Office of Inspector General Kristofer B. Sullivan, Inspector General

Docusigned by:

Kristofer B. Sullivan

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Audit Report No. 23P-009 Movable Bridge Operations Program Audit June 26, 2024

What We Did

The Office of Inspector General (OIG) conducted an audit of the Florida Department of Transportation's (Department) movable bridge operations program within the Office of Maintenance. The purpose of this engagement was to determine if the Department's policies, procedures, and guidance regarding the operation of movable bridges are in compliance with select federal and state requirements. In addition, the purpose was to determine if the operations of Florida's movable bridges are being conducted in compliance with federal and state requirements and Department policies, procedures, and guidance. The scope of the audit included applicable statutes, rules, and other state requirements related to the operation of movable bridges. The objectives included onsite observation of the operation of the Department's movable bridges to ensure they conformed with program requirements. This audit was conducted as a part of our annual work plan for the fiscal year (FY) 2022-23.

What We Found

We determined the Department's policies and procedures regarding movable bridge operations complied with select federal and state requirements. **We also determined**, from a sample of four movable bridges selected, the following complied with select federal and state requirements, and Department policies, procedures, and guidance:

- Administrative documents were present at each bridge tested; and
- Operation of the bridge by the bridge tender on duty.

We observed opportunities for the Office of Maintenance to improve the Department's movable bridge operations program by updating the Department's movable bridge operation guidance, required to be followed by the contracted bridge tenders/operators, per contract language. In addition, the Central Office should consider working with the districts to offer additional guidance to ensure standardized quality assurance reviews.

What We Recommend

We have no further recommendations at this time, as we found the areas under review to be compliant.

TABLE OF CONTENTS		
BACKGROUND AND INTRODUCTION	3	
RESULTS OF REVIEW	5	
Finding 1 – Department's policies, procedures, and guidance regarding the operation of movable bridges compliance with select federal and state requirements	5	
Finding 2 – Florida's movable bridges operation compliance with select federand state requirements and Department policies, procedures, and guidance		
Opportunities for Improvement	11	
APPENDIX A – Purpose, Scope, and Methodology	12	
APPENDIX B – Affected Entity Responses	13	
APPENDIX C – Management Response	14	
APPENDIX D – Comparison of Criteria	15	
DISTRIBUTION	16	
PROJECT TEAM	17	
STATEMENT OF ACCORDANCE	17	

BACKGROUND AND INTRODUCTION

Within the Department of Transportation's (Department) Engineering & Operations, the Office of Maintenance (OOM) develops and provides policies, procedures, training, criteria, and standards for the maintenance of Florida's bridges and roadways. The OOM's functional areas include Contract Management, Motor Carrier Size and Weight, Performance Management, Program Resources, Roadway Operations, and Structures Operations. Structures Operations has statewide oversight of the Department's bridge inspection and bridge management programs, including the oversight of the operating of movable bridges in Florida.

There are 138 movable bridges in the state of Florida. There are 88 movable bridges under contract with the Department, contracted with four entities (Contractors). The remaining 50 bridges are operated by another state agency, county agencies, city agencies, or are privately operated.

According to the Asset Maintenance Scope of Services Summary, the performance-based contract requires the performance of all components of the transportation facility as identified in the contracts. All maintenance activities formerly performed by the Department's Maintenance Offices within the limits of the contract are to be performed by the Contractors, unless otherwise exempted in the contract. Bridge Operators/Tenders are to perform movable bridge tending duties and preventative maintenance according to the Standard Scope of Services for Bridge Tending and Preventative Maintenance. Rather than the Department directing specific work as in most traditional maintenance contracts, the performance-based contract requires the Contractors to continually produce a quality product.

The Department will evaluate the Contractors' quality of work performed, both randomly and systematically, with the use of quality assurance reviews. The Department is entrusting the Contractors to care for and maintain select roadways, structures, and facilities of Florida's state roads and fully expects the Contractors to take pride in performing a high level of maintenance. The continual quality of the maintenance of the roadways, structures, and facilities will be a direct reflection, under public scrutiny, of the quality and integrity of the Contractors.

The Asset Maintenance Contract agreements indicate the Contractors agree with the Department to do all the work and furnish all the materials, equipment, supplies, and labor necessary to carry out the contracts. These will be in the manner and to the full extent as set forth in the Request for Proposal Special Conditions, Proposal, and Scope of Services, all of which were adopted and made a part of the contracts, to the satisfaction of the duly authorized representatives of the Department. The Department representatives shall always have the full opportunity to inspect the materials to be furnished and the work to be performed under the contracts.

To increase the safety of the Department's movable bridges, Light Detection and Ranging (LiDAR) was tested in 2021 on a Department movable bridge. With LiDAR, laser light is sent from a source (transmitter) and reflected from objects. These objects can include cars, trucks, and pedestrians. If the system identifies such an object on the bridge, it will lock out bridge operation by the tender, to lessen the chance of human error, aiding in the prevention of an incident. The OOM has indicated, based on the positive results of testing, additional bridges are being fitted with the LiDAR system.

RESULTS OF REVIEW

We determined the Department's policies, procedures, and guidance regarding the operation of movable bridges complied with select federal and state requirements. We also determined the operations of Florida's movable bridges are being conducted in compliance with federal and state requirements and Department policies, procedures, and guidance.

In addition, we determined, from a sample of four movable bridges selected, the following complied with select federal and state requirements, and Department policies, procedures, and guidance:

- Administrative documents were present at each bridge tested; and
- Operation of the bridge by the bridge tender on duty.

Finding 1 – Department's policies, procedures, and guidance regarding the operation of movable bridges compliance with select federal and state requirements

We determined the Department's policies, procedures, and guidance regarding the operation of movable bridges complied with select federal and state requirements.

We identified the following federal and state criteria for movable bridge operations:

- Title 33, Part 117, Code of Federal Regulations (C.F.R.), Drawbridge Operation Regulations includes:
 - rules, regulations, procedures, and administrative procedures associated with movable bridge operations;
 - indicates when the drawbridge must open;
 - indicates general requirements for drawbridge owners, including maintaining the working machinery of the drawbridge in good operating condition and cycling the draw-spans periodically to ensure operation of the drawbridge;
 - indicates sound signals required when opening drawbridges;
 - identifies drawbridge operations for emergency vehicles and emergency vessels; and
 - identifies requirements for temporary change to a drawbridge operating schedule.
- Section 20.23(3)(a), Florida Statutes (F.S.) (2023), indicates the central
 office establishing Department policies, rules, procedures, and standards
 and shall monitor the implementation to ensure uniform compliance and
 quality performance by the districts and central office units that implement
 transportation programs; and
- American Association of State Highway and Transportation Officials (AASHTO) Movable Bridge Inspection Manual (2019) presents uniform guidelines and procedures for the inspection, evaluation, and maintenance of the nation's existing movable bridge inventory.

To make our determination, we evaluated the Department's policies, procedures, and guidance with federal and state requirements. We then evaluated the asset maintenance contract language with Department policies, procedures, and guidance to ensure the Department's compliance with federal and state requirements. The results of our review are as follows.

Department Policy, Procedure, and Guidance Compliance with Federal and State Requirements

We evaluated the following Department policies, procedures, and guidance to the selected federal and state requirements, detailed in the criteria, for the Department's operation of movable bridges for each district possessing a movable bridge.

- Topic No. 850-010-032-b Movable Bridge Operations (2019), also referred
 to as the Department of Transportation Movable Bridge Operations
 Manual, requires bridge operation and maintenance shall be in full
 compliance with the applicable portions of the AASHTO Movable Bridge
 Inspection, Evaluation and Maintenance Manual, and indicates bridgespecific operations manuals shall be developed for each movable bridge;
- Scope of Services for Bridge Tending and Preventive Maintenance Section 3.0 Bridge Tending Services provides for personnel trained as bridge tenders to operate the movable bridges twenty-four (24) hours a day, seven (7) days a week, and maintain adequate supervision of all bridges at all times;
- The Department's Quality Control Plan assesses the quality of the bridge operations at a given time to create a culture of continuous learning and improvement, specific to the Department's movable bridges; and
- The District's Movable Bridge Quality Control Plans for each district with movable bridges to assess the maintenance and operation of movable bridges in their district.

Asset Maintenance Contract Compliance with Department Policies, Procedures, and Guidance

We evaluated asset maintenance contract language with selected Department policies, procedures, and guidance to ensure compliance.

Although each district contract may have differed in actual verbiage, the contracts indicated the Contractor agrees with the Department to do all the work necessary to operate the movable bridge in the manner and to the full extent as set forth in the Standard Scope of Services for Bridge Tending and Preventative Maintenance (Scope of Services) to the satisfaction of the duly authorized representatives of the Department, who shall have at all times full opportunity to inspect the work to be performed under the contract. Page 29 of the Scope of Services requires maintaining adequate supervision of all bridges at all times. It also indicates having a responsible Bridge Tender

Supervisor for supervising, training, scheduling, and coordinating the required services with the district office engineer or designee. The engineer assists in the training, testing, and orienting the supervisor in the Department's administrative requirements as applied to the contract and the specific Bridge Operations Manual.

The Department's Topic No.: 850-010-032-b Department of Transportation-Movable Bridge Operations Manual, establishes procedures and guidelines for the safe, efficient, and effective operation of movable bridges under the responsibility of the Department. The principal users of this procedure are all people involved with movable bridge operations, maintenance, inspection, and repair. The procedure and the user handbooks referenced in the procedure provide methods and systems designed to efficiently, effectively, and safely conduct the activities associated with Bridge Management. Specifically, under section 1.0 Movable Bridge Operations and Maintenance, it states, "Movable bridge operation and maintenance shall be in full compliance with the applicable portions of the AASHTO Movable Bridge Inspection, Evaluation and Maintenance Manual (Manual) except as noted in this procedure."

The Manual provides information pertaining to the operational characteristics of a movable highway bridge. The Manual was developed for bridge engineers, inspectors, and maintainers charged with operational and maintenance responsibility for these complex structures. Based on our review of the district's contracts, we confirmed compliance with selected Department policies, procedures, and guidance.

For more detailed information regarding the comparison of federal and state requirements with the Department policies, procedures, guidance, including industry guidance, and the asset maintenance contract language, see Appendix D.

Quality Assurance Review

We reviewed the State Maintenance Quality Assurance Review Plan (QARP) Fiscal Years 2023-29,¹ provided by the State Structures Maintenance Engineer. The QARP consists of a Quality Assurance Review (QAR).

Staff performing the QAR will discuss the results with the district counterpart at the time of the QAR process/field review. If needed improvements are noted during the QAR, these individuals need to reassess the Quality Management Plan to make improvements at the system level. The individual performing the QAR process/field review will provide the results of the QAR field review and a summary of the discussions to the State Maintenance Engineer and the Director of OOM. The State Maintenance Engineer, the Director of OOM, and the OOM program areas will discuss the results of the QAR and a summary of the discussions with the District Maintenance Engineer.

¹ Consists of a six-year plan to review the Department's movable bridges. The plan is to assess the quality of the bridges at a given time to create a culture of continuous learning and improvement. A review consists of four parts: Kick Off Meeting, Process Review, Field Review, and Close Out Meeting.

The Department's movable bridge inventory is under an Asset Maintenance (AM) Contract. The AM contractor is responsible for the operations, including bridge tending, of all bridges. According to the contract, the Contractor is expected to perform all work to current Department standards, specifications, manuals, procedures, guides, and handbooks throughout the contract duration, as they may be updated throughout the life of the contract.

The Quality Assurance Plan, as outlined under section 1.6.4 of the AASHTO Movable Bridge Inspection, Evaluation and Maintenance Manual², shall be used by the district to monitor the performance of the AM Contractor. Evaluations are performed semi-annually (coinciding with the Asset Maintenance Performance Evaluation Report, AMPER) by the Asset Maintenance Project Manager with input from the National Bridge Inspection Standards.

Department contract managers perform monthly and/or quarterly visits to each bridge to ensure the bridge operators follow the Department's guidance and bridge specific operational manuals normally located at each bridge. If any issues are identified during the visits, they are immediately corrected, if possible, or corrected by the next visit. In addition, each Department contract manager indicated the district office is notified of all training and revisions to all operational manuals that are kept at each bridge to ensure the bridge tender has the proper requirements to operate the bridge.

Based on our analysis, **we determined** the Department has established compliant policies, procedures, and guidance in accordance with appropriate federal and state requirements.

Finding 2 – Florida's movable bridges operation compliance with select federal and state requirements and Department policies, procedures, and guidance.

We determined, from a sample of four movable bridges selected, the following complied with select federal and state requirements, and Department policies, procedures, and guidance:

- Administrative documents were present at each bridge tested; and
- Operation of the bridge by the bridge tender on duty.

This conclusion was based on site visits to the selected sample of bridges to observe the operations of the movable bridge by the bridge tender.

We compared select requirements identified in Finding 1 above to the operation of the Department's movable bridges for each district with a movable bridge, to confirm compliance with federal and state requirements, and Department policies, procedures,

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² This manual presents uniform guidelines and procedures for the inspection, evaluation, and maintenance of the nation's existing movable bridge inventory. The manual provides information pertaining to the unique operational characteristics of a movable highway bridge.

and guidance. Districts 2, 4, 5, and 6 are included in our review. The Department's Operations Manual indicates bridge-specific operations manuals shall be developed for each movable bridge. Each bridge is required to have an operational manual. Our testing included confirming the presence of bridge operation manuals for each of Florida's bridges and also included on-site visits of select bridges to confirm the bridge tenders safely operated the opening and closing of the bridges in compliance with select requirements.

Bridge Operation Manuals

The Department's Operations Manual indicates bridge-specific operations manuals shall be developed for each movable bridge. The operations manuals cover all aspects of normal bridge operation and emergency procedures as defined in Chapter 4.7 of the Department's Operations Manual. In addition, the Department's quality assurance reviews of the bridges include confirming each bridge has an operational manual on the bridge to ensure tenders meet Department requirements.

The manuals establish the duties and responsibilities of bridge tenders operating movable bridges in each district. Each manual is specific to each bridge and serves as guidance to assist bridge tenders in understanding their role in the proper and safe operation of movable bridges. We requested and received bridge operation manuals from all the districts with bridges; therefore, confirming compliance with the requirement for all Department bridges to have bridge operation manuals.

Bridge Operation On-site Testing

Our review included selecting a sample of the Department's bridges to conduct on-site visits to determine if the bridges are being operated safely by the bridge tenders. We selected two bridges based on their geographic location to the Central Office and two additional bridges in south Florida, based on our risk assessment. The sample of bridges selected was used to determine the safe operation of the Department's movable bridges. We used checklists as guides during the on-site observations of the bridges we selected. The checklists were either provided by the districts or created by the auditor in absence of a district checklist. Our observations are summarized below.

The following criteria were used to evaluate four selected bridges for operation of the movable bridge:

- Bridge Operations Manuals for each bridge tested.
- Scope of Services for Bridge Tending and Preventive Maintenance Section 3.0 Bridge Tending Services provides for personnel trained as bridge tenders to operate the movable bridges twenty-four (24) hours a day, seven (7) days a week and maintain adequate supervision of all bridges at all times;

- The Department's Quality Control Plan assesses the quality of the bridge operations at a given time to create a culture of continuous learning and improvement, specific to the Department's movable bridges; and
- The District's Movable Bridge Quality Control Plans for each district with movable bridges to assess the maintenance and operation of movable bridges in their district.

On-Site Visit – Bridge #1

Based on our on-site visit, we determined the bridge tender complied with the requirements of the operation of Bridge #1. There were no issues identified during the on-site visit.

On-Site Visit – Bridge #2

Based on our on-site visit, we determined the bridge tender complied with the requirements of the operation of Bridge #2.

However, during the visit, we did observe the bridge operational manual was not available in the bridge tender house. Although the bridge tending contract's scope of services does not specifically require manuals on the bridges, the State Maintenance Office Quality Assurance Review Plan does require Department staff to confirm manuals present on the bridges. No other issues were identified during the on-site visit.

On-Site Visit – #3

Based on our on-site visit, we determined the bridge tender complied with the requirements of the operation of Bridge #3. There were no issues identified during the on-site visit.

On-Site Visit – #4

Based on our on-site visit, we determined the bridge tender complied with the requirements of the operation of Bridge #4. There were no issues identified during the on-site visit.

We determined, from the sample of four movable bridges selected, the following complied with select federal and state requirements, and Department policies, procedures, and guidance:

- Administrative documents were present at each bridge tested; and
- Operation of the bridge by the bridge tender on duty.

Opportunities for Improvement

Although the OOM was in compliance with the requirements we reviewed, we observed opportunities for improvement to the Department's guidance relating to the safe operation of Florida's bridges.

The Asset Maintenance Contract Scope of Services indicates the contractor is to perform all work to current Department Standards and Specifications throughout the contract duration including any updates to the contract. The State Maintenance Office Quality Assurance Review Plan Fiscal Years 2023-29 requires Department staff to confirm manuals on the bridges. However, the scope of services does not specifically require manuals on the bridges. The OOM should consider updating the Department's movable bridge operation guidance to include a requirement for the bridge operation manual to be present on all movable bridges. This requirement should be followed by the contracted bridge tenders/operators, per contract language.

To gain a deeper knowledge of the quality assurance review sections specific to the operation of the bridge by the tenders/operators, we collected checklists used by the districts to conduct the quality assurance reviews of the bridges. We identified not all districts used the same checklist and although the quality assurance reviews did focus on the mechanical aspects of the bridges, there was inconsistent information regarding the action of the operators or tenders to ensure the safe operation of the bridges. The Central Office should consider working with the districts to offer additional guidance to ensure standardized quality assurance reviews, including standardized checklists specific to the bridge tenders/operators safely operating the bridges. These quality assurance reviews should be in addition to any quality assurance reviews specific to the inspection and maintenance of the bridges.

APPENDIX A – Purpose, Scope, and Methodology

The **purpose** of this engagement was to determine if the Department's policies, procedures, and guidance regarding the operation of movable bridges are in compliance with select federal and state requirements. In addition, the purpose was to determine if the operations of Florida's movable bridges are being conducted in compliance with federal and state requirements and Department policies, procedures, and guidance.

The **scope** of this audit included:

- Title 33, Part 117, Code of Federal Regulations (C.F.R.), Drawbridge Operation Regulations;
- Title 49, Part 239, C.F.R., Bridge Safety Standards; and
- the Department's policies and procedures pertaining to movable bridges.

The **methodology** included:

- reviewing applicable federal and state laws and requirements;
- reviewing applicable Department manuals, Department policies, procedures, and quidance: and
- observing a sample of movable bridge openings and closings.

APPENDIX B – Affected Entity Responses

On May 30, 2024, the OIG received an email response from Tom Harman, District Manager of Velociti Safety Service Solutions, indicating no comment.

On June 4, 2024, the OIG received an email response from Jose Rodriguez, Project Manager of Florida Drawbridge Inc, indicating no comment.

APPENDIX C – Management Response

Although there were no findings or recommendations requiring a response, on June 14, 2024, the OIG received an email response from Felix Padilla, the State Structures Maintenance Engineer from the Office of Maintenance. He indicated that they are currently working on updates to the Movable Bridge Operations Procedure (Topic 850-010-032). As part of these updates, they have already included preliminary language requiring that the bridge operation manual be present at the bridge at all times. Additionally, they are considering creating a form with checklists for bridge operators. However, due to the unique characteristics of each bridge, they need to be cautious about adding requirements that could cause other issues. Nonetheless, they are exploring this possibility as they continue to update the procedure.

APPENDIX D – Comparison of Criteria

We compared federal and state requirements with the Department policies, procedures, and guidance, including industry guidance to ensure compliance for the OOM. For more detailed information relating to the requirements tested, see the table below.

Federal Regulations	State Requirements	Department Policies, Procedures & Guidance
Section 117.1-49, Code of Federal Regulations. When the drawbridge must open. General Requirements for Drawbridge Owners. Sound Signals	Section 20.23(3)(a), F.S. The central office shall establish departmental policies, rules, procedures, etc. Florida Statute 334.048(3) The central office shall adopt policies, rules, procedures, and standards which are necessary for the department to function properly, including establishing accountability for all aspects of the department's operations.	SCOPE OF SERVICES FOR BRIDGE TENDING AND PREVENTIVE MAINTENANCE (PERFORMANCE) (REV.9-12-2006) 3.0 BRIDGE TENDING SERVICES: A. Provide personnel trained as bridge tenders to operate the moveable bridges twenty four (24) hours a day, seven (7) days a week. Topic No. 850-010-032-b Movable Bridge Operations 1.0 MOVABLE BRIDGE OPERATIONS AND MAINTENANCE Movable bridge operation and maintenance shall be in full compliance with the applicable portions of the AASHTO Movable Bridge Inspection, Evaluation and Maintenance Manual except as noted in this procedure. 2.0 Operations Manual - A bridge-specific operations manual shall be developed for each movable bridge. The Operations Manual shall cover all aspects of normal bridge operation and emergency procedure as defined in Chapter 4.7 of the above reference manual. 3.0 Bridge Tender Any person operating a movable bridge shall meet the following criteria: - must be at least 18 years of age, have a corrected vision of 20/40 or better, as verified by a periodic eye exam performed at intervals not to exceed two years; - be able to distinguish primary colors (red, green and blue), as verified by an initial eye exam; - be able to hear frequencies from 500 to 6,000 Hertz between 15 and 50 decibels (DB) with hearing sensitivity in normal situations, as determined by an initial exam and at intervals not to exceed 5 years; and - successfully complete a minimum 32 hours of classroom and on-site training based on the specific and current operational characteristics of the bridge be able to climb bridge stairs and ladders. 8.0 MOVABLE BRIDGE QUALITY CONTROL PLANS Each district with movable bridges shall have a quality control plan for the maintenance and operation of movable bridges in their district and plan shall include items to be reviewed and frequency of review. The quality control plan shall cover training of bridge, tenders, staffing of bridge, adherence to standards and regulations, record keeping, monthly submitted maintenance and inspection reports, and safety stand

DISTRIBUTION

Responsible Manager:

Lance Grace, P.E., Director of Maintenance Scott Arnold, P.E., State Maintenance Engineer Felix Padilla, P.E., State Structures Maintenance Engineer

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Nicola Liquori, CPA, Executive Director, Florida's Turnpike Enterprise

PROJECT TEAM

Engagement was conducted by:

Christina Walker, Auditor

Under the supervision of:

Paul Lowery, Senior Audit Supervisor Amy Furney, Deputy Audit Director for Performance and Information Technology Joseph W. Gilboy, Director of Audit

Approved by:

Kristofer B. Sullivan, Inspector General

STATEMENT OF ACCORDANCE

The Department's mission is to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities.

The Office of Inspector General's mission is to provide independent and objective investigative and audit services that promote accountability, integrity, and efficiency within the Florida Department of Transportation and its partners.

This work product was prepared pursuant to section 20.055, Florida Statutes, in accordance with the Association of Inspectors General *Principles and Standards for Offices of Inspector General*, and conforms with The Institute of Internal Auditors' *International Standards for the Professional Practice of Internal Auditing*.

Please address inquiries regarding this report to the Department's Office of Inspector General at (850) 410-5800.