



# Florida Rail Corridors Bridge Management Program

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## Florida Department Owned Railroad Bridge Management Program

The Florida Department of Transportation's Florida Rail Corridors Bridge Management Program (FRC BMP) **will be ~~is~~** approved for use on the Department Owned rail bridge structures, culverts and retaining walls along state-owned corridors.

The FRC BMP **adoption is expected** January 1, 2024. The FRC BMP is to be used on all Department Owned Railroad bridge Projects after December 31, 2023.

Recommendations and comments pertaining to the BMP are welcomed and encouraged. Please send all recommendations and comments to [FDOT-RailStructures@dot.state.fl.us](mailto:FDOT-RailStructures@dot.state.fl.us).



## ACRONYMS

**AASHTO:** American Association of State Highway and Transportation Officials

**ABET:** Accreditation Board for Engineering and Technology, Inc.

**API:** Application Programming Interface

**APL:** Approved Products List

**AREA:** American Railway Engineering Association

**AREMA:** American Railway Engineering and Maintenance-of-Way Association

**AREMA MRE:** American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering

**ASLRRRA:** American Short Line and Regional Railroad Association

**BSS:** Bridge Safety Standards

**BMP:** Bridge Management Program

**BMTC:** Bombardier Mass Transportation Corporation

**BWP:** Bridge Work Program

**CFR:** Code of Federal Regulations

**CFRC:** Central Florida Rail Corridor

**CMP:** Corrugated Metal Pipe

**CP:** Concrete Pipe

**DCC:** Dispatch Control Center

**DOR:** Department Owned Railroad

**DPG:** Deck Plate Girder

**EDMS:** Electronic Document Management System

**FCEN:** Florida Central Railroad

**FDM:** FDOT Design Manual

**FDOT:** Florida Department of Transportation

**FRC BMP:** Florida Rail Corridors Bridge Management Program

**FHWA:** Federal Highway Administration

**FR:** Federal Register

## Florida Department Owned Railroad Bridge Management Program

**FRA:** Federal Railroad Administration

**FRE:** Florida Rail Enterprise

**FS:** Florida Statute

**HSSE:** Health, Safety, Security, and Environment

**MOW:** Maintenance of Way

**MRE:** Manual for Railway Engineering

**NDE:** Non-Destructive Evaluation

**OSHA:** Occupational Health and Safety Act

**RBI:** Railroad Bridge Inspector

**RBPM:** Railroad Bridge Program Manager

**RBS:** Railroad Bridge Supervisor

**RC:** Reinforced Concrete

**RCB:** Reinforced Concrete Box

**RCP:** Reinforced Concrete Pipe

**ROW:** Right of Way

**RSIA:** Railroad Safety Improvement Act

**RWIC:** Roadway-Worker-in-Charge

**RWP:** Roadway Worker Protection

**SFRC:** South Florida Rail Corridor

**SFRTA:** South Florida Regional Transportation Authority

**SP:** Steel Pipe

**SPRAT:** Society of Professional Rope Access Technicians

**STAR:** Safety Transportation and Responsibility

**TBD:** Timber Ballast Deck

**TPG:** Through Plate Girder

**TTR:** Through Truss

**VTMI:** Veolia Transportation and Maintenance Infrastructure

**WP:** Work Program

**WPI:** Work Program Instructions

## DEFINITIONS

This section provides the definitions used for the FRC BMP. To properly understand the FRC BMP, certain terminology utilized by the Department will be used throughout this document. In addition to the terms defined in this section, refer to the following documents:

- 49 CFR § 237.5- Definitions
- AREMA Bridge Inspection Handbook
  - Chapter 5 Bridge Nomenclature
  - Glossary

**Abutment:** An abutment or end bent refers to a support structure that connects the end of a bridge to the ground or foundation. In cases where the retaining wall is integrated with the bridge abutment, the portion of the abutment located underneath the bridge and extending 10 feet on either side of the bridge shall be considered part of the bridge abutment.

**Bridge Management Program (BMP):** The FRC BMP acts as a means of managing the inspection, operation and maintenance of railroad bridges, overhead bridges, pedestrian bridges, culverts, and retaining walls. The BMP includes elements for the:

- Qualifications of responsible persons
- Collection and maintenance of inventory information
- Inspection and documentation of inspection findings
- Assessment of condition and strength
- Prioritization of maintenance and replacement requirements
- Records retention
- Tracking of critical deficiencies to resolution
- Audit procedures

**Defect:** A condition of deterioration or damage to a railroad bridge component that may impact the safe load carrying capacity of the structure or overall integrity or safety for trains and personnel using the structure.

**Department Owned Railroad Bridge:** Bridges on Department-owned railroad, as well as railroad bridges owned by others that the Department is providing quality assurance oversight to help ensure the railroad bridges in the state of Florida are inspected and maintained in accordance with FRA regulations and this BMP. Ownership, Inspection and maintenance responsibility for each bridge are included in Appendix 3.

**Maintenance:** The preservation and upkeep of a structure, including all its appurtenances, in its original condition (or as subsequently improved). Maintenance includes any activity intended to “maintain” an existing condition or to prevent deterioration. Examples include minor repairs, cleaning, lubricating, painting, and application of protective systems.

**Non-Qualifying Culvert:** Any structure supporting the track(s) with a span length of less than 10 feet measured horizontally from spring line to spring line and not possessing a deck supporting railroad live loading.

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**Overhead Bridge:** Any structure passing over the track(s) constructed for carrying railroads, highways, pedestrians, pipelines, conveyors, or other miscellaneous purposes and is supported by structural elements on one or both sides of the track(s).

**Railroad Bridge:** A railroad bridge is defined as a structure that provides support for one or more railroad tracks over an open span of 10 feet or greater measured along the centerline of the track. Span lengths shall be measured as the unobstructed distances from bearing face to bearing face or the distance between the inside faces at the spring lines on pipes and culverts. For pipe and culvert structures an opening is considered contiguous when the length between the clear opening at the spring line is less than half the size of each adjacent opening. Undergrad structures may be removed from the bridge inventory by the RBE In cases where the height of the fill material and ballast covering an undergrade structure exceeds the total length of the opening.

**Railroad Bridge Culvert:** A culvert that meets the definition of a Railroad Bridge.

**Retaining Wall:** A retaining wall is a specially designed structure intended to securely hold or retain soil, rock, or other materials in a designated area, effectively preventing erosion, collapse, or sliding. In cases where the retaining wall is integrated with the bridge abutment, the portion of the retaining wall located underneath the bridge and extending 10 feet on either side of the bridge shall be considered part of the bridge abutment. Consequently, it will be classified as the bridge substructure element and subjected to inspection accordingly.

**Roadway Bridge:** A structure, including supports, built over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of 20 feet or more between undercopings of abutments, spring lines of arches, or extreme ends of multiple pipe or box culverts.

**Routine Maintenance:** The anticipated minor repair and preventative maintenance activities necessary to maintain a satisfactory and efficient structure. The preservation and upkeep of a structure to its original condition.

**Span Length:** The distance between the center of bearings of the primary load-carrying members (girders, trusses, etc.), or the distance between spring lines of arches.

**Spring line:** An arch or culvert spring line refers to the point or line on an arch or culvert where it begins to curve upward from its supporting structure, such as columns or piers. It's essentially the lowest point on the arch from which its curve starts to rise.

**Tunnel:** Any longitudinal opening through soil or rock constructed by mining, boring, or cut and cover methods and through which track(s) pass.

## INTRODUCTION

### PURPOSE AND OBJECTIVES

The objective of this document is to establish a comprehensive Florida Rail Corridors (FRC) Bridge Management Plan (BMP) that serves as a foundational framework and a minimum standard for individual BMPs of State rail agencies located in Florida. In addition Private Rail Bridges without an agency BMP are governed by this document in alignment with the FRA Regulations. The FRC BMP aims to consistently apply best management practices, to ensure railroad bridge safety and a prudent work program. The Bridge Management Program (BMP) assumes a critical role in averting bridge or component failures and safeguarding invaluable infrastructure investments. This document fulfills FDOT's commitment to a BMP and adheres to the stipulations of 49 CFR Part 237, Bridge Safety Standards (BSS), pertaining to the management of bridge and structure safety practices.

Each rail agency operating under this BMP must develop its own BMP that meets or exceeds the standards defined herein. Additionally, in addition to the routine inspections carried out by FDOT each railroad agency will be required to conduct annual and underwater Inspections to meet FRA requirements.

FDOT will appoint a Railroad Bridge Program Manager (RBPM) and a Railroad Bridge Supervisor (RBS) to oversee the program implementation and audit the program.

The BMP has been developed in collaboration and consultation with the Florida Department of Transportation's Central and District Offices, as well as representatives from the two state-owned rail corridors, the Central Florida Rail Corridor (CFRC), and the South Florida Rail Corridor (SFRC). The Florida Department of Transportation officially adopts this BMP for all railroad bridge structures within state-owned corridors. Incorporating Department-Owned/maintained rail bridges into a standardized system empowers the Department to effectively fulfill its responsibility of minimizing the life cycle cost of owning these structures. This integration further enhances safety measures and effectively mitigates liability risks.

### FDOT'S RESPONSIBILITY

FDOT is responsible for overseeing the state's rail network, diligently ensuring the secure and seamless transportation of goods and passengers. Moreover, FDOT undertakes the responsibility of managing the interconnected assets across the entirety of the state.

### STATE-OWNED RAILROAD AGENCIES RESPONSIBILITY

The state-owned railroad agencies are responsible for meeting the guidelines in this document and for compliance with FRA Part 237 regulations. The individual agencies (CFRC, SFRC, ect) shall be on recorded with FRA and FDOT as responsible for compliance for their managed sections of rail.

## DESCRIPTION OF STATE-OWNED RAILROADS

### CFRC DESCRIPTION

The Central Florida Rail Corridor (CFRC), an agency of the state of Florida, (created under Florida State Statute, Chapter 343) is responsible for the operation of both the SunRail commuter rail service and the Tenant Railroads. The CFRC is an Approximately 62-mile rail corridor between Deland, FL and Poinciana, FL. The SunRail service currently operates on 49 miles of the corridor from DeBary Station to Poinciana and has 16 passenger stations.

*The CFRC has assigned responsibility for inspection and maintenance of the CFRC ROW and bridges' carrying track within the 62-mile corridor as well as for the maintenance and operation of the SunRail commuter service to a railroad asset maintenance company.*

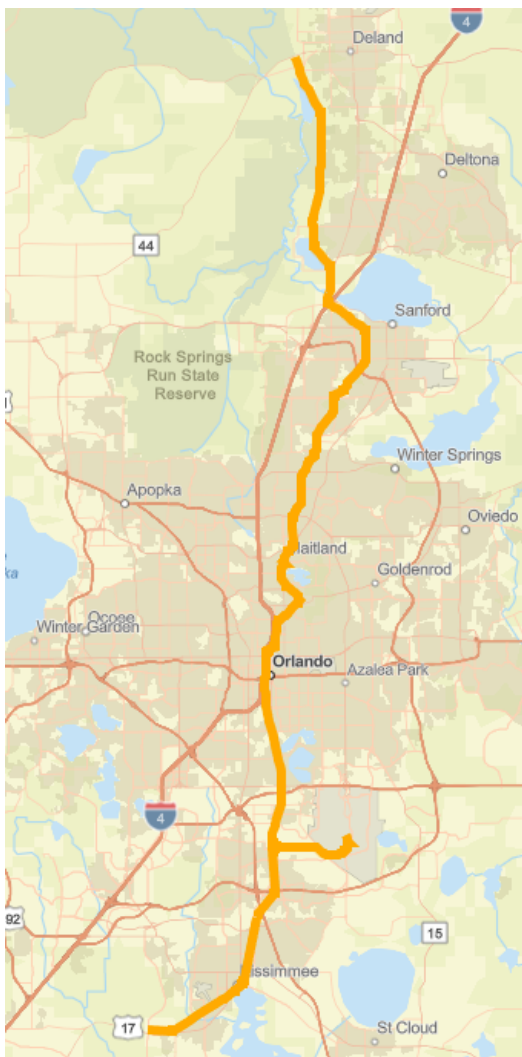


Figure 1: CFRC/SunRail - System Map

**SFRC DESCRIPTION**

SFRC (South Florida Rail Corridor) extends from Magnolia Park in Palm Beach County to the Miami International Airport, as depicted in Figure 2. SFRTA (South Florida Regional Transportation Authority) is the state agency responsible for managing this passenger rail service corridor for the Florida Department of Transportation (FDOT).

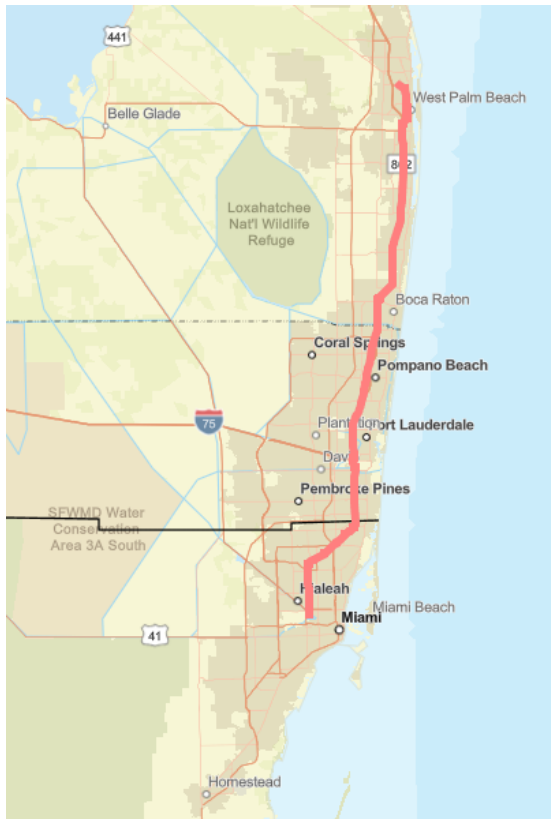


Figure 2: Tri-Rail System Map

## ADDITIONAL REFERENCES

The following documents have been referenced in the development of the FRC BMP:

- Federal Law and Policies CFR 49 §237-Bridge Safety Standards and §214- Railroad Workplace Safety
- Americans with Disabilities Act
- Occupational Health and Safety Act (OSHA) Construction and General Industry Standards
- CFR Part 1910\1926
- American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (MRE)
- AREMA Bridge Inspection Handbook
- National Bridge Inspection Standards (NBIS)
- Bridge Inspector's Reference Manual (BIRM)
- Manual For Bridge Evaluation (MBE)
- FDOT BMS Coding Guide
- FDOT Field Guide
- <https://www.fdot.gov/maintenance/divisions.shtm#StructuresOperations>
- <https://www.fdot.gov/rail/default.shtm>

Procedural guidelines pertaining to bridges are outlined in the AREMA Bridge Inspection Handbook, which is incorporated into this BMP by reference.

## FRC BMP ROLES

The Florida Rail Corridors (FRC) Bridge Management Program (BMP) establishes a fundamental framework and a baseline standard for the individual BMPs of rail agencies operating within the State of Florida. The diagram provided below illustrates the essential roles that must be filled by both FDOT and the railroad agencies to effectively implement this BMP. In addition to the roles shown below each rail agency will likely have an RBS and or RBPM.

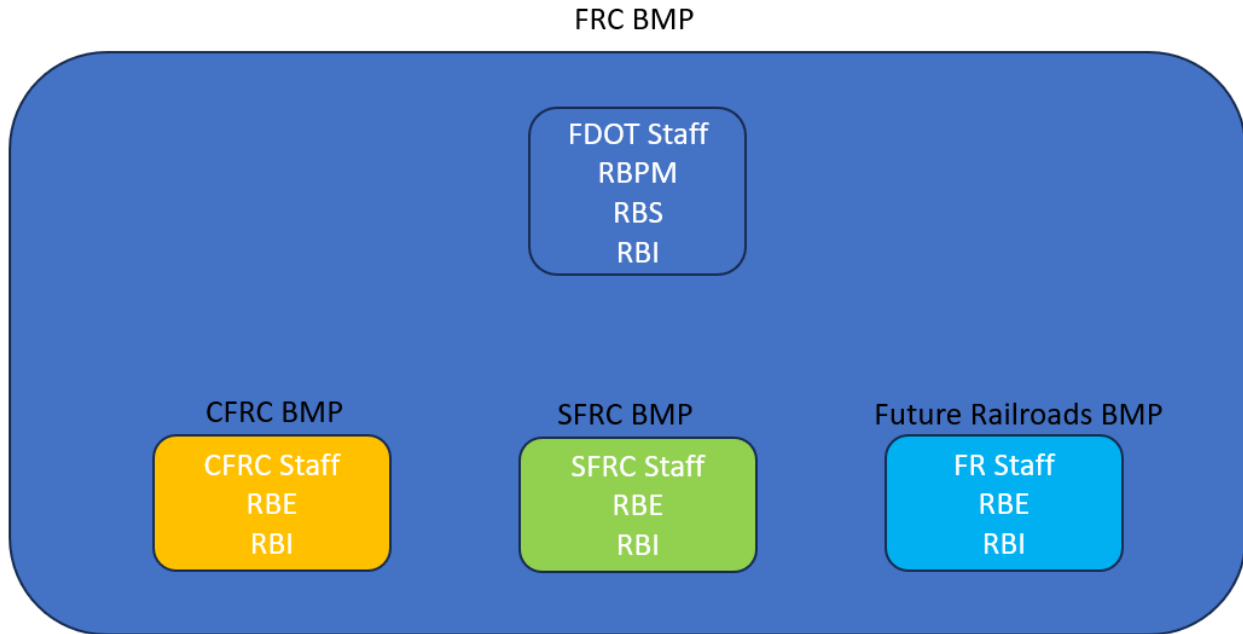


Figure 3: FRC BMP Roles

## QUALIFICATIONS AND DESIGNATIONS OF RESPONSIBLE PERSONS

This section provides the qualifications and responsibilities of personnel assigned to carry out the policy as stated in this document.

The FDOT's Railroad Bridge Program Manager will keep a record on file of personnel assigned to these roles. These records are available for review by the FRA upon request through the FDOT's Freight and Rail Office. The record will contain:

- Each individual's qualifications for meeting the position requirements.
- An organization chart showing the relationship between responsible parties

The current designated individuals, with their contact information, in the key positions described below can be found in Appendix 6.

### **RAILROAD BRIDGE ENGINEER (RBE)**

- a) Each railroad shall have one individual designated as their RBE.
- b) The responsibilities of the Railroad Bridge Engineer include:
  - Analysis
    - Determining forces and stresses in railroad bridges and bridge components
    - Performing engineering analysis when required for exceptional high/wide/heavy loads.
  - Load Conditions and Load Ratings
    - Prescribing safe load conditions for railroad bridges
    - Determining and validating bridge load ratings
    - Reviewing approvals for High/Wide/Heavy loads over structures (49 CFR §237.71(h))
    - Establishing procedures to help ensure that bridges are not loaded beyond their capacities.
  - Inspection and Maintenance
    - Interpreting inspection reports
    - Modifying Inspection Procedures and frequency
  - Repairs and Modifications
    - Designing repairs and modifications to railroad bridges and developing plans to repair defects affecting the load carrying capacity of the structures.
    - Performing engineering for correction of substandard conditions
    - Determining remedial action for emergency conditions
  - Policy Development
    - Assisting in periodic reviews and recommending changes to the FRC BMP Policy and DOR Bridge Program Policy Documents
  - Program Audits
    - Performing audits on behalf of the FDOT Freight and Rail Office to verify the FRC BMP Policy is being followed.

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- Reviewing bridge inspection reports at random, observe performance of bridge inspections.
  - Reviewing bridge inspection reports identified by the Railroad Bridge Inspector or Railroad Bridge Program Manager for compliance with the FRC BMP and identifying bridge conditions warranting special action.
  - Staff and Consultant Qualifications
    - Reviewing and providing objective advice on qualifications of railroad bridge consultants for railroad bridge engineering projects on FDOT right-of-way by third party entities identified and being considered through established FDOT protocols.
    - Designating employees to perform structure inspections, including Railroad Bridge Inspectors and other qualified employees.
  - Supervising the construction, modification, or repair of a railroad bridge in conformance with specifications, plans and instructions applicable to the work being performed.
  - Assisting in and coordinating day-to-day activities of crews performing repair, maintenance, construction, and inspection of structures
  - Authorizing or restricting the operation of railroad traffic over a bridge according to its immediate condition or state of repair
  - Reviewing work performed that affects the load carrying capacity of structures for conformance to Railroad requirements, standard procedures, plans, and specifications.
  - Initiating inspections or repairs of structures and associated track in response to extraordinary conditions or events when they occur
  - Reviewing inspections performed by the Railroad Bridge Inspector for conformance to Railroad requirements and conditions found that impact the safe load carrying capacity of structures
- c) The education and experience requirements of the Railroad Bridge Engineer are:
- Professional Engineer registered in Florida.
  - 10 years of experience working on bridge design, inspection, and maintenance projects
  - Demonstrate familiarity with the AREMA Manual for Railway Engineering, AREMA Bridge Inspection Handbook and be familiar with FDOT procedures.

### **RAILROAD BRIDGE INSPECTOR (RBI)**

- a) All bridge inspections are to be conducted by or under the direct supervision of a Railroad Bridge Inspector meeting the minimum qualifications as stated in this document.
- b) The responsibilities of the Railroad Bridge Inspector include:
- Inspecting, measuring, marking, and recording conditions and defects found during the inspection.
  - Providing element quantities and condition states

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- Verifying the accuracy of the structure inventory records while performing the inspection
  - Notifying the Railroad and FDOT management of any conditions that are safety concerns, or conditions that may cause substantial financial impacts.
  - Authorizing train movement restrictions over bridges when safety issues are identified or when structure/weather/traffic conditions warrant.
  - Performing inspections according to FDOT requirements, and 49 CFR §214 Railroad Workplace Safety and §237 Bridge Safety Standards
- c) The railroad bridge inspectors for the Rail Agency Annual Inspections shall be a person who is determined by the track owner to be technically competent to view, measure, report and record the condition of a railroad bridge and its individual components which that person is designated to inspect. The Inspector must have completed Bridge Inspector training- AREMA Bridge Inspection Webinar Series.
- d) The railroad bridge inspectors for the FDOT Routine Inspections must meet the additional qualifications.
- Meet one of the four qualifications:
    - (i) Be a registered Professional Engineer and have 6 months of bridge inspection experience
    - (ii) Have 5 years of bridge inspection experience
    - (iii) Have all of the following:
      - (A) A bachelor's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and
      - (B) 2 years of bridge inspection experience
    - (iv) Have all the following:
      - (A) An associate degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and
      - (B) 4 years of bridge inspection experience
- AND
- Complete an FHWA-approved comprehensive bridge inspection training course and score 70 percent or greater on an end-of-course assessment.
- AND
- Complete a cumulative total of 18 hours of FHWA-approved or FRA-approved bridge inspection refresher training over each 60-month period.
- AND
- For non-professional Engineers have active status as a Florida Certified Bridge Inspector (CBI)

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- Annual certification for Safety Rules and Roadway Worker Protection for the Operating Railroad

### **FDOT RAILROAD BRIDGE SUPERVISOR (FD-RBS)**

- a) FDOT shall provide an employee or a consultant as the FDRBS. Each state-owned rail agencies may also have an RBS to implement their BMP.
- b) The responsibilities of the FDOT Railroad Bridge Supervisor include:
  - The day-to-day implementation of this BMP
  - Supervising and scheduling of the FDOT Bridge Inspections
  - Authorizing or restricting the operation of railroad traffic over a bridge according to its immediate condition or state of repair
  - Reviewing work performed that affects the load carrying capacity of structures for conformance to FDOT requirements, standard procedures, plans, and specifications.
  - Initiating inspections or repairs of structures and associated track in response to extraordinary conditions or events when they occur
  - Reviewing inspections performed by the Railroad Bridge Inspector for conformance to FDOT requirements and conditions found that impact the safe load carrying capacity of structures.
- c) The education and experience requirements of the FDOT Railroad Bridge Supervisor are:
  - Professional Engineer registered in Florida.
  - 10-years of experience working on railroad design, inspection, and maintenance projects.
  - Demonstrate familiarity with the AREMA Manual for Railway Engineering, AREMA Bridge Inspection Handbook, NBIS and be familiar with FDOT procedures.

### **FDOT RAILROAD BRIDGE PROGRAM MANAGER (FD-RBPM)**

The Railroad Bridge Program Manager is the Office Manager of the FDOT Freight and Rail Office or delegated as assigned.

- a) FDOT shall provide an employee or consultant as the RBPM.
- b) The responsibilities of the Railroad Bridge Program Manager include:
  - Oversight of the bridge program
- c) The education and experience requirements of the Railroad Bridge Manager are:
  - 10-years of experience working on railroad design, inspection, and maintenance projects
  - Demonstrate familiarity with the AREMA Manual for Railway Engineering, AREMA Bridge Inspection Handbook, NBIS and be familiar with FDOT procedures.

## BRIDGE LOAD RATINGS

Load ratings shall be performed according to the latest edition of AREMA MRE, the FDOT Bridge Load Rating Manual (BLRM) and the FDOT Bridge Load Rating Summary Form, sheet "RR" (<https://www.fdot.gov/maintenance/LoadRating.shtm>).

### DETERMINATION OF BRIDGE LOAD RATINGS

All bridge load ratings will be based on the as-built plans and or field measurements. The as-inspected-condition of the bridge shall be included in the load ratings. Assumed load ratings based on engineering judgment for structures with incomplete or missing plans are acceptable when the superstructure and substructure are rated 5 or higher (NBI Grade). For structures graded below a 5 for the superstructure or substructure, a detailed review of the structure shall be required that may include nondestructive testing and or load testing to provided additional structure data to allow for a more accurate load rating. Use the requirements of the most current FDOT's Bridge Load Rating Manual and Load Rating Procedures for member properties when plans do not exist. Load ratings performed prior to December 2023 based on plans and or measured sections and include current as inspected defects are not required to be modified to meet this BMP.

a) Local analysis parameters:

- The Substructure is required to be rated when an inspection appraises the substructure in poor condition (NBI or AREMA).
- Rate all superstructure primary members for normal and maximum levels according to the AREMA.
- The Load Factor Rating (LFR) method is preferred; the Allowable Stress Design (ASD) method is also acceptable. However, do not mix load rating methodologies within elements of the same material.

b) Dead Load

- Dead loads shall be determined based on the AREMA Manual.
- The following are recommended methods for calculating dead loads.
  - Ballast dead load may be calculated assuming the ballast load of 120lbs/ft<sup>2</sup> per foot depth of ballast without adjustment for area taken up by the ties.
  - For concrete ties in ballast, in addition to the ballast weight, add 10 lbs/ft<sup>2</sup> over the tie width.
  - For concrete ties not in ballast, add 35 lbs/ft<sup>2</sup> over the tie width.
  - For wooden ties in ballast, ballast loading will govern, no additional load need be applied.
  - For wooden ties without ballast, add 15 lbs/ft<sup>2</sup> dead load over the tie width.
  - For rail dead load, add 45lbs/ft per rail.

c) Restrictions:

- Equipment is subject to any restrictions or conditions as prescribed by the RBE.

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- Only the RBE can authorize equipment operation on bridges that produces forces greater than the normal capacity.

### d) Change in Rating:

- Load ratings shall be updated as needed determined by the RBE.
- After each inspection, the RBE shall state whether the current load rating is complete and applicable. The note should indicate who made the determination, and when.
- Update the bridge capacity as appropriate, when meaningful changes have occurred (5% or more section loss or loss/increase of capacity to a load carrying member in an area of high stress) due to deterioration, repair, rehabilitation, or replacement.
- The RBE will update load rating records within thirty days of the receipt of new rating information.
- Upon notification of a defect that creates a condition affecting the live load capacity of the bridge, the RBE must take action to protect the structure until a new safe load capacity is determined.

### e) Documentation:

- The current load capacity of each bridge is documented in Appendix 2 of this BMP .
- The Department will retain all current and post load rating calculations within its EDMS/Hummingbird archive.
- Changes to the load capacities that occur between publications of the FRC BMP will be issued as bulletin orders sent to the dispatcher for the affected railroad.

## PROTECTION OF BRIDGES FROM OVER-WEIGHT AND OVER-DIMENSIONED LOADS

The RBE is responsible for issuance of instructions to operating and mechanical personnel regarding bridge capacities. The timetable includes instructions and other information, such as Line Load Limits, pertaining to the movement of unrestricted loads over the railroad. The RBE must approve movement of loads that exceed the weight or dimension limits shown in the timetable. Approved movement instructions may contain conditions such as speed restrictions, restriction of traffic from adjacent tracks, or weight limitations on adjacent cars in the same train.

Line Capacity for maximum gross car weight for regular scheduled service is 286,000 lbs at maximum authorized speed. The Maximum gross weight of car restriction is applicable only to four axle cars with coupled length of 41 feet 8 1/2 inches or greater. Six axle locomotives are approved for regular scheduled service. Cars that exceed the above weight limit or shorter geometric configuration are not permitted without authority on the RBE.

### a) Requests for Over-Weight and Over-Dimensioned Loads

- The over-weight loading request must include the following information:
  - Total weight
  - Each axle load
  - Axle spacing or minimal equipment length
  - Cross section width

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- Number, frequency, and schedule of trip(s) anticipated.
- The over-dimensioned load request must include all vertical and horizontal dimensions with respect to the track centerline.
- The over-weight and/or over-dimensioned load requests are reviewed by the RBE for any loading-imposed request and resulting stresses in the affected bridge components to determine if the load is safe for passage.
- The RBE will review the current inspection reports for the affected structures and determine if special inspections are required.
  - If special inspections are conducted, the results will be incorporated into the rating calculations to determine if safe load carrying capacity of each structure subjected to the over-weight load needs to be modified.
  - The review will also determine if speed or operating restrictions are warranted.
  - Operating restrictions may limit weights on adjacent cars.
- Approval or denial of the over-weight or over-dimensioned loads are conveyed by the following:
  - CFRC: CFRC's Chief Operating Officer or designee will issue the final approval.
  - SFRC: SFRC's Bridge Program Manager will convey the permission or denial of movement and any additional restrictions.
- Operations over a structure that has a calculated Maximum Rating that is less than the demand from equipment will in no case be allowed to operate over a structure.
- Details and procedures for over-weight and over-dimensioned load requests are contained in:
  - CFRC: High Wide Heavy Clearance SOP T200.02
  - SFRC: SFRC's Standard Operating Procedure or SOP for High/Wide/Heavy Clearance

## **INSPECTIONS PERFORMED BY RAIL AGENCIES**

### **RAIL AGENCY ANNUAL INSPECTIONS:**

A regular comprehensive inspection, conducted by the operating rail agency, meeting FRA requirements, following AREMA Bridge Inspection Handbook procedures, and reported FDOT-RailStructures@dot.state.fl.us. Each bridge in railroad service shall be inspected at least once each calendar year, with no more than 540 days between any successive inspections. A bridge shall be inspected more frequently when a railroad bridge engineer determines an enhanced schedule is warranted or prudent – considering the type and configuration of the bridge, the weight and frequency of traffic carried on the bridge, structure conditions, scour conditions, weather events, emergencies, impacts, etc. Scour inspection shall be included in the Rail Agency Annual Inspection.

### **RAIL AGENCY MECHANICAL AND ELECTRICAL INSPECTIONS:**

In addition to the Rail Agency Annual Inspection described above, Mechanical and Electrical inspections are mandated on movable structures at intervals of no more than 24 months elapsing between inspections. Electrical and Mechanical Inspections shall be performed by Florida PE.

### **RAIL AGENCY UNDERWATER INSPECTIONS:**

Bridges mandating underwater inspections will be specifically identified by the Rail Agency RBS or RBE. These designations will be recorded in the bridge inventory, specifying the necessary inspection frequency, which must not surpass 48 months. Moreover, to enhance scheduling efficiency within the program, the Rail Agency RBS is empowered to shift individual inspection dates by a maximum of 12 months during every third inspection cycle. Underwater Inspections encompass a range of methods, including soundings, probing, diving, or other techniques as stipulated by the Rail Agency RBS. The assessment of submerged elements may be carried out utilizing:

- A qualified bridge inspection diver
- Side scan sonar
- Conducting the inspection when water levels are low.
- Conduct more frequent inspections including soundings or probing if flood events or flow conditions create scour hazards or concerns.
- Other methods as determined by the RBE.

### **RAIL AGENCY OUT OF SERVICE STRUCTURAL INSPECTIONS:**

Annually, an RBI shall perform a Routine Observation on bridges that are out of service to ensure public safety.

### **ADDITIONAL INSPECTION TYPES RAIL AGENCIES MAY PERFORM AS NEEDED**

#### **Pre-Rating Inspection:**

Prior to the completion of a load rating, a pre-rating inspection shall be completed documenting all defects/construction flaws that may impact the load capacity of the structure and all dead loads

that will increase the demand on the structure. This report shall be reviewed and approved by the Rail Agency RBI and RBE prior to completion of the load rating.

### **Rail Agency Detail Inspection:**

This type of inspection will be performed as determined by the Rail Agency RBS or RBE. The Rail Agency Detail Inspection is a close-up, hands-on inspection performed on one or more members or components to identify or quantify deficiencies or gather information not normally obtained during a General Inspection. This inspection may include the use of more advanced Non-Destructive Evaluation (NDE) techniques and provides sufficient details and measurements to permit a RBE to perform an evaluation of the load capacity of the structure or components.

### **Rail Agency Emergency Inspections:**

An inspection conducted as a response to an incident, such as a derailment, fire, flood, hurricane, earthquake, or collision impact, which could have led to a modification in the structure's condition. The approach and thoroughness of this inspection will be determined by a Rail Agency RBE, correlating directly with the seriousness of the incident. Further details regarding emergency inspections can be found in the AREMA Bridge Inspection Handbook, specifically in Chapters 13 and 14.

Alerting the following organizations in the event of a bridge collision or damage:

- CFRC: Operation Control Center (OCC) (radio communication)
- SFRC: Public Safety Coordination Center (PSCC) (radio communication)
- FDOT Rail Structures: [fdot-railstructures@dot.state.fl.us](mailto:fdot-railstructures@dot.state.fl.us)
- FDOT Rail Safety: [fdot-railsafetynotification@dot.state.fl.us](mailto:fdot-railsafetynotification@dot.state.fl.us)

Additional Florida Railroad contacts can be found at the following web page:

- <https://www.fdot.gov/rail/contacts/rrs.shtm>

In response to various emergency scenarios, the RBE will consult with the FDOT RBS, and the RBE will determine whether the structure is safe, the following actions are required, unless directed otherwise by the RBS:

**Accidents / Collision Impacts:** Upon learning of any vehicular or vessel impact to a bridge or its supports, the train dispatcher shall cease train operations over the bridge. Resumption of rail operations, either normal or restricted, is only permitted after an RBI has inspected and assessed the bridge's condition.

**Derailments:** In the aftermath of a derailment involving a bridge, train operations over the bridge must cease. Resumption of rail operations, either normal or restricted, is only allowed after an RBI has inspected and evaluated the bridge's condition.

**Flash Floods / Floods:** Upon receiving a flood warning that could potentially damage bridges or their approaches, the train dispatcher is responsible for notifying train crews on tracks or bridges susceptible to flood damage. Trains and light locomotives must adhere

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to reduced speeds ensuring safe operation considering potential water levels and visibility conditions. This speed limitation continues until an inspection is performed in accordance with 49 CFR 213.239 and it's confirmed that there's no longer a hazard. If the inspection reveals questionable structural stability at a bridge, no train movement is allowed until an RBI has inspected and evaluated the bridge's condition.

**Fires:** In the event of a fire on or beneath a bridge, train operations over the bridge must cease until an RBI has inspected and evaluated the bridge. Unless it's determined that the fire had minimal impact on primary load-bearing structural components or systems, the RBI, in consultation with the FDOT RBS and RBE, will refer to appropriate sections in the AREMA MRE for guidance on evaluating fire damage.

### **Rail Agency Routine Observations:**

A walk-through observation of short duration; primarily performed to detect any major defects in primary load carrying members that are visually apparent without employing tactile methods. Railroad employees may perform observations at any time. Observations are not documented as an inspection, but the observer may keep notes in a daily journal. The observer will report any conditions that may affect the integrity of any structure to the RBE. The frequency and necessity of this type of observation is at the discretion of the Rail Agency RBE.

## **INSPECTIONS PERFORMED BY FDOT**

### **FDOT ROUTINE INSPECTIONS**

FDOT Routine Inspection are supplementary; they complement Annual Rail Agency Inspections for the bridges that are maintained by state rail agencies. FDOT routine inspections (1) thoroughly and impartially evaluate the condition of FDOT owned/maintained railroad bridges, (2) seek to understand current bridge conditions, identify necessary repairs, assess the extent of deferred maintenance, and audit the inventory, (3) follow the AREMA Bridge Inspection Handbook, and add components from the National Bridge Inspection Standards (NBIS) as detailed below

The frequency of this inspection type is as follows:

Department owned/maintained railroad bridges, and railroad bridge culverts are subject to inspections every 24 months, with no more than 27 months between inspections. The RBS is empowered to adjust individual inspection dates by up to 3 months during every third inspection cycle to enhance scheduling efficiency within the program.

If the RBS deems it essential due to factors such as previous inspection results, bridge type and design, and the load-bearing capacity, there might be a need for more frequent inspections.

Railroad bridges, and railroad bridge culverts meeting any of the following criteria are required to undergo inspections at intervals of no more than 12 months.

These criteria include:

- a. Any deck, superstructure, substructure, or culvert components rated in serious or worse condition, as indicated by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, with a code of three or less; or
- b. A scour condition rating of serious or worse, as recorded by the Scour Condition Rating item with a code of three (3) or less.

All bridges susceptible to scour shall be designated by the Rail Agency RBS. Designations are noted in the bridge inventory. Scour inspection shall be part of the FDOT Routine Inspection. Additional inspections including soundings or probing shall be conducted if flood events or flow conditions create scour hazards or concerns. In addition to railroad bridges the RBS may include inspections of tunnels, overhead bridges, pedestrian bridges, and retaining walls. It's noteworthy that overhead vehicular bridges are excluded from compulsory inspections within the railroad program.

### **ADDITIONAL INSPECTION TYPES FDOT MAY PERFORM AS NEEDED**

#### **FDOT Special Structures**

This inspection classification serves as a supplementary component to both the Rail Agency Annual Inspections, which adhere to FRA guidelines, and the FDOT Routine Inspections. Bridges falling within this category are distinguished by their elevated complexity, rendering them more susceptible to potential issues..

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- a) Pin Connected Truss Spans: In addition to the FDOT Routine Inspection outlined above, It is recommended FDOT or assigned shall perform an intermediate interim inspection at minimum of every 4 years which focuses on members prone to fatigue including:
  - a. All truss members (with particular attention to floor beam hangers and eyebars)
  - b. Truss pins
  - c. All floor system end connection details
- b) Apart from the FDOT Routine Inspection described earlier, Mechanical and Electrical inspections are recommended at intervals not to exceed 24 months elapsing between inspections. Furthermore, an interim Mechanical and Electrical inspection is recommended in years when the FDOT Routine Inspection is not conducted. Electrical and Mechanical Inspections shall be performed by Florida PE.

### **FDOT Interim Inspections:**

When the FDOT Routine Inspection identifies a substandard condition, FDOT may deem it necessary to conduct additional inspections to monitor and assess the condition closely. The procedures employed for these follow-up inspections will be the same as those used during the FDOT Routine Inspection. The frequency of these additional inspections will be determined by the RBS based on the severity of the substandard condition and the need for continuous monitoring

### **FDOT Underwater Inspection:**

This inspection category serves as a supplement to the Rail Agency underwater Inspections, that meet FRA requirements. The aim of these supplementary assessments is to offer an impartial evaluation of the condition of rail bridges under FDOT ownership and/or maintenance. This is carried out for the purpose of audits and to gain a comprehensive understanding of the overall state of rail bridge system.

Bridges mandating underwater inspections will be specifically identified by the Rail Agency RBS or RBE. These designations will be recorded in the bridge inventory. The frequency of the FDOT underwater inspections is recommended to not exceed 96 months. FDOT Underwater Inspections encompass a range of methods, including soundings, probing, diving, or other techniques as stipulated by the FDOT RBS. The assessment of submerged elements may be carried out utilizing:

- A qualified bridge inspection diver
- Side scan sonar
- Conducting the inspection when water levels are low.
- Conduct more frequent inspections including soundings or probing if flood events or flow conditions create scour hazards or concerns.
- Other methods as determined by the RBE.

## **RESUMING RAILROAD SERVICE**

Prior to resuming railroad service over a bridge which has not been in railroad service and has not been inspected according to the requirements of the FRC BMP in the past 12 months, the following must occur:

- Conduct a FDOT Routine inspection or a Rail Agency Annual Inspection
- The inspection report must be reviewed by the Rail Agency RBE.
- Rail Agency RBE must provide written approval to resume operation on the rail bridge.

## BRIDGE INSPECTION PROCEDURES

### DEFECT LEVEL AND CODES

The FDOT Routine Inspection reports for rail structures shall be entered in BrM. The Rail Agency Annual Reports will be included in the BrM as Special Inspections. The deck, superstructure, substructure, culvert and channel shall be coded utilizing the highway NBI coding system (1-9). The Deck component for rail structures shall include the condition of the ties, ballast and deck. The inspectors shall also perform an element level inspection of the ties, ballast, deck, superstructure, paint system, and substructure. The element level inspections shall be completed in accordance with highway NBI with condition grading from (1 -4).

*Note: The Kopper repair priority designations are not utilized in FDOT's routine inspections to avoid confusion with Kopper repair priority ratings (1-5, with 1 being the highest priority) and the NBI element rating system (1-4, with 1 being the best condition). Elements needing immediate repair should be issued a critical finding.*

The Inspectors performing the FDOT Routine Inspections shall prepare and submit a report of each inspection in the BrM system. The inspection report must be comprehensible without need for interpretation by the reporting inspector. Reports will be prepared from notes taken on the day(s) of the inspection. The report shall contain narratives, sketches, and/or photographs, as appropriate. If an area of a railroad bridge is not accessible at the time of inspection, the RBI must note this condition on the inspection form and notify an RBS to plan provisions for adequate access. With the above exceptions the inspections shall be performed in accordance with recommendations and practices of the following documents:

- AREMA Bridge Inspection Handbook, 2nd Edition, Chapters 3 and 5-16
- AREMA MRE, current edition:
  - Chapter 8, Part 21, Inspection of Concrete and Masonry Structures
  - Chapter 9, Part 1.2, Post-Seismic Event Operation Guidelines
  - Chapter 15, Part 7.2, Existing Bridges – Inspection

The FDOT Routine Inspection report shall include:

1. FDOT Bridge Number. The first 2 digits will represent the county code, the third digit shall be coded "R" for Rail structure, the fourth digit shall be coded "N" for single tracks or Middle track. For two or more tracks the fourth digit for the left track, when looking up station, will be coded "L" and the right track will be coded "R". The last two digits will be non-repeating, consecutive numbers from south to north for each bridge.
2. Town name of bridge location
3. The bridge mile post location and subdivision
4. Type of inspection
5. Date(s) of inspection
6. Date Record created
7. Signature of the RBI with dated form completion
8. Any restrictions placed at the time of inspection

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9. Narrative condition of components inspected
10. Portions of structure inspected, if not the entire structure
11. NBI ratings
12. Element quantities and condition states
13. Repair recommendations
14. Critical findings indicate on the report as to whether any item noted requires expedited or critical review by the RBE and any restrictions placed at the time of the inspection. All critical findings shall be reported within 24 hours of finding.
15. Restrictions on operation
16. Soundings when bridge crosses water
17. Required access equipment
18. Typical cross sections of the superstructure
19. Elevation of the bridge from abutment to abutment with span lengths (joint to joint and bearing to bearing) clearly labeled
20. All photos shall be geotagged, and the original images shall be a minimum of 2MB and be digitally maintained for a minimum of 6 years.

Standard Photos should be updated every 6 years. These photos should include, approach photos looking down the bridge, profile pictures of the entire bridge, typical bents, typical underside of deck, typical bearings, and typical abutment.

Railroad Agency Annual Inspections procedures must be documented in their BMP's and meet FRA guidelines.

### **CONDUCT OF FDOT BRIDGE INSPECTIONS**

Inspections must be conducted under the direct supervision of a designated Railroad Bridge Inspector (RBI) who is responsible for the accuracy of the results and the conformity of the inspection to the FRC BMP.

- a) Record the inspection report in the BrM and EDMS as follows:
  - Record the report of each bridge inspection record in the BrM and EDMS within 30 calendar days of the completed inspection
  - Add new structures to BrM within 45 calendar days of the structure being placed into service
  - Update records within 30 calendar days of any changes or modifications to the structure
  - Maintain all inspection records and backup documents for the life of the structure
  - Bridges and culverts that are modified, rebuilt, removed, abandoned-in-place, taken out of service, leased, sold, or listed in error are to promptly have their Bridge Management System status and details updated accordingly by the RBI or the RBE
- b) Requirements when the RBI discovers a bridge condition affecting bridge integrity under trainloads:

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- RBI's must be prepared to take immediate action to protect rail traffic based upon actual conditions found, including removal from service, closure, and placing speed or load restrictions
- Coordinate emergency inspections with the RBE and RBS
- If any FDOT employee or assigned inspection firm/staff discovers a bridge condition that affects the integrity of the bridge under trainloads, the employee/firm/staff must provide protection for other bridge users with actions including warning other trains which may be approaching, stopping any train passage over the structure and arranging for immediate repairs (See Appendix 7).
- Immediately contact the following upon the discovery of a deficiency warranting the bridge to be taken out of service or the issuance of a slow order or speed restriction.
  - Dispatcher of the Operating Railroad
  - FDOT's Central Office
  - FDOT's District Office
- The RBE must be notified promptly with any pertinent details after the appropriate steps to protect rail traffic have been taken. The RBE must expedite the review.
- The RBE will maintain a list of governmental agencies that require notification of structural inspections and arrange for the documented submission in a timely manner. RBIs must be aware of these reporting requirements to ensure a timely submission.
- The following additional notifications must be made for critical deficiencies affecting bridge safety along **CFRC's railroad**:
  - SunRail Chief Engineer Maintenance of Way
  - SunRail General Manager
  - SunRail Chief Transportation Officer
  - SunRail Manager of Train Operations
  - SunRail Track Manager
  - CFRC Management
    - FDOT CFRC/SunRail Chief Operating Officer
    - CFRC Director of Operations
    - CFRC Superintendent of Operations
- The following additional notifications must be made for critical deficiencies affecting bridge safety along **SFRC's railroad**:
  - The Rail Manager who will be responsible for ensuring SFRC DCC and all affected parties are notified.
- Promptly report geometry car exceptions found on bridges to the Railroad Bridge Engineer to arrange an inspection of the bridge within 48 hours to verify the structural integrity.

### c) Structure nomenclature:

- Number spans from low to high mileage
  - Always face increasing milepost to determine direction and orientation.
  - The left-hand side begins with pile or post one increasing to the right (similar with stringers or girders)

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- Designate the first span as Span #1
- Designate the first end bent as Bent #1
- Designate bridge components (e.g., stringers) with numbering from left to right while looking in the direction of increasing mileage.
- Refer to the AREMA Bridge Inspection Handbook, Chapter 5- Bridge Nomenclature for additional information.

### REVIEW OF BRIDGE INSPECTION REPORTS

The RBE shall review all reports submitted by an inspector within 30 calendar days of submission, unless noted for expedited review, in which case a review by an RBE shall occur within 5 working days of submission.

a) The purpose of the review is to:

- Ensure the completeness and have full understanding of structural conditions.
- Confirm that bridge inspections were conducted according to the prescribed schedule and specific procedures.
- Evaluate whether any items within the report represent a safety hazard.
- Prescribe any modifications to the inspection procedures or frequency for that bridge.
- Schedule any repairs or modifications to the bridge required to maintain its structural integrity.
- Determine the need for specialized inspections or a higher-level review by FDOT or their bridge oversight designate.

Upon completion of the review, the RBE will document the completion of the review in the BMS. Deficiencies noted during any type of inspection shall be tracked to a resolution by using the prescribed form that will indicate the method of resolution and date thereof. Resolution may be through monitoring, repair, or replacement.

### Feasible Action and Review Committee:

- The Feasible Action and Review Committee (FARC) meetings will be held in person annually, led by the RBPM or a designated representative. The FARC meetings will include the RBS, RBE, inspection, and repair teams, as assigned by the RBPM. In cases where work orders are to be executed by an Asset Management (AM) contractor, a representative from the AM contractor will also be included as a FARC member. A representative from the inspection consultant will be present as well. The primary function of the FARC is to provide recommendations regarding necessary work. The FARC will assess and suggest whether the required work should be undertaken through the work order system or included in the work program. Ultimately, the RBPM will hold the authority to make the final decision based on these recommendations.
- The RBE for the different railroads will work with information gathered from inspection, rating, and the FARC review to develop a Maintenance and Capital Work Plan.

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- Each Railroad Operator will submit a Maintenance and Capital Work Plan to FDOT for consideration annually by March 1<sup>st</sup>. The Plan must address the needs for bridge replacement work through the fifth year, and bridge repair and rehabilitation work through the third year.

### Critical Deficiencies:

Critical deficiencies affecting the safety, capacity or stability of the structure found during any type of inspection must be tracked to a final resolution.

- Final resolution includes repairs, replacements, or a determination that the condition is not critical and requiring immediate action.
- Retain the record of the final resolution with the bridge file.

## **REPAIR AND MODIFICATION OF BRIDGES**

### **DESIGN**

The RBE is responsible for the design of any repair or modification, which materially modifies the capacity of a bridge or the stresses in any primary load-carrying bridge component. The design must specify the way railroad traffic or other live loads may be permitted on the bridge while it is being modified or repaired. Repair or modify bridges according to plans and procedures prepared or approved by an RBE. Designs and procedures for repair or modification of bridges of a common configuration, or instructions for in-kind replacement of bridge components, may be issued as a common standard. Update the bridge records to reflect the work performed. Determine new bridge capacity ratings to reflect the work performed.

### **SUPERVISION OF REPAIRS AND MODIFICATIONS**

Each repair or modification must be performed under the immediate supervision of an RBE. The Railroad Bridge Supervisor must ensure that that the work is carried out in conformance with the plans and specifications designed by the Railroad Bridge Engineer. When repairs or modifications are completed, a Bridge Repair or Modification Record will be submitted to the FDOT District Office by the RBE within 30 days of the date of the repair.

## **DOCUMENTS, RECORDS AND AUDITS OF THE BRIDGE MANAGEMENT PROGRAM**

### **AUDITS OF PROGRAM**

Every two years, at minimum, the RBPM shall audit the effectiveness of this program to ensure the validity of procedures and compliance with applicable regulations. The audit consists of a review of bridge inventory data, issued instructions on weight / dimensional limits and movement restrictions on loads with exceptional weight or dimensions. Also, every two years, the RBPM, RBS and a RBE will review the provisions of this BMP to ensure the validity and effectiveness of the written program. The RBPM will keep an audit report on file summarizing the findings of the audit.

### **STRUCTURE INSPECTION AUDIT PROCEDURES**

At a minimum, every two years, the RBS is responsible for conducting an audit to assess the effectiveness of the inspection program. This audit help ensures the accuracy of bridge inspection reports, and adherence to inspection procedures and frequencies. To enhance quality assurance, the independent FDOT Routine Inspections will be cross-referenced with the Annual Rail Agency inspection reports to verify the completeness of inspections and the updating of load ratings as required.

Moreover, as part of the audit process, an RBE will accompany each RBI during the Annual Rail Agency Inspections. This allows for firsthand observation of the utilized procedures and verification of the credibility of the findings. The audit will encompass a minimum of five bridges per rail agency. Subsequently, an audit reports will be submitted by the RBE and RBS to the RBPM for each audit conducted.

### **DOCUMENTS AND RECORDS**

- a) The retention period shall be no less than two years following the completion of the inspection. Records of underwater inspections shall be retained until the completion and review of the next underwater inspection of the bridge. FDOT will maintain archived records in the Electronic Document Management System (EDMS) and the BrM-BMS database for lifetime of the structure.
- b) Include information for the following for each bridge in the Railroad Bridge Management Database and EDMS: Note that all categories may not be appropriate for each railroad structure type and additional information may be added during inspections. Additionally, not all structures will have complete plans or historical information on file. When possible, document the request for such information by retaining letters or emails submitted to the previous owner of the structure. The following information shall be maintained:
  - Bridge History Summary Report- A live document that will be updated every two years at minimum and maintain the history of significant changes in the inspection, conditions, and load rating of the bridge.
  - Drawings and Design Documents
    - General layout drawings, including individual span lengths

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- Original bridge plans, design calculations and shop drawings and legacy records
- Construction records and as-built plans
- Repair, rehabilitation and bridge modification plans, design calculations and shop drawings
- QA/QC Records
- Identification and Location
  - FDOT bridge number
  - Original bridge ID (name or number)
  - Mile post
  - Subdivision name
  - Track identifier (if applicable)
  - Location, by nearest town (and State) or station name
  - Geographic coordinates
- Crossing Features
  - Crossing type (waterway, roadway, ditch, path, etc.)
  - Crossing description (watercourse name, state road, etc.)
  - High water level
  - Watercourse characteristics and any observed changes to flow
- General Configuration and Construction Type
  - Overall bridge length
  - Number of tracks
  - Total number of spans
    - Listing of each span in order, description of each span including span type and span length
  - Bridge type
    - Deck type(s)
    - Superstructure type(s)
    - Substructure type(s)
    - Foundation type(s)
  - Maximum height
  - Alignment (Tangent or degree of curvature)
  - Clearance dimensions
- Dates
  - Original construction
  - Deck replacement
  - Last inspection
  - Underwater inspection
- Repairs, Strengthening or Renovation
  - Programmed inspections (underwater, mechanical, electrical, etc.)
  - Inspection reports with photos
  - Any condition(s) that may affect the structure's safe load capacity
  - Equipment restrictions (if any)

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- Maintenance program with assigned priorities
  - Repair history with drawing references
  - Structure or feature that work was performed on
  - Type of work
  - Date of work
  - Identities of responsible parties for bridge maintenance and bridge components
  - Load rating calculations
  - All bridge inspection records and bridge capacity records
  - Audit records
- c) Documents and records will be made available for inspection and reproduction by the Federal Railroad Administration.
- a. Upon request FDOT will provide bridge records to rail agencies.

## INSPECTOR SAFETY REQUIREMENTS

Safety is the number one priority when working on, under, or around a railroad bridge. Safety practices for Railroad Bridge Inspectors are included in the appropriate portions of the AREMA BIH, Chapter 1. Regardless of the work assignment (inspection, construction, repair work, observations, etc.) personnel must stay alert to their immediate surroundings and watch for dangerous animals, insects, etc.

Anytime inspections or other work are being performed at a railroad structure, personnel must comply with all applicable requirements, including but not limited to FRA 49 CFR Part 214, Subpart B Bridge Worker Safety Standards and Subpart C Roadway Worker Protection, On-Track Safety Rules and Engineering Instructions and the recommended practices as defined in the AREMA Bridge Inspection Handbook.

In addition

- a) All personnel and those under contract with CFRC are required to perform inspections of FRC structures in conformance with the following safety requirements:
  - CFRC MWI 1401- 02 Inspection of Bridges, Culverts, and Tunnels
  - CFRC Operating Rules
  - STAR (Safety, Transportation, and Responsibility) rules.
  - All applicable CFRC Engineering Safety Rules pertaining to Railroad Bridge Workers.
  - The Site Safety Plan
  - CFRC Roadway Worker Protection (RWP) Plan
- b) All personnel and those under contract to SFRC are required to perform inspection of FRC structures in conformance with:
  - SFRTA Safety and Operating Rules, including SFRTA System Bulletin 001- Item 3 Work on Bridges ES-13-1-C.
- c) Inspectors must be equipped with the prescribed personal protective equipment, including but not limited to:
  - Hard hat
  - Reflective vest
  - Safety glasses
  - Compost or Steel Toe boots
- d) Fall protection equipment is to be used according to these regulations when working 12-feet or more above the ground or water surface or where a special danger exists. The choice of anchor point requires good judgment if permanent anchorage points are not available.
- e) When fall protection equipment is used, a rescue plan must be in place.

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- f) Railroad Bridge Inspectors, professionally trained and qualified under CFR 49 §214.103(b)(2), may be exempt from use of fall protection equipment when solely engaged in the inspection process.
- g) The Railroad Bridge Engineer is responsible for determining the appropriate safety procedures, inspection access methods, and on-track protection for each bridge inspection. The Railroad Bridge Engineer will arrange and coordinate inspections using specialized equipment including ladders, scaffolds, bucket trucks or platform inspection trucks.
- h) Where possible, use a hi-rail bridge inspection vehicle equipped with a boom and bucket to safely conduct inspections where inspectors are required to work 12 feet or more above the ground or water surface.
- i) Employees performing inspections must be familiar with all equipment to be used.

**ACCESS**

Major structures are to be periodically reviewed by the RBE to determine if permanent improvements (such as anchor points, horizontal cables or inspection platforms and walkways) are feasible and effective to facilitate inspections.

## FUTURE CONSIDERATIONS

The following are recommendations for future updates to this program:

1. **Establishment of a Dedicated Website:** It is advised that serious consideration is given to the creation of a dedicated website. This website would serve as a platform for hosting this document, providing access to reference materials, and facilitating contact with relevant parties. Such an online presence can greatly enhance the accessibility and usability of the program's resources.
2. **Expansion of Scope to Include Ancillary Structures:** The present document primarily focuses on railroad bridges. However, it is important to recognize that rail agencies have a broader responsibility that extends to inventorying and maintaining clearance information for various ancillary structures. These include overhead bridges and other infrastructure elements that have the potential to impact rail operations. Hence, it is recommended that future iterations of this document contemplate the inclusion of these additional structures.
3. **Simplify Communications:** Work with the rail agencies to simplify contact requirements, consider creating a listserv email address for each rail agency to notify all the responsible parties of upcoming inspections, critical findings, and or needed repairs.

