GENERAL TOLLING REQUIREMENTS

PART 1 - DEVELOPMENT AND PROCESSES

~~January~~ August ~~2023~~2025

FDOT

FLORIDA'S TURNPIKE

100 Introduction

100.1 Purpose

The ***General Tolling Requirements (GTR)*** is the source of toll infrastructure criteria/requirements for all project delivery methods including Conventional Projects (Design-Bid-Build), and Non-Conventional Projects (Design-Build, Design-Build Finance, and Public-Private-Partnership).

100.2 Procedure

GTR criteria are for toll sites on the Department's toll roads and express lanes.

All items requiring Turnpike Tolls Design approval must be in writing and submitted to the Turnpike Tolls Design Administrator for review.

100.3 Organization

The ***GTR*** has three parts:

(1) ***Part 1*** contains development and processes.

(2) ***Part 2*** contains design criteria including the content of the exhibits.

(3) ***Part 3*** contains the plans preparation and assembly requirements.

Special requirements for Non-Conventional Projects are shown in a "Modification for Non-Conventional Projects" box. See example below:

Modification for Non-Conventional Projects:
Append the above with the following: The RFP defines additional tolling requirements.

These boxes are located at the beginning of the chapter, or after a section, paragraph, or table which is to be modified. The requirements listed within these boxes are only applicable to Non-Conventional Projects.

Exhibits may contain notes to the preparer which are shown in a shadow box within each exhibit.

101 Abbreviations and Glossary of Terms

101.1 Abbreviations

The following is a list of the commonly used abbreviations:

AASHTO	***American Association of State, Highway and Transportation Officials***
ADA	***Americans with Disabilities Act***
AET	***All Electronic Tolling***
AHU	***Air Handling Unit***
AIA	***American Institute of Architects***
AOR	***Architect of Record***
APE	***Average Pavement Elevation***
ATC	***Alternative Technical Concept***
AVI	~~***Automatic Vehicle Identification***~~ ***including associated infrastructure***
BCA	***Building Code Administrator***
BCU	***Battery Charging Unit***
CCTV	***Closed-Circuit Television***
CEI	***Construction Engineering and Inspection Professional***
CSI	***Construction Specifications Institute***
CU	***Condensing Unit***
DBPR	***Department of Business and Professional Regulation – State of Florida***
DVAS	***Digital Video Auditing System***
~~***E6***~~	~~***Encompass 6 Multiprotocol Reader***~~
EL	***Express Lane***
EOR	***Engineer of Record***
EPA	***Environmental Protection Agency***

FBC	***Florida Building Code***
FDOT	***Florida Department of Transportation (Department)***
FDM	***FDOT Design Manual***
FDP	***Fiber Distribution Panel***
FE	***Fire Extinguisher***
FOC	***Fiber Optic Cable***
GTR	***General Tolling Requirements***
GUL	***General Use Lane***
HOV	***High Occupancy Vehicle***
ITS	***Intelligent Transportation Systems***
HDPE	***High Density Polyethylene***
KML	***Keyhole Markup Language***
KMZ	***Compressed version of KML file***
LRFD	***Load and Resistance Factor Design***
LRFDLTS	***LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals***
MOC	***Maintenance of Communications***
MSE	***Mechanically Stabilized Earth***
MSP	***Modified Special Provision***
NEC	***National Electric Code***
NEMA	***National Electrical Manufacturers Association***
NESHAP	***National Emissions Standard for Hazardous Air Pollutants***
NOA	***Notice of Acceptance***
NRTL	***Nationally Recognized Testing Laboratory***
OCC	***Outdoor Communications Cabinet***
OPUS	***Optical Profile Unifying System***
ORT	***Open Road Tolling***

OSHA	***Occupational Safety and Health Administration***
PD&E	***Project Development and Environment***
PCMS	***Portable Changeable Message Sign***
RFP	***Request for Proposal***
RTC	***Roadside Tolling Cabinet***
SBS	***Styrene-Butadiene-Styrene***
SCADA	***Supervisory Control and Data Acquisition***
SMFOC	***Single Mode Fiber-Optic Cable***
SPD	***Surge Protection Device***
TEB	***Toll Equipment Building***
TEC	***Toll Equipment Contractor***
TL	***Tolled Lane***
TSP	***Technical Special Provision***
TSTM	***Toll Siting Technical Memorandum***
TTCP	***Temporary Traffic Control Plans***
UL	***Underwriter's Laboratory***
UPS	***Uninterruptible Power Supply***
VAC	***Voltage – Alternating Current***
VCAR	***Vehicle Capture and Recognition***
VDC	***Voltage – Direct Current***
VDAC	***Vehicle Detection and Classification***

101.2 GTR Definitions

The following is a list of terms used in the ***GTR*** with their definitions or explanation of the context in which they are used.

(1) **Architect of Record**: The architect registered in the State of Florida that applies the criteria for the project, performs the analysis, designs the project, and is responsible

for the preparation of plans and specifications. The AOR for design must not be employed as the Contractor's AOR.

(2) **Average Pavement Elevation**: The average between the worst-case highest and the worst-case lowest pavement elevations of all interim and the ultimate conditions within the toll loop pavement area of all travel directions and shoulders under a single span along the centerline of the gantry.

(3) **Buffer**: Space between an express lane and GULs or TLs.

(4) **Equipped Lane(s) / Shoulder(s)**: Lanes or shoulders at a toll site with gantry-mounted equipment overhead.

(5) **Express Lane**: A travel lane, delineated or physically separated from a general use lane within a roadway corridor in which tolls are set based on traffic conditions. See ***FDM 102.2*** and ***FDM 211*** for additional information on ELs.

(6) **Fiber Optic Backbone**: Fiber Optic trunk line supporting communications pathways (typically 96 or 144 strand single mode fiber), running along the roadway in either or both directions (northbound / southbound or eastbound / westbound) that is owned by the Department and or tolling agency.

(7) **Florida's Turnpike Enterprise (Turnpike):** A part of the FDOT that governs the design of the Department's toll roads in Florida.

(8) **General Use Lanes**: Un-tolled roadway lanes.

(9) **Leased Circuit Digital Communication Lines**: High speed digital communication line from the local incumbent telephone/data communications provider (Telco) to the TEB or OCC.

(10) **Outdoor Communications Cabinet**: Communications cabinet that houses the RTC toll site's SCADA, communications, network video recorder, and uninterruptible power supplies.

(11) **Power Distribution Frame:** Electrical power equipment and panel assembly that distributes power to the toll sites without a TEB.

(12) **Roadside Tolling Cabinet:** Cabinet that houses the toll equipment for toll sites without a TEB.

(13) **Toll Equipment Building**: A free-standing building that houses electronic equipment associated with toll collection from one or more toll gantries.

(14) **Toll Equipment Contractor:** The TEC is a tolling vendor currently under contract with the Turnpike to furnish and install the toll system.

(15) **Toll Equipment Working Space**: Each instance (cabinet, backplane, etc.) of tolling equipment installed by the TEC within the TEB or RTC.

(16) **Toll Gantry**: Truss structure supporting the toll equipment over the roadway.

(17) **Toll Header Curb**: Load bearing concrete installed adjacent to the concrete barrier for the full length of the toll loop pavement as shown in the exhibits of ***GTR 232***.

(18) **Toll Infrastructure**: The gantry, building, portion of the roadway, and any other components that support the toll system.

(19) **Tolled Lanes**: Tolled roadway lanes for which tolls are constant and not set based on traffic conditions.

(20) **Toll Loop Pavement Area:** 100 feet of pavement centered on the gantry that covers all tolled lanes, shoulders adjacent to tolled lanes, buffer, and lane adjacent to the buffer as identified in ***GTR 221***.

(21) **Toll Loop(s):** In-pavement inductive system used to detect and count the vehicle's axles in the toll loop pavement area.

(22) **Toll Site Envelope**: The area defined as the boundary surrounding the toll site as shown in the exhibits of ***GTR 231 and GTR 232.***

(23) **Toll Site / Toll Facility:** All toll infrastructure required to support one or more tolling movements at a unique location.

(24) **Toll Site in Production:** A toll site that is actively processing tolling transactions and transmitting them to the tolls data center.

(25) **Toll Site Plan Nomenclature for TEB and / or RTC sites:**

(a) **Standard Toll Site Plan**: Gantry upright and toll loop pavement are within or adjacent to the site layout limits housing the TEB or RTC cabinets. See ***GTR Part 2*** ~~***Exhibit 231.1-1, Exhibit 231.1-2, and Exhibit 231.1-5***~~ ***Exhibit 231.1-1***, ***Exhibit 231.1-2***, and ***Exhibit 231.1-5*** for examples of Standard Site Plans.

(b) **Detached Toll Site Plan**: Gantry upright is within the site layout limits housing the TEB or RTC cabinets. The detached toll loop pavement area is located in the median or on the side of the roadway opposite the site layout limits housing the TEB or RTC cabinets. See ***GTR Part 2 Exhibit 231.1-3***, ***Exhibit 231.1-4***, and ***Exhibit 231.1-7*** for examples of Detached Site Plans.

(c) **Remote Toll Site Plan:** Gantry upright and toll loop pavement area are located in the median or on the side of the roadway opposite the site layout limits

housing the TEB or RTC cabinets. See ***GTR Part 2 Exhibit 231.1-13***, and ***Exhibit 231.1-8***~~f~~ for examples of Remote Site Plans.

~~(24)~~(26) **Toll System**: The equipment required to collect toll revenue. This includes the equipment installed on the gantry, in the building, toll loops, and all equipment wiring furnished and installed by the TEC.

~~(25)~~(27) **Tolling Movement**: A separately tolled direction of travel at a single toll site.

~~(26)~~(28) **Tolls Fiber-Optic Lateral**: Fiber optic connection between the toll equipment building and the FO backbone with associated conduit.

~~(27)~~(29) See ***Standard Specifications*** for definitions of other entities referred to in the GTR (e.g. contractor, engineer, engineer of record, etc.).

102 Requirements and Governing Documents

102.1 General Requirements

The GTR contains infrastructure requirements for new toll facilities. The GTR also includes requirements for maintaining toll operations at existing toll sites during construction.

The GTR alone may not contain all toll infrastructure requirements necessary for the installation and testing of a fully functional tolling system. For additional requirements, directly or indirectly related to tolling, refer to the following:

(1) Scope of Services for Consulting Engineering Services

Modification for Non-Conventional Projects:
Replace Item (1) above with the following: (1) Request for Proposal (RFP)

(2) FDOT Design Manual (FDM)

(3) FDOT Standard Plans

(4) FDOT Structures Manual

(5) FDOT Drainage Manual

(6) FDOT Soils and Foundations Handbook

(7) FDOT Traffic Engineering Manual (TEM)

(8) FDOT Design Bulletins and Update Memos

(9) FDOT Basis of Estimates Manual

Modification for Non-Conventional Projects:
Delete Item (12) above.

(10) FDOT CADD Manual

(11) AASHTO LRFD Bridge Design Specifications

(12) LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (LRFDLTS)

(13) AISC Steel Construction Manual

(14) Aluminum Association Design Manual Specifications and Guidelines for Aluminum Structures

(15) ACI Building Code Requirements for Reinforced Concrete

(16) AWS Structural Welding Code

(17) Florida Building Code (FBC)

(18) Florida's Fire Prevention Code

(19) Institute of Electrical and Electronics Engineers (IEEE) Standards

102.1.1 Plans and Designs

All plans and designs must be prepared according to the criteria contained in the GTR. In case of discrepancy between the GTR and other sources of tolling related requirements:

(1) If the GTR conflicts with applicable federal, state, or FDOT codes, criteria, and standards, the more stringent requirement governs.

(2) Coordinate with Turnpike Tolls Design to resolve all conflicts that would impact the project's schedule, budget, and quality.

102.2 Responsibilities

102.2.1 Department

The Department's responsibilities are listed below:

(1) Issues a scope of services.

Modification for Non-Conventional Projects:
Replace Item (1) above with the following: (1) Issues the RFP.

(2) Turnpike Tolls Design retains the authority to review for any items directly or indirectly related to tolling.

102.2.2 AOR/EOR

The AOR's/EOR's responsibilities are listed below:

(1) Prepare contract plans and supporting documents to furnish and install the toll infrastructure to support TEC systems.

(2) Prepare and submit contract documents for building permit review and approval. Refer to ***GTR Part 2*** for additional information and requirements regarding building permits and State Fire Marshal requirements.

(3) Inter-discipline coordination to accommodate the toll site infrastructure (roadway typical section(s), gantry structures, toll site signing, etc.).

102.2.3 TEC

The Department's TEC is responsible for furnishing, installing, commissioning and testing TEC systems including:

(1) Toll equipment~~,~~

(2) T~~t~~oll equipment cabling~~, and~~

~~(1)~~(3) RTC(s)

~~(2)~~(4) Toll loops

110 GTR Deviations

110.1 Introduction

(1) GTR Deviations are design deviations from the criteria. They are evaluated against the following:

(a) Toll collection accuracy is within the ranges established by Florida's Turnpike Enterprise

(b) Consistent, predictable and repeatable design and construction

(c) Maintainability of toll infrastructure

(2) Requests for deviations from GTR criteria/requirements must be approved by the Florida's Turnpike Enterprise through the GTR Deviation process as outlined below.

110.2 GTR Deviation Request

The need for GTR Deviations must be identified early enough in the process to obtain the required approvals. This is developed during the PD&E process as part of the preliminary TSTM and finalized during the early part of Final Design as part of the draft and final TSTM development.

Modification for Non-Conventional Projects:
Delete the second sentence of the above paragraph and replace with the following: This is required during RFP development as part of the TSTM.

As design progresses past the final TSTM, additional GTR Deviations may be needed. GTR Deviations identified after the final TSTM must also be submitted for review and approval.

The GTR Deviation process includes the following:

(1) GTR Deviation requests must be submitted using the GTR Deviation Submittal Letter**.** A separate letter is required for each GTR Deviation.

(2) Submit the GTR Deviation request to Turnpike Tolls Design for review. Once review is complete, the Turnpike Design Engineer will evaluate for approval.

(3) GTR Deviation Submittal Package

The submittal package consists of the following:

(a) GTR Deviation Submittal Letter(s)

(b) Supporting Documentation

(4) GTR Deviations that are identified during final engineering design:

(a) If any phase submittal (for tolls subcomponents) includes GTR Deviations that have not been previously approved, the phase submittal for all subcomponents for the affected toll site location will be rejected.

(b) See ***GTR 300.1*** for GTR Deviation submittal requirements.

110.2.1 Supporting Documentation

Sufficient detail and explanation must be provided to justify the GTR Deviation. Documentation to support the GTR Deviation request must include:

(1) A brief project description and a figure identifying the toll site location associated with the GTR Deviation request.

(2) GTR section whose criteria cannot be met.

(3) Reasons associated with not meeting criteria and supporting documentation (sketch, plans, etc.).

(4) Considerations of design alternatives to eliminate or reduce criteria deviation.

111 Standard Letters and Templates

This section identifies standard letters and templates that can be obtained from:

https://floridasturnpike.com/business-opportunities/design/tolls-design/

(1) GTR Deviation Submittal Letter

(2) TSTM Template

120 Plan Development Process

120.1 Engineering Design Process

The ***FDM 110*** through ***112*** discusses the plan development process. This chapter identifies the additional processes that are required for toll projects.

All toll projects require the development of a TSTM prior to the start of the plan development process. See ***GTR 202*** for details regarding the TSTM.

120.1.1 Initial Engineering Design Process

Tolling projects must have additional major activities included in the various steps of the flow chart presented in ***FDM Figure 110.1.1*** as follows:

(1) Add to the activities in the fifth step of the flow chart “Review, Confirm, & Approve” the following:

(a) …Conceptual locations for toll facilities (Express lane toll sites are dependent on the ingress / egress locations.)

(2) Add to the activities in seventh step of the flow chart “Develop” the following:

(a) …Toll site locations based on GTR toll siting requirements vs. project geometry

(b) …Draft of the Preliminary TSTM

(3) Add to the activities in the last step of the flow chart “Review and Confirm” the following:

(a) …Toll site locations (Express lane toll sites are dependent on the ingress / egress locations.)

(b) …GTR Deviation Submittal Letter

(c) …Preliminary TSTM

Modification for Non-Conventional Projects:
Delete ***GTR 120.1.1***.

120.1.2 Final Engineering Design Process

Tolling projects must have additional major activities included in the various steps of the flow chart presented in ***FDM Figure 111.1.1*** as follows:

(1) Add to the activities in the second step of the flow chart “Perform Final Engineering” the following:

(a) …TSTM (Express lane toll sites are dependent on the ingress / egress locations.)

Modification for Non-Conventional Projects:
Delete item (a) above when there are no proposed changes from the RFP TSTM that impact toll sites.

(2) Add to the activities in the third step of the flow chart “Coordinate Disciplines” the following:

(a) …Toll facilities

(3) Add to the activities in the fifth step of the flow chart “Perform Roadway Structural Design” the following:

(a) …Toll gantries

(4) Add to the activities in the sixth step of the flow chart “Coordinate and Advance” the following:

(a) …Toll site engineering, plans, specifications, and reports

(b) …Toll site GTR Deviation submittals

(5) Add to the activities in the seventh step of the flow chart “Finalize Design & Plans” the following:

(a) …Toll site design calculations, reports, and cost estimates

(b) …Toll site permit packages

(6) Add to the activities in the last step of the flow chart "Prepare and Document" the following:

(a) …Toll site permit review

(b) …Toll site GTR Deviation submittals

120.2 Process for Use of RTC Sites

(1) RTC sites and associated criteria must not be used without Turnpike Tolls Design and Turnpike Design Engineer approval. See ***GTR 200*** for more information on Toll Site categories. For express lane projects, District TSM&O Engineer must submit RTC request(s) to FTE during PD&E.

(2) RTC site use requests must be submitted in PD&E prior to the draft submittal of the preliminary TSTM.

Modification for Non-Conventional Projects:
Delete items (1) and (2) above and replace with the following: RTC sites and applicable requirements in the GTR must not be used. Use TEB site design criteria for all toll sites.

120.3 Toll Site Pre-Design Meeting

The toll site pre-design meeting occurs within two weeks after the EOR/AOR receives notice to proceed with the design which must be attended by the Turnpike's and FDOT's Project Managers and key staff together with EOR's design team (toll site, building, gantry, roadway, drainage, lighting, ITS, utilities, etc.). The District TSM&O Engineer must be included as an attendee for EL projects. The items to be discussed include:

(1) Site visit – At the Turnpike's Project Manager's discretion, a site visit is conducted to review critical items that must be addressed during the plans development process

(2) Project schedule – Milestone dates for the project are discussed, including how they relate to the Tolls specific deliverables in ***GTR Part 3*** and the permitting described in ***GTR 270***

(3) Scope clarification – The EOR/AOR responsibilities are discussed

(4) All known, approved, or under review GTR Deviations