shall read 3M Linear Delineation System (Barrier Wall) or (Guardrail).

0713-1AA-BCD Preformed Tape: See CFX Signing and Marking Details for pay item descriptions.

### 325.5 - General Notes Sheet

*Add the following paragraphs:*

See CFX Signing and Marking Details for Signing and Pavement Marking Standard General Notes.

All notes shall be shown in the project plan set. For notes not applicable to the project, the Consultant shall revise the note to read “Not Used”. For notes needing modification, the Consultant shall modify the note to meet project specific requirements. The consultant shall add project specific notes as needed.

### 325.6.1 – Required Information

*Add the following:*

10. Walls shall be shown and labeled per type, i.e. sound wall, barrier wall, MSE wall, etc.

11. Plans sheets shall have a key map if the project contains an interchange with an intersecting roadway, a system to system interchange, or an interchange with loop/
partial loop ramps.

(12) Mainline and ramp toll plaza stations and begin/end of concrete deck plaza.

(13) The centerline of each toll plaza with stations.

(14) CFX Fiber Optic Network

(15) Special design sign panels shall be assigned a unique sign number.

(16) Radii labels for all dotted lines used as turning guidelines.

(17) Station ties at the following locations:

- Each point where a lane line is changed from one striping pattern or material to another
- All lane and edge line begin and end taper points.
- All stop bars
- All crosswalks
- Merge arrow and pavement message sets

(18) Spacing for 18" white and yellow diagonal striping and painted gore areas

325.7 - Guide Sign Worksheet

*Add the following paragraphs.*

All dimensions shall be shown to the nearest tenth of an inch. Word lengths shall be shown as the total for each word. The individual space between each whole element in a line of copy shall be shown. Guide Sign Worksheet sheet number shall be referenced on the plan sheets for the respective sign panel.

Guide sign worksheets shall show the maximum number of panels possible. The following note shall appear on each sheet: “Width - horizontal spacing dimensions are in inches. End dimensions include border width and margin.”

325.8 - Multi-Post Sign Supports

*Add the following paragraphs:*

Multi-post support calculations shall be signed and sealed by a Professional Engineer licensed in the state of Florida.

A single unique structure number shall be assigned to each multi-post sign assembly. Use the format GM-XX.
325.9 - Overhead Sign Cross Sections and Support Structure

Add the following paragraphs:
Cross sections are required when existing sign structures have proposed panels that are lane specific or when relocating existing lane specific signs along the truss.

The Consultant shall identify on the sign structure cross section what panel sizes the structure must ultimately accommodate, as well as the panels required at interim installations.

Overhead sign support calculations shall be signed and sealed by a Professional Engineer licensed in the state of Florida.

A single unique structure number shall be assigned to each overhead assembly. Use the following format:

- OT-XX for overhead truss (half or full span).
- OC-XX for overhead cantilever.
- BM-XX for bridge mount

When panels are lane specific and the location of individual lanes cannot be clearly identified, lane line locations shall be shown.

326 - Lighting Plans

326.2 - Key Sheet

Delete the order of lighting plan sheets and replace with:

(1) Key Sheet
(2) Signature Sheet (If required)
(3) Tabulation of Quantities
(4) General and Pay Item Notes
(5) Legend
(6) Pole Data (Roadway Lighting)
(7) Luminaire Data (Sign and Underdeck Lighting)
(8) Project Layout
(9) Lighting Plan
(10) Underdeck Lighting Plan
(11) Maintenance Lighting (If required)
(12) Underdeck Lighting Mounting Details
(13) Remote LED Driver Cabinet Details
(14) Sign Lighting Details
(15) Service Point Details
(16) Panelboard Schedules
(17) Arc Flash Warning Label and Notes

Note: Refer to current CFX lighting details for additional information.

326.4 – Tabulation of Quantities and Standard Notes

Delete FDM 326.4 and replace with:

The Tabulation of Quantities sheet lists the item numbers, description and quantity of materials.

List pay items in numerical order. Provisions must be made to show the original and final quantities per sheet or by station. When the number of pay item columns exceed one page, the additional sheet is to be numbered using an alphabetic suffix; e.g., L-3 and L-3A, L-4 and L-4A.

When there is not a roadway component, see FDM 307.1 for placing Summary of Quantities sheets in the Lighting plan set.

Place pay item notes and standard notes that refer to item numbers on this sheet.

See current CFX lighting details for standard lighting notes.

326.5 - General Notes Sheet

Revise the title of the section to General and Pay Item Notes Sheet and replace with the following:

Refer to current CFX lighting details for additional information related to general notes, pay item notes, and maintenance related pay items, notes, and quantity percentages used for new and retrofitting lighting projects.

For notes not applicable to the project, the Consultant shall revise the note to read “Not Used”. For notes needing modification, the Consultant shall modify the note to meet project specific requirements. The consultant shall add project specific notes as needed.
326.6 - Lighting Data Table and Legend Sheet

Add the following paragraph:

Refer to current CFX lighting details for additional information related to preparation of pole data, sign luminaire data, and underdeck luminaire data tables; and legend sheet.

326.7.1 - Required Information

Delete reference to high mast poles in sub-note (6).

Delete sub-notes (7)(a) through (7)(c) and replace with:

(a) Service Point Location
(b) Power Service-Entrance Location stationing and Offset
(c) Voltage and Phases (e.g. 240/480 Volt, Single Phase)

Add the following paragraph:

Refer to current CFX lighting standards as relate to service point details for additional information.

326.8 - Foundation Details Sheet

Delete the second sentence of the first paragraph.

Delete the first bullet of the second paragraph.

326.9 – Boring Data Sheet

Delete the sentence and replace with the following:

Boring Data sheets provide the boring data for non-standard foundation details.

327 - Signalization Plans

327.2 - Key Sheet

Add the following items to the signalization plans assembly list:

(9) Internally Illuminated Street Name Signs Detail(s) (if required)

(10) Electrical Power Service Detail (if required)
327.5 - General Notes Sheet
Add the following after last paragraph:

Coordinate with the maintaining agency of the traffic signal and include the appropriate notes that comply with maintaining agency requirements. Review the agency notes with CFX to verify there is no contradictions.

For notes not applicable to the project, the Consultant shall revise the note to read “Not Used”. For notes needing modification, the Consultant shall modify the note to meet project specific requirements. The consultant shall add project specific notes as needed.

327.6.1 - Required Information

Replace item (7) in the list of signalization plan sheet requirements:

(7) Electrical service location and proposed electrical service routing.

328 - Intelligent Transportation Systems Plans

Add the following paragraph:

The CFX ITS Design Details establishes guidelines for the preparation of ITS Plans that can be found on the CFX website.
CFX Document File Naming

Plans Component PDF Files

ProjectNumber-PLANS-XX-COMPONENT-Submittal.pdf
XXX-XXA-

-ROADWAY
-SIGNINGMARKING
-SIGNALIZATION
-ITS
-LIGHTING
-LANDSCAPE
-ARCHITECTURAL
-STRUCTURES
-TOLLFACILITIES
-UTILITYWORK

-Submittal

30, 60, 90, 100, PREBID, BID, AFC, REV#

EXAMPLE: 100% Submittal of Signing and Pavement Markings Plans for Contract 417-134:

417-134-PLANS-02-SIGNINGMARKING-100.pdf
**Technical Reports and Memos PDF Files**

*ProjectNumber-REPORT_NAME-Submittal-Date.pdf*

- PrelimDesignReport
- RoadwayDesignNotebook
- CrossSlopeEvaluation
- BridgeConceptMemo
- PavementDesignReport
- BridgeHydraulicsReport
- DrainageReport
- StructuralDesignCalcs
- MiscStructureDesignCalcs
- BridgeLoadRatingMemo
- RoadwayGeotechReport
- StructuresGeotechReport
- SignStructuresGeotechReport
- LightingDesignAnalysis
- TrafficAnalysisReport
- NoiseStudyReport

- *Submittal* (DRAFT or FINAL)

- *Date* (mo.da.yr)

**EXAMPLE:** *Final Submittal of Preliminary Design Report for Contract 417-134:*

417-134-PrelimDesignReport-FINAL-08.22.18.pdf
Appendix B - CFX Document Naming

2022 Design Guidelines
## CFX File Directory Structure

*ProjectNumber*

1. Administration
2. CADD
3. Submittals
4. Bidding
5. Construction
6. Permanent_Records
CFX File Directory Structure (Expanded)

*ProjectNumber*

1. Administration
   1.1 Board Memos
   1.2 Contract
      1.2.1 Consultant_Contract
      1.2.2 Supplemental_Agreements
      1.2.3 Scope_of_Services
      1.2.4 Project_Schedule
      1.2.5 Invoices
   1.3 Coordination
      1.3.1 Correspondence
      1.3.2 Progress_Meetings
      1.3.3 Meetings
         /Agenda
         /Meeting_Minutes
      1.3.4 InterAgency_Coordination
      1.3.5 Stakeholder_Coordination
      1.3.6 Utility_Coordination
      1.3.7 Design
   1.4 Existing_Data
      1.4.1 Traffic_Data
      1.4.2 Crash_Data
      1.4.3 ESAL
      1.4.4 Lane_Closure
      1.5.5 Bridge_Inspection
1.4_Permits

1.5.X_(Permit_Agency)

2_CADD

(FDOT File Structure and Naming Convention)

3_Submittals

3.1_Concepts

3.1.1_Preliminary_Design_Report

3.1.2_Concept_Exhibits

3.1.3_Supporting_Documentation

3.2_30%

3.2.1_Plans

3.2.2_Reports

3.2.3_QC

3.2.4_Review_Comments

3.3_60%

3.3.1_Plans

3.3.2_Reports

3.3.3_QC

3.3.4_Review_Comments

3.4_90%

3.4.1_Plans

3.4.2_Reports

3.4.3_QC

3.4.4_Review_Comments

3.4.5_CADD
3.5_100%
   3.5.1_Plans
   3.5.2_Reports
   3.5.3_QC
   3.5.4_Review_Comments
   3.5.5_CADD

3.6_Pre-Bid
   3.6.1_Plans
   3.6.2_Reports
   3.6.3_QC
   3.6.4_Review_Comments
   3.6.5_CADD

3.7_Bid
   3.7.1_Plans
   3.7.2_Reports
   3.7.3_QC
   3.7.4_Review_Comments
   3.7.5_CADD

4_Bidding
   4.1_Special_Provisions
   4.2_Technical_Specifications
   4.3_Technical_Special_Provisions
   4.4_Addenda
   4.5_Bid_Form
   4.6_Schedule
   4.7_Permits
4.8_Utility_Work_Schedules
4.9_Bid_Review

5_Construction
5.1_AFC
5.2_Revisions
5.3_RFIs
5.4_Shop_Drawings
5.5_Correspondence

6_Permanent_Records
6.1_AFC_Revisions
6.2_As-Builts
6.3_Record_Drawings
6.4_Final_Reports_Memos
6.5_Final_Permits
   6.5.1_Environmental
   6.5.2_Utilities
6.6_Agreements
6.7_Final_CADD
Central Florida Expressway Authority  
Record Drawings Guidelines

1. Plan Sheet Preparation
   a. The project CEI will prepare and send the Final As-Built PDF’s to the CFX PM.
   b. The CFX PM will send the As-Built plans to the EOR.
   c. The EOR shall make all plan updates in the CAD files as listed below:
      i. Remove ALL revision clouds
      ii. Remove revision triangles
      iii. Leave revision dates and descriptions on the key sheet
      iv. Leave revision dates and descriptions in the revision block at the bottom left corner of
          the plan sheets
      v. Incorporate all as-built conditions into the plans:
          1. Redline hand markups
          2. Redline pdf markups
          3. Fill in final quantities
   d. Stamp all sheets with PDF software (i.e.: Adobe Acrobat or Bluebeam Revu) as described
      below:
      i. The key sheet stamp shall include the following information:

         FINAL RECORD DRAWINGS

         CONTRACTOR:
         CEI CONSULTANT:
         SR. PROJECT ENGINEER:
         PROJECT ADMINISTRATOR:
         DATE WORK STARTED:
         FINAL ACCEPTANCE:

         NOTE: INFORMATION AS PRESENTED IN THESE
         "AS-CONSTRUCTED" RECORD DRAWINGS IS AS REPORTED
         BY THE GENERAL CONTRACTOR AND/OR THE C.E.I. CONSULTANT
         ONLY LIMITED VERIFICATION WAS CONDUCTED BY THE EOR

      ii. All sheets (including the key sheet shall contain the following information

         RECORD DRAWING

         RECORD DRAWING INFORMATION FURNISHED:
         ON: __________________________
         BY: __________________________
         CONTRACTOR: __________________________

      iii. Lock all stamps once placement is complete

2. Submittal to CFX:
   a. One electronic copy via e-mail or SharePoint:
      i. Include ALL record drawing CADD files
      ii. Include ALL Record Drawings PDF’s. Each component set of the drawings (roadway,
          structures, S/PM, signalization, etc.) shall be its own Record Drawing.
   b. One hard copy:
      i. Printed on 11" x 17" paper
      ii. Laminated card stock key sheet front cover and blank back cover
      iii. 3-hole punched and bound with screw posts

Revised 2022