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Department of Transportation

BRIDGE AND OTHER STRUCTURES INSPECTION AND REPORTING

AUTHORITY:

Sections 20.23(3)(a) and 334.048(3), Florida Statutes (F.S.)

REFERENCES:

Sections 316.003(57), 334.03(2), 334.046, 335.074, 339.05, F.S.
Rule Chapter 14-48, Florida Administrative Code; 23 CFR Part 650, Subpart C-National Bridge Inspection Standards

The following publications are available on the State Maintenance Office Infonet site and from the Florida Department of Transportation Maps and Publication Sales, 605 Suwannee Street, Mail Station 12, Tallahassee, Florida 32399-0450, (850) 414-4050, unless stated otherwise.

Bridge Maintenance, Planning, and Repair Handbook - Defines standard maintenance and repair details.

AASHTO Movable Bridge Inspection, Evaluation and Maintenance Manual - Provides guidelines for the inspection, preventive maintenance, operation and repair of moveable bridges. This document is available from the American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, N.W., Suite 249 Washington, D.C. 20001. This document is not available from the Department.

Bridge Work Order Handbook – Provides instructions for the processing of data collected by Bridge Inspectors. This document is available from the Office of Maintenance.

Bridge Inspectors Field Handbook – Provides guidance for inspectors in selecting elements and assigning quantities to condition states for selected elements. This document is available from the Office of Maintenance.

Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges – Provides instructions for coding data items required by the Federal Highway Administration. This document is available from the Federal Highway Administration at: http://www.fhwa.dot.gov/bridge/nbi.cfm.

Evaluating Scour at Bridges Hydraulic Engineering Circular No. 18 (HEC-18) - provides guidance on evaluating scour and developing plans of action. This document is available from the Federal Highway Administration at: http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm.

Team Leader Requirements in Florida – describes the requirements for serving as a bridge inspection team leader in Florida. This document is available on the Office of Maintenance Internet site.

Metrics for the Oversight of the National Bridge Inspection Program HBIS 30 – provides guidance to the Federal Highway Administration Division Bridge Engineers in conducting compliance reviews of State and Federal agency safety bridge inspection programs. This document is available at: https://www.fhwa.dot.gov/bridge/nbip/metrics.pdf.

Procedural Manual: Reclassify Unknown Foundation Bridges - describes the process for evaluating bridges with unknown foundations. This document is available on the Office of Maintenance Internet site.

PURPOSE:

To establish inspection and reporting requirements for bridges and other structures under the responsibility of the Florida Department of Transportation (Department).

SCOPE:

The principal users of this procedure will be all persons involved with bridge operations, maintenance, inspection, and repair.

DEFINITIONS:

Ancillary Structures: Non-bridge structures such as overhead sign structures, high mast light poles and traffic signal mast arms.

Appurtenances: Items that are not technically part of the bridge but are generally associated, inspected, and maintained with the bridge. Examples include approach guardrail, fender systems, traffic control devices, bridge mounted signs, and approach slabs.

Bridge: a structure including supports erected 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 more than 20 feet between the undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; which may include multiple pipes, where the clear distance between openings is less than half the smaller contiguous opening.

BrM: A computer program for bridge management system developed by AASHTO and used by the Department.

Culvert: A type of structure which conveys water or forms a passageway through an embankment and is designed to support superimposed loads of earth or other fill material plus a live load. A culvert will be considered a bridge if it meets the above definition of a bridge.

Pontis: A computer program for bridge management system developed by AASHTO and previously used by the Department, and still contains historic bridge inspection information

Non-Qualifying Structure: A structure that does not meet the statutory definition of a bridge.

1. GENERAL

1.1 OBJECTIVES

The primary objective of the Bridge and Other Structures Inspection Program is to protect the safety and welfare of the motoring public and safeguard the public's investment. The Structures Inspection Program identifies bridge deficiencies and other deficiencies that are critical enough to endanger public safety. Non-critical deficiencies are also identified. By correcting non-critical deficiencies, the structure's service life is lengthened, total maintenance costs are reduced, and the public receives a better return on their investment. An inspection will:

1. Identify immediate action to limit the use of or close any structure which is revealed by inspection to endanger public safety.
2. Establish a chronological record of periodic and special inspections, listing structure components, and component condition at the time of each inspection, thus allowing detection of progressive changes.
3. Determine the extent of any deficiency, critical or minor, resulting from deterioration, or any other cause.
4. Enable maintenance, repair, and rehabilitation to be programmed more effectively through early detection of structure deficiencies by which the public investment in the highway system will be safeguarded and repair costs minimized.
5. Collect data on frequently occurring deficiencies to support a change in design and/or

construction practices to eliminate the cause of the deficiency.

6. Collect, record, and store bridge inventory and inspection data required to support the bridge management system.

This procedure provides guidance on how to accomplish the primary objectives stated above. The following tasks will be covered in this procedure:

1. What to inspect
2. When to inspect
3. How to inspect
4. What to report
5. How to report
6. What resources are needed
7. What repairs are needed
8. How to initiate repairs
9. How to follow up on corrective action
10. How to maintain quality

1.2 ANNUAL MILESTONES

The following is a list of mandatory annual tasks that are performed as part of the bridge inspection process.

Date	Activity
March 1	District Structures Maintenance Office submits to the Office of Maintenance , a list of Delinquent Inspections and Postings/Closing Deficiency Reports (Compliance Reports)
March 15	Office of Maintenance submits Compliance Reports to the Federal Highway Administration (FHWA)
March 15	District Structures Maintenance Office submits the Status of Scour Screening and Evaluation to the Office of Maintenance
March 27	Office of Maintenance reports the Status of Statewide Scour Screening and Evaluation to the FHWA
April 15	Office of Maintenance submits the National Bridge Inspection data to the FHWA
June 1	District Structures Maintenance Office submits updates of March 1 Compliance Reports to the Office of Maintenance
June 15	Office of Maintenance submits updates of March 1 Compliance Report to the FHWA
Sept. 1	District Structures Maintenance Office submits Compliance Reports to the Office of Maintenance
Sept. 15	Office of Maintenance submits Compliance Reports to the FHWA
Oct. 15	District Structures Maintenance Office submits the Status of Scour Screening and Evaluation to the Office of MaintenanceOct. 27Office of Maintenance reports the Status of Statewide Scour Screening and Evaluation to the FHWA
Dec. 1	District Structures Maintenance Office submits updates of September 1

Compliance Reports to the Office of Maintenance

Dec. 15 Office of Maintenance submits updates of September 1 Compliance Report to the FHWA

2. ORGANIZATION

2.1 RESPONSIBILITY

2.1.1 Structures Owned by the Department Requiring Inspection

2.1.1.1 Inspection

The Department is directly responsible for the inspection of all bridges on the state highway system. Border bridges on highways connecting Florida with other states shall be inspected according to written agreements between the states' Departments of Transportation.

2.1.1.2 Bridge Records

The complete bridge record, or an electronic copy, shall be maintained in the District Structures Maintenance Office for the life of the structure. Structures taken out of service which have historical significance should have the bridge plans and records forwarded to the State Archives and Records Office in Tallahassee, Florida. In addition, the Department's Environmental Management Office should be notified.

The inspection reports for miscellaneous structures (such as non-qualifying bridges, sign structures, high mast light poles and mast arm traffic signals) inspected by the Department shall be maintained by the District's Structure Maintenance Office for the life of the structure.

2.1.1.3 Maintenance and Repair

The primary function of a bridge maintenance program is to prevent or reduce deterioration of the structure. This protects the safety of the public and safeguards the state's investment by extending the structure's useful life. A thorough, documented inspection is essential for determining maintenance requirements and making practical recommendations to correct or preclude bridge defects or deficiencies. Each District Maintenance Office is responsible for maintaining and repairing the bridge structures in their inventory.

The District Structures Maintenance Office is responsible for the preparation of work orders and plans for bridge maintenance and repair.

2.1.1.4 Weight Restrictions

The District Structures Maintenance Engineer is responsible for ensuring that no bridge structure is operated at levels exceeding the Operating Rating.

2.1.1.5 Suitability for Structure Rehabilitation or Replacement

It is the responsibility of the District Structures Maintenance Engineer to develop the bridge repair and replacement Bridge Work Plan for Department bridges within their jurisdiction.

2.1.2 Non-highway Bridges, Non-qualifying Bridge Structures, and Ancillary Structures Owned by the Department

2.1.2.1 Bridges Less Than 20 Feet in Length

These structures are typically inspected as part of the roadway work needs survey and are the responsibility of the Area Maintenance Engineer. The Area Maintenance Engineer and the District Structures Maintenance Engineer may agree that certain structures are best inspected by the District Structures Maintenance Office. The District Structures Maintenance Engineer shall determine the frequency of inspection. The scope of the inspection and the extent of the records shall be determined by the District Structures Maintenance Engineer. Should the Department set up a default inspection cycle of no more than 4 years for instance? See 2.1.3.4 language requiring periodic inspection. See 2.3.1 identifying a minimum 48 month inspection cycle.

2.1.2.2 Railroad or Mass Transit Overpasses Maintained by the Department

The Department's Rail Office is responsible for ensuring that these structures are inspected. These structures may be assigned a bridge number for tracking in the bridge management system database. The requirements for the input of data will include those items listed for National Bridge Inventory (NBI) Item 5 for "under records".

2.1.2.3 Department Maintained Pedestrian Overpasses

The Department builds and maintains pedestrian overpasses over major highways. These structures shall be assigned bridge numbers and inspected in accordance with this procedure. Load ratings generally are not required, but the District Structure Maintenance Engineer may require a load rating. The minimum requirements for input of data will include those items listed for NBI Item 5 for "under records". The inspection of these structures will be at a 24-month frequency.

2.1.2.4 Overhead Sign Structures, High Mast Light Poles and Mast Arm Structures

These structures shall be inspected in accordance with this procedure. High mast light poles provide global lighting for an interchange and are higher than 50 feet high. The poles are generally tapered with circular or polygonal sections.

2.1.2.5 Mechanically Stabilized Earth (MSE) Walls

When a MSE wall is part of the structure it shall be inspected. MSE walls may extend for significant distances from the structure being inspected. In this case, the inspection of the MSE walls shall be limited to the portion of the MSE walls within 30 feet of the structure.

2.1.2.6 Seawalls and Bulkheads

When a seawall or bulkhead protects the slope near a bridge the limits of inspection shall be limited to the portion of the seawall within 30 feet of the structure.

2.1.2.7 Overhead Adhesive Anchors

When overhead adhesive anchors are identified during an inspection the overhead adhesive anchors shall be evaluated by a structural engineer to determine if a failure could result in a risk to the public. If it is determined that a risk to the public exists, then action shall be taken to minimize the chance of failure.

2.1.3 Structures Owned by Others

2.1.3.1 General Authority to Inspect and Establish Weight Limit Posting

The Department is responsible for ensuring that bridge structures are inspected, load rated, weight restricted in accordance with the applicable state, and federal laws and regulations.

2.1.3.2 Other State Agency Owned Bridge Structures

Other state agencies own and maintain bridge structures within the state. These structures shall be inspected by the Department in accordance with the National Bridge Inspection Standards (NBIS) and Florida law.

2.1.3.3 Structures Owned by the Federal Government

The federal government owns and maintains bridges in the state. The appropriate federal agency is responsible for inspecting these structures and providing structure inventory and appraisal data to the FHWA to record and maintain.

2.1.3.4 Structures Other Than Highway Bridges

A non-highway public or privately-owned bridge structure, which over passes a state maintained highway shall be assigned a bridge number and appropriate NBI data shall be gathered. The requirement for the input of data into the NBI file shall include those items listed for NBI item 5 for “under records”. In the event deficiencies are discovered during the gathering of NBI data, the owner shall be notified. Steps shall be initiated to ensure that the needed corrective action is taken. Privately owned highway bridges are not covered by this

procedure or the ***National Bridge Inspection Standards***, however, the District Structures Maintenance Office shall notify the owner that standard engineering practice requires periodic inspection of these structures and that the owner is responsible for the safety of their structures.

2.1.3.5 Pedestrian Bridges Owned by Third Parties Over State Maintained Highways

For pedestrian overpasses over Department maintained roads, but not owned by the Department inspection shall be limited to that necessary to collect the required inventory data. The requirements for input of data will include those items listed for NBI Item 5 for “under records”. The inspection of these structures will be at a 24-month frequency. The construction of new pedestrian bridges built over state highways by third parties requires a permit from the Department. As a condition of the permit to build and operate these structures, the Department will require the owner to take full responsibility for the inspection and maintenance of these structures. The requirement for the input of data into the NBI file shall include those items listed for NBI item 5 for “under records”. In the event deficiencies are discovered during the gathering of NBI data, the owner shall be notified. Steps shall be initiated to ensure that the needed corrective action is taken. The District Structures Maintenance Office shall inform the owners of these pedestrian bridges of their responsibility to inspect their bridges and request that a copy of the bridge inspection report be provided to the District Structures Maintenance Office.

2.1.3.6 Pedestrian Bridges over Non-Department Maintained Federal Aid Highways

For pedestrian overpasses over Non-Department maintained Federal Aid Highways, inspection shall be limited to that necessary to collect the required inventory data. This inventory inspection shall be conducted at a 24-month frequency. The requirements for input of data will include those items listed for NBI Item 5 for “under records”. The District Structures Maintenance Office shall notify the owner that standard engineering practice requires periodic inspection of highway bridges and that the owner is responsible for the safety of their structures.

2.1.3.7 Pedestrian Bridges, Trail Bridges, or Fishing Piers Not Over Highways

These structures are not covered by the National Bridge Inspection Standards. The owner of these structures shall be responsible for inspecting and maintaining these structures. Should the Department accept responsibility for inspecting these structures, the District Structures Maintenance Office shall establish the criteria and frequency of inspection of these structures. If it is decided to keep these structures in the Bridge Management System database, the Office of Maintenance shall be consulted on the proper coding of these structures.

2.2 FUNCTIONS OF DEPARTMENT DISTRICT STRUCTURES MAINTENANCE OFFICE

The District Structures Maintenance Office may include the following functions, management, engineering, structure inspections, and structure repair and maintenance.

2.2.1 Management

The District Structure Maintenance Engineer coordinates the functions of the various sections of the District Structures Maintenance Office and is responsible for coordination with other units within the District, other districts and central office. Management of consultant contracts is also the responsibility of the office management.

2.2.2 Engineering

The engineering section has four distinct functions:

2.2.2.1 Data Management and Reporting

Maintaining quality data and developing reports from the bridge management system.

2.2.2.2 Load Capacity Analysis

Determining the load carrying capacity of a structure.

2.2.2.3 Repair Plan Preparation

Design and preparation of plans and specifications for the repair of structures identified by inspection.

2.2.2.4 Planning, Programming and Production

Establishing, coordinating, maintaining, and reviewing the District's bridge repair, rehabilitation, and replacement programs.

2.2.3 Structure Inspection

The structure inspection section performs inspections of bridges and other structures. Inspections are conducted on all elements that can be accessed above or below water. Inspections are performed using heavy equipment or watercraft as required.

2.2.4 Structure Repair and Maintenance

For bridge structures to be properly maintained, preventive maintenance, routine maintenance and repair must be performed. The bridge maintenance section will perform this function. This

unit performs repairs of mechanical systems, electrical systems, welding of steel, concrete repairs, and other heavy construction repairs. This work may be performed by the District Heavy Bridge Crew or by contract.

3. INSPECTION AND REPORTING

3.1 INSPECTION METHODS

Tools and equipment needed for the inspection of bridges vary with the type of inspection being made. Refer to the current FHWA Bridge Inspector's Reference Manual, for a list of equipment that may be used for inspection.

A proper inspection method is essential to protect the safety of the public and to safeguard the public's investment in bridge structures. The field investigation of a bridge shall be conducted in a systematic and organized manner to be efficient and to minimize the possibility of items being overlooked.

Some methods of inspection include:
1. Visual Inspection
2. Non-destructive Testing
3. Material Sampling (Coring, removal and testing)
4. Structural Inspections
5. Innovative Techniques

During the initial inspection of a structure, the bridge inventory data shall be verified in the field to reflect the "as built" conditions. Before making subsequent inspections, review the previous bridge inspection reports and the bridge record file.

3.1.1 Visual Inspections

Dirt and debris must be removed to permit visual observation and precise measurements. Careful visual inspection should be supplemented with appropriate special equipment and techniques. Use of mirrors will increase visual access to many bridge components. Sketches, photographs and video cameras should be used as required to record significant or unusual details.

3.1.1.1 Sequence

Whenever practical, inspection should proceed from substructure to superstructure to deck. The cause of superstructure and deck deficiencies may be more apparent if the substructure was inspected initially.

3.1.1.2 Thoroughness

All surface areas of each bridge member must be examined. To ensure that no surface is overlooked, each inspection team should develop a standard and methodical order for examining the surfaces of each member. The minimum distance the inspector needs to be

from each surface varies depending on what is being inspected and the condition of the structure. Typically, items such as bearing areas, fatigue prone details, areas where debris accumulates and other areas known to be prone to deterioration should be inspected at arms length. Areas like mid span portions of prestressed girder bridges in good condition can typically be inspected from the ground. As the condition of the structure worsens, the effort required for the inspection will increase.

The minimum level for an underwater inspection is 100 % Level I and 10 % Level II.

1. Level I Underwater Inspection is a swim by inspection within arms-length of all underwater elements of the structure. When visibility is limited the Level I inspection consists of feeling all surfaces of the underwater portion of the structure. The Level I underwater inspection also includes looking for evidence of scour, undermining of foundations, and the exposure of normally buried portions of the structure.
2. Level II Underwater Inspection involves cleaning and close inspection of a limited portion of the structures. For 10% of the piles clean 10-inch high bands at the waterline, mudline, and midway in between, three sides of rectangular piles, six sides for octagonal piles and three fourths of the perimeter for round piles. For steel piles, clean outside flange faces and one side of web. Clean four equally spaced 1-foot by 1-foot areas for large (> 3 ft) diameter sections. For all large solid faced structures (piers and abutments) clean 1-foot by 1-foot areas at three levels on each face.
3. Level III Underwater Inspection involves cleaning and close inspection of a portion of the structure beyond what is required for a Level II Underwater Inspection. This may involve nondestructive and destructive testing techniques. A Level III Underwater Inspection may be required by the District Structure Maintenance Engineer when the Level I and Level II Underwater Inspections cannot conclusively determine the condition of all of the underwater elements, or it may be used to determine the extent of work required for repair or rehabilitation projects.

3.1.1.3 Completeness

Inspect all components of the bridge during every inspection. If a specific component or member cannot be inspected, it must be noted in the bridge inspection report. Features that are not of a structural nature, such as approach guard rails, lighting, and signs should also be inspected as these components have an impact on the performance of the bridge and on public safety. The elements listed in the bridge inspection report should be used as a guide to assure complete inspections. There are also items that are incidental to the elements that need to be inspected.

3.1.1.4 Discovery of Serious Safety Concerns

When deficiencies are discovered which may pose a definite threat to public safety, the inspection team leader shall initiate action to protect public safety. In extreme cases when the structure is in imminent danger of collapse, the inspector shall close the bridge to traffic. The District Structures Maintenance Engineer shall be notified immediately of the critical deficiency and the following steps shall be taken.

1. Coordinate the traffic restrictions for public safety.

2. Visit the site to evaluate the critical deficiency. During this phase personnel may be brought to the site to aid in the evaluation of the critical deficiency.
3. Determine the action to correct the critical deficiency.

3.1.1.5 Questionable Conditions

During the inspection, conditions may be encountered which require evaluation beyond the knowledge and experience of the bridge inspector. When this occurs, engineers from the District Structures Maintenance Office shall visit the site and personally examine the situation before determining the course of action.

The District Structures Maintenance Engineer shall determine if experts from the District, Central Office, State Materials Office, Universities, consultants, federal or other state agencies, need to be consulted to aid in the evaluation of questionable conditions.

3.1.2 Non-Destructive Testing

Non-destructive testing (NDT) can be used to augment visual inspection. Generally, NDT is not practical for large scale use on a bridge unless a defect has first been detected by visual means. NDT can be used to highlight or define the extent of the defect.

Since most types of NDT require special equipment, and detailed instructions to perform the various tests, and correctly interpret the results, it is essential to have the NDT performed and interpreted by qualified personnel.

3.1.3 Materials Sampling (Destructive Testing)

Destructive testing can be used in evaluating bridge materials. This requires taking samples from the various bridge components. Samples from low stress areas of steel beams can help the engineer determine the type and strength of the steel. Taking samples out of concrete members can be useful for identifying hidden defects as well as determining the strength of the concrete. Taking small samples from timber members using an incremental borer may be performed but the hole should be plugged with a treated wood plug or other suitable method.

Destructive testing is not usually recommended except in cases where it is necessary to evaluate the structure before major rehabilitation, or to determine material properties for analysis. It is imperative that sample holes be patched or plugged to prevent future deterioration.

3.1.4 Structural Investigations

3.1.4.1 Purpose

When a failure or condition threatening the structural integrity is discovered on a bridge, culvert, overhead sign structure, high mast light pole, retaining wall, mast arm traffic signal or other significant structure, the failure shall be investigated to determine the cause. Based on the investigation, action should be taken to prevent future similar failures.

3.1.4.2 Notification

The District Structures Maintenance Engineer must be notified when a failure or near failure occurs. Where possible, the failed structure should not be moved until an investigation can be performed. When traffic or safety concerns dictate immediate removal of the failed structure, the failed structures should be stored where it will be available for future investigations.

3.1.4.3 Preliminary Actions

The initial phase of the investigation should be the documentation of the condition. Extensive videos, photographs, sketches and measurements should be used to document the failed structure. During the preliminary phase of the investigation, the District Structures Maintenance Engineer will notify the following:

1. Office of Maintenance
2. District Structures Design Office
3. District General Counsel, if the incident involves the public

3.1.5 INNOVATIVE INSPECTION TECHNIQUES

Innovative inspection techniques have the potential to improve the quality and/or cost effectiveness of the inspection process. Submit requests to use an innovative technique to the Office of Maintenance for approval with details on the proposed technology. Some possible innovative techniques include:

- Pole Inspection Crawler – a camera equipped device that can crawl up a pole or cable and allow the inspector to view the pole or cable as the crawler moves along the pole or cable.
- Small Unmanned Aerial Vehicles (sUAV) – these allow the inspector to view hard to access portions of a structure. All applicable Federal Aviation Administration and State Statutes must be followed. Currently, the FHWA does not allow the use of sUAVs for fracture critical inspection. Contact the Professional Service Office for the standard contract language to use for contracts that use sUAVs. If sUAVs are used on an existing contract, the contract shall be amended to include the standard sUAV language.
- Infrared Cameras – these can be used to find delaminations in concrete.

Information collected shall be included in the inspection report. Deficiencies discovered using innovative inspection techniques may require further investigation as determined by the bridge inspection team leader. The District will determine if any videos collected during the inspection need to be kept as part of the structure record.

The District Structures Maintenance Office shall evaluate the innovative technique and provide the evaluation to the Office of Maintenance and the other District Structures and Facilities Offices.

3.2 FREQUENCY AND DEPTH OF INSPECTION

3.2.1 General

Each bridge is to be inspected at regular intervals not to exceed 24 months. An inspection will be considered not delinquent if it is inspected in the month scheduled. If a bridge is inspected after the month that it is due, documentation of the reason must be placed in the communications section of the bridge record file and the inspection notes section of the bridge management system. FHWA uses the criteria in the document "Metrics for the Oversight of the National Bridge Inspection Program" to determine if an agency is in compliance with the National Bridge Inspection Standards. With the approval of the FHWA, certain low risk bridges may be inspected at 48-month frequency. The criteria for selecting these bridges will be developed by the Office of Maintenance with input from the Districts. Currently, the Department has decided to maintain the 24-month inspection frequency. If the Department decides with FHWA approval, to implement the 48-month cycle for certain low risk bridges, the Office of Maintenance will make the final decision on implementation of the 48-month cycle.

3.2.2 Reduced Frequency Due to Condition Rating and Bridge Posting

The condition of a bridge's components, major features and the bridge posting rating establishes the frequency of inspection, and occurs in between the 24-month routine inspections. An interim inspection, does not have to be an inspection of the entire structure, but may be limited to the portion of the structure that has caused the inspection to occur. The minimum frequency for these inspections is detailed in the table below. The District Structures Maintenance Engineer has the option to have a structure inspected more frequently than required by the table below.

INSPECTION FREQUENCY TABLE		
INSPECTION FREQUENCY	**BRIDGE POSTING RATING**	**COMPONENT CONDITION RATING**
	NBI Item 70 Bridge Posting	NBI Item 58 Deck NBI Item 59 Superstructure NBI Item 60 Substructure NBI Item 61 Channel NBI Item 62 Culvert
24 months*	5	5 or greater
12 months	4 or less	4
6 months		3 or less
* Movable bridge mechanical, hydraulic and electrical components including, the submarine cable, must be inspected at least every 12 months. (This is the 8500 series elements in BrM.)		

3.2.3 Frequency of Underwater Inspections

An underwater inspection will be required every 24 months, unless conditions warrant more frequent inspections as determined by the table above or the District Structures Maintenance Engineer. Generally, when the depth of water is less than 3 feet, an underwater inspection will not be required.

3.2.4 Inspection of Movable Bridges

The inspection of movable bridges requires knowledge and skills beyond that required for routine bridge inspections. The mechanical, hydraulic, and electrical portions require inspection by inspectors experienced and knowledgeable in these areas. The bridge inspection team shall include a professional mechanical engineer and a professional electrical engineer with experience conducting inspection of movable bridges. The District Structures Maintenance Engineer may approve bridge inspection teams that demonstrate that its members possess the required knowledge and skills to complete the inspection.

3.2.5 Movable Bridges with Hopkins Frames

Failure of bolts in a Hopkins Frame resulted in the temporary closure and emergency repair of a movable bridge. An investigation was performed of the bolts for all Hopkins Frames movable highway bridges using (NDT) methods. This resulted in the replacement of bolts on several bridges. The replaced bolts shall be inspected using NDT methods as part of the 1st inspection occurring 12 months after the new bolts were installed. If no new issues are found the NDT inspection shall be repeated every 48 months for all Hopkins Frame bolts as part of a regularly scheduled inspection. Any time one of the Hopkins Frame Bolts are replaced, an NDT inspection shall be performed on that bolt as part of the 1st inspection occurring 12 months after the installation of the new bolt.

3.2.6 Inspection of Segmental Bridges

External post tensioning tendon failures are generally visually apparent. Twelve months after each routine inspection of any segmental bridge with external tendons, a walk-through inspection of the segmental bridge shall be conducted visually checking the external ducts containing the post tensioning tendons for signs of failure. Any failure of the post tensioning shall be immediately reported. The findings of this inspection shall be reported in the inspection notes, and a short inspection report created and filed.

3.2.7 Inspection of Existing Bridges During a Construction Project

Prior to the inspection of an existing bridge included in a construction project, the District Structures Maintenance Office must notify the District Construction Office for coordination of the inspection activities and construction operations. The inspection will be conducted in accordance with the Construction Office's instructions to minimize disrupting the contractor's operations. If possible, the inspection will be scheduled before the start of the construction project, or after the completion of the construction project. Document any delayed inspection in the bridge file. Delays greater than 4 months shall be avoided.

3.2.8 Construction Projects on an Existing Bridge

If a regularly scheduled bridge inspection occurs when a construction project is underway on all or part of a bridge, a complete inspection (as defined in this procedure) must be performed as scheduled on all existing bridge components, including any that are part of the project if

they are carrying live load stresses. If construction operations prevent inspection of certain existing components, it should be noted in the bridge inspection report. Components added through repair, widening, or rehabilitation projects will not require inspection until final acceptance by the Construction Office. A pre-acceptance inspection may be performed.

3.2.9 Replacement Bridge Construction Projects

Safety is the primary concern when inspecting a bridge that will be replaced by a current construction project. Comprehensive documentation will only be required if, and when, a new deficiency is discovered that could endanger public safety.

3.2.10 Initial Inspections

The initial inspection of a structure requires establishing the structure in the database and the record file for the structure. The inventory data and the bridge record file need to be as complete as possible. When the initial inspection occurs before the bridge is complete 100% accuracy of the inventory data may not be possible. During the initial inspection, it is important to identify any construction defects so that they may be addressed by the contractor. If any warranty items exist, they shall be identified and tracked in future inspections. Any latent defects need to be identified as soon as possible.

3.2.11 Unusual Inspections

Unusual events, such as hurricanes, floods, earthquakes, fires, explosions, and accidents, have the potential to adversely affect the condition of bridges and other structures. Inspections of these structures should be made as soon as possible after the occurrence. In the case of multiple structures affected by the event, the District Structures Maintenance Engineer shall prioritize the structures for inspection based on considering susceptibility to damage, traffic levels, and expense of replacement.

3.2.12 Inspection After Major Repair or Rehabilitation

If the work performed changes the inventory data for the structure, the structure must be inspected and the inventory database updated within 90 days of the completion of construction for department owned bridges and 180 days for non-Department owned bridges. If the work does not change the inventory data, the District Structures Maintenance Engineer may decide to conduct an inspection to assess the quality of the repair or rehabilitation, or wait for the next scheduled inspection.

3.2.13 Inspection of Gusset Plates on Trusses

The FHWA issued a technical advisory, dated January 29, 2010, for inspecting gusset plates on trusses. When visual techniques are inadequate to determine the extent of deterioration due to corrosion NDT methods are to be used. The FHWA recommends Ultrasonic Testing (UT) for thickness measurements. UT works best for single plate gusseted connections. Research is underway to identify suitable advanced technology for multi-plated gusseted connections. Until suitable technology is available, the FHWA recommends a combination of

visual and UT inspection to best evaluate multi-plated gusseted connections. Exact measurement locations and thickness shall be documented from each inspection in the bridge inspection report and retained in the bridge record file. See ***Section 3.6.2.8***.

3.3 INSPECTION PROCESS

3.3.1 General

Bridge Inspections shall be conducted in accordance with the following state and national publications covering bridge inspection standards of practice:

National Bridge Inspection Standards – Title 23, Code of Federal Regulations, Part 650, Subpart C.

Manual for Bridge Evaluation - American Association of State Highway and Transportation Officials (AASHTO)

Bridge Inspector's Reference Manual - U.S. Department of Transportation/Federal Highway Administration (USDOT/FHWA)

Inspection of Fracture Critical Bridge Members - FHWA-IP-86-26

Movable Bridge Inspection, Evaluation, and Maintenance Manual - AASHTO

Culvert Inspection Manual - FHWA-IP-86-2

Evaluating Scour at Bridges – Hydraulic Engineering Circular 18 FHWA-IP-90-017

Underwater Inspection of Bridges - FHWA-DP-80-01

Manual on Uniform Traffic Control Devices - (USDOT/FHWA)

Roadway and Traffic Design Standards Index Nos. 600-651- (FDOT)

Utility Accommodation Manual - 710-020-001 (FDOT)

Technical Advisory Inspection of Gusset Plates Using Non-Destructive Evaluation Technologies - January 29, 2010 (FHWA)

Rule Chapter 14-48, F.A.C.

3.3.2 Inspection Tasks

Inspection of bridges is accomplished by the following tasks:

- **Office Preparation.** Review previous reports, structure plans, maintenance and repair records, inventory reports, and the bridge record file. This review will familiarize the

inspector with the structure and areas requiring special attention. The inspector will determine any special equipment or maintenance of traffic needed for the inspection. Coordination of equipment and manpower are required for an orderly and complete inspection.

- **Field Inspection.** Field inspections will be performed in an orderly and systematic way.

- **Documentation.** The report is created and the data gathered during the field inspection is entered into the Bridge Management System. Recommendations for repair will be made and entered into the Bridge Management System. Inspection reports and inventory data reports will be created. The Bridge Management System database will be updated with the new inspection date within 30 days after the inspection is completed. The inspection report will be completed within 60 days of the completion of the inspection. Whenever a new load rating is required, perform the load rating and update the database within 90 days after the bridge inspection report is sealed.

- **Quality Control.** Review the steps and procedures required to create the inspection report and inventory data report. Inspectors will review the inspection report and inventory data reports. Independent review by the bridge inspection supervisor is also required.

- **Signing.** When the inspectors are satisfied that the inspection report and inventory data report accurately describe the condition of the structure, the inspectors will initial the cover sheet of the inspection report. The reviewing bridge inspection supervisor will initial the report on the completion of the review of the inspection report and inventory data report. The professional engineer responsible for confirming the accuracy of the report will sign and seal the inspection report. Electronic signature is allowed

- **Processing.** When the inspection report and inventory data report are finalized, the official copies will be stored by the District Structures Maintenance Engineer for state owned structures, and the respective owner for local government bridges. Storage may be in a conventional paper file or the official copies of the reports may be stored in the Department's Electronic Document Management System (EDMS).

3.4 STRUCTURE NUMBERING AND BRIDGE MAPS

3.4.1 Structure Numbers

3.4.1.1 Purpose

The purpose of assigning a structure number is to maintain a statewide inventory by incorporating a unique structure number for each structure inspected through the Department's Bridge Management System. These structure numbers shall be assigned during the design phase and included on the structure plans.

3.4.1.2 Scope

Each structure entered in the Department's Bridge Management System shall have a unique structure number assigned. This number will not change through the life of the structure, and will not be reused when the structure is removed from service.

3.4.1.3 Assignment of Structure Numbers

The District Structures Maintenance Office will assign structure numbers. For new structures, structure numbers should be assigned during the design phase and included on the design plans. The District Structure Maintenance Office may choose to assign structure numbers for ancillary structures during the construction phase or initial inspection.

3.4.1.4 Placement of Structure Number

Bridge structure numbers should be placed on the traffic barrier on their right side so as to be seen by the driver looking to their right side. Culvert structure numbers should be placed on the top of the headwall on the right side in the direction of inventory. Ancillary structure numbers should be placed so as to be visible as the structure is approached from the roadway.

3.4.2 Bridge Element Numbering

The bridge element numbering system detailed below is considered the Department's standard and should generally be followed. However, cases could arise where a different numbering system works better for a particular bridge. In these cases, the system used for a particular bridge shall be documented in the bridge record file.

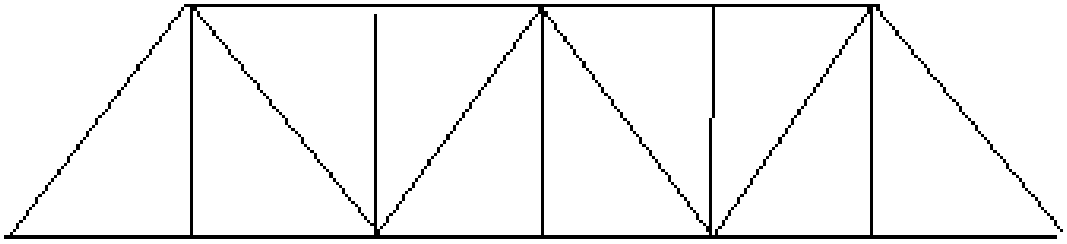
3.4.2.1 Span Numbering

Spans shall be numbered in the direction of inventory or stationing, starting with number 1.

3.4.2.2 Superstructure Element Numbering

Stringers, beams or girders shall be numbered left to right in the direction of inventory or stationing, starting with Girder 1-1 across span 1, then with Girder 2-1 across span 2. Floor beams shall be numbered in the direction of inventory or stationing starting with FB 1-1 along span 1, then with FB 2-1 along span 2. Truss members are numbered according to their beginning and ending panel point numbers. Panel points are numbered in the direction of stationing starting with number 0. (See figure below.) Note: On design plans, symmetrical trusses often used a single quote to indicate the symmetrical panel point on the other end of the truss, for example U4 in the figure below would be U2'. This should not be used for inspection reports.

U1 U2 U3 U4 U5



L0 L1 L2 L3 L4 L5 L6

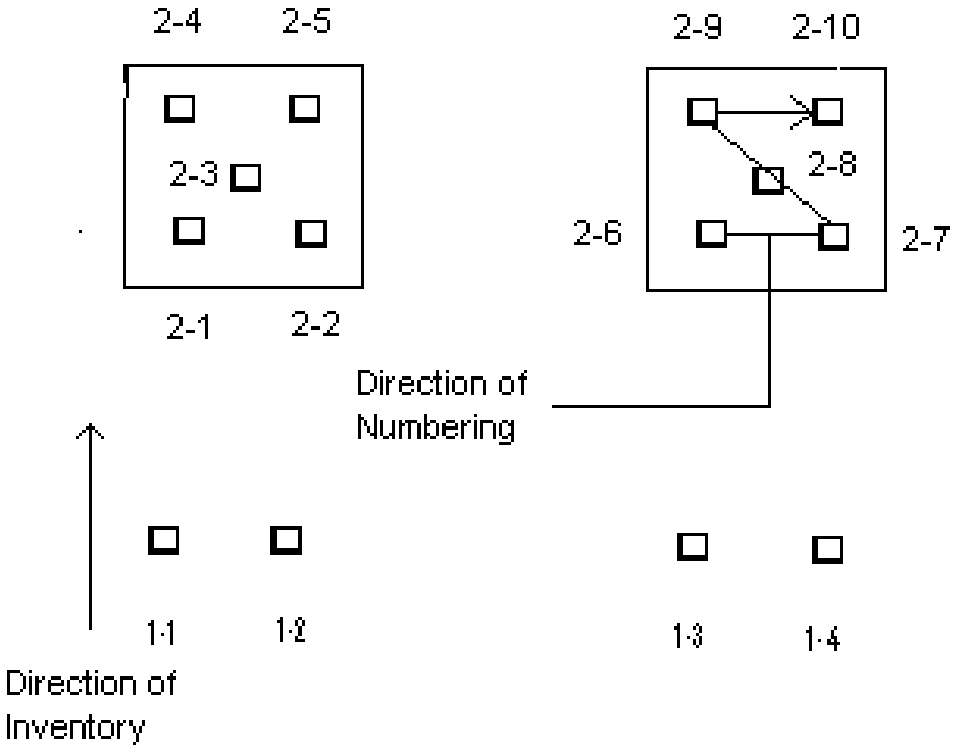
TRUSS NUMBERING SYSTEM

3.4.3 Substructure Unit Numbering

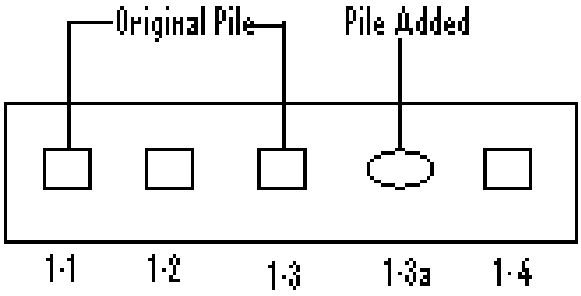
Substructure units shall be numbered in the direction of inventory or stationing, starting with number 1 at the abutment or end bent. (i.e. End Bent 1, Bent 2, Pier 3, Bent 4, End Bent 5 for a 4-span structure.)

3.4.4 Pile Numbering

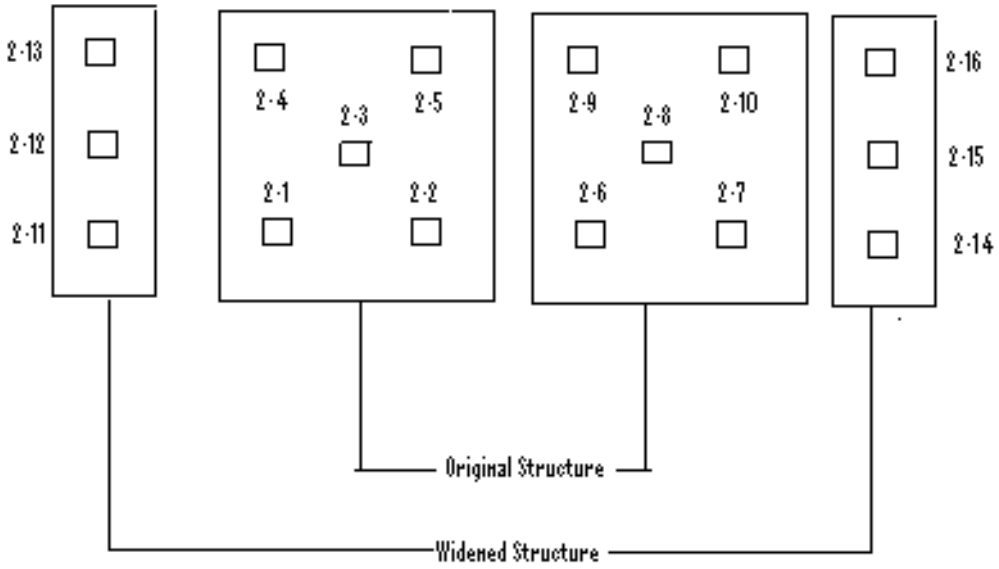
Each pile in a structure shall have a unique number assigned to it. For new structures, numbers shall be assigned in the direction of the inventory or stationing, and from left to right. Pile numbers are composed of two parts. The first part is the sequential substructure as described in ***Section 3.4.3***. The second part is a unique pile number within the substructure component. When a pile is added within a substructure unit, the unit maintains the numbers of the original piles and adds an alpha character to the designation of the new pile(s). When piles are added outside of the existing piles label, the new piles will be numbered starting with the lowest unused number. In complex situations, create and document a logical numbering system so future bridge inspections use the same numbering system.



STANDARD PILE NUMBERING SYSTEM



PILE ADDED EXAMPLE



WIDENING PILE NUMBERING EXAMPLE

3.5 INSPECTION REPORT

3.5.1 General

The bridge inspection report shall be a standalone document and must include all elements inspected during that inspection event. For routine inspections, all elements will be included. Some special inspections may only involve an inspection of part of the bridge. The inspection report will contain some or all of the following:

1. Cover Page
2. Element Inspection
3. Inspector Recommendations
4. Structure Notes
5. Inspection Notes
6. Photographs and Sketches
7. Comprehensive Inventory Data Report (CIDR)
8. Channel Profile
9. Addendum

3.5.2 Cover Sheet

The first page of all reports must be a standard inspection report cover page, generated by the Department's Bridge Management System.

3.5.3 Page Numbering

Reports without addendums will have a closed numbering system with the total number of pages in the report shown on each page, i.e. Page 10 of 17. Bridges that have an addendum should have a closed numbering system for the main portion of the report, and a separate closed numbering system for the addendum.

3.5.4 Element Inspection

This section will have each element inspected for this inspection event and will include the element condition states and element inspection notes. Deficiencies shall be described in enough detail to allow rates of change to be monitored over consecutive inspections. This section is generated by the Department's Bridge Management System.

3.5.5 Inspector Recommendations

This section will contain the inspector's recommendations for corrective actions. If there are no inspector's recommendations this section will not be present. This section is generated by the Department's Bridge Management System.

3.5.6 Structure Notes

This section will contain information about the structure including where applicable: posting status, depth of culvert fill, bridge numbers preceding and following the structure, and other information unique to the structure that is not covered in other locations. This section is generated by the Department's Bridge Management System.

3.5.7 Inspection Notes

This section will contain the date the sufficiency rating was performed and inspected and a note about the applicability of the load rating. The note shall state that the current load rating is complete and applicable and the name of the Engineer who made that determination. If the current load rating is not complete and applicable, a recommendation shall be made to perform a new load rating.

3.5.8 Photographs and Sketches

Photographs and sketches shall be input into the Department's Bridge Management System. Significant deficiencies should be documented by photographs and/or sketches. Any deterioration causing an element to have a condition state of 3 or higher should be documented with a photograph or sketch. If the deterioration causing condition state 3 or higher is extensive, typical photographs may be used. If a component (Deck, Superstructure, Substructure, Culvert or Channel) has a rating of 6 or less, at least one photograph should be taken documenting the rating. If the bridge is weight restricted, a photograph of each posting sign shall be taken and included in the report. If videos are taken as part of the inspection process, the appropriate photographs shall be captured from the video and included in the

inspection report. The District Structures Maintenance Engineer shall determine if the video needs to be kept in the structure record file. Maybe identify who at the District will determine if the video needs to be kept in the structure record file,

3.5.9 Comprehensive Inventory Data Report

This section will contain the CIDR report reflecting the data from the current inspection report. This report may be a standalone report, an addendum to the bridge inspection report or could be included with the bridge inspection report. Including this section is the option of the District Structures Maintenance Office.

3.5.10 Channel Profile

This section contains the channel profile when present. This report may be a standalone report, an addendum to the bridge inspection report, or could be included with the bridge inspection report. This section may be included by the District Structures Maintenance Office.

3.5.11 Addendum

For some bridges, the size of the report is greater than can be accommodated by the Department's Bridge Management System. When this occurs, an addendum may be created to include additional inspection notes, sketches, and photographs. When this is done, the addendum shall be converted to a pdf file, and stored in the Bridge Management System when possible. If the addendum is too large, it shall be stored in the Department's EDMS in the appropriate format.

3.6 BRIDGE RECORD CONTENT AND ORGANIZATION

The bridge record consists of three major sections:

1. Section I - Bridge Inspection Reports
2. Section II - Inventory
3. Section III - Communications

The bridge record may be filed in a file folder or jacket with the bridge number plainly shown on the tab, or the data in the bridge record may be stored in the EDMS.

When the bridge record is a paper file the bridge record sections should be arranged so that Section I is on the left side of the folder and Sections II and III are on the right side of the folder. When the bridge record is stored electronically, the information below should be contained in the electronic file.

3.6.1Section I – Bridge Inspection Reports

This section contains a chronological log sheet listing each report and document. This section contains routine periodic inspection reports, as well as other special inspection reports.

3.6.2 Section II – Inventory

This section provides a permanent, concise, up-to-date source of bridge information.

3.6.2.1 Photographic Inventory, Topic A

This inventory shall be stored in the Department's Bridge Management System, as bridge photographs, under the Media Tab. The following photographic views shall typically be provided (specific site conditions may prevent the taking of all photographs listed below):

1. Both elevations of the bridge (for long bridges this may take multiple photographs).
2. Both approaches facing toward and away from the bridge.
3. Current typical transitions between the bridge and the approach guardrail (only different types need to be shown).
4. Current typical handrails and barriers.
5. Superstructure and Substructure views, if not adequately shown in the elevation photographs.
6. Any unique features of the structure.
7. A photograph showing the bridge number.

The captions for all photographs should include a description of the photograph and the date the photograph was taken. Inventory photographs should be updated whenever the bridge is altered, and at a minimum of every 10 years. For ancillary structures, the following pictures shall be taken:

1. An overall photograph showing the elevation of the structure. For overhead sign structures, a picture of both sides of the structure is required. For traffic signal mast arms take enough elevation shots to show all mast arms in the intersection.
2. A photograph of each foundation.

3.6.2.2 Bridge Location Map, Topic B

This should be a letter size sheet showing the location of the bridge and the detour route. This should be reviewed during each inspection, and updated as required.

3.6.2.3 Data Files and Reports, Topic C

The ***Comprehensive Inventory Data Report*** will be included here, unless it is attached as part of the inspection report.

3.6.2.4 Load Capacity Information, Topic D

The load rating summary sheet and any correspondence related to approving, changing or removing posting shall be included here. The load rating analysis computations may be stored here or separately.

3.6.2.5 Bridge History, Topic E

Documentation of major events that have occurred to the bridge since construction shall be included here. The following type events should be included: major repairs and rehabilitation, including important details such as contractor, total cost, project numbers, etc.; periods posted or out of service; utility or structural attachments constructed or removed; original designer, contractor, date and cost of construction; and summary details of any accident or damage occurrence.

3.6.2.6 Field Preparation and Check List, Topic F

Preparation requirements for field phase on an inspection vary greatly. Variation is caused by factors such as traffic, stream flow, vegetation, embankment conditions, and site accessibility. By documenting unique field preparation requirements here, oversights that result in needless travel will be reduced. The following major areas of preparation, where applicable, shall be documented for each bridge, including the underwater inspection:

1. Tools and Equipment. If the inspection requires tools and equipment not ordinarily carried by the inspectors, these items should be listed.
2. Services. Services include such items as maintenance of traffic crews, cleaning crews, underbridge inspection machines, special boats, etc.
3. Scheduling. Specific non-routine inspection scheduling must be documented, such as time of day, month or year.
4. Site Conditions. Unique site conditions that may require more than routine preparation should be documented here.
5. Checklists. When checklists are used, they should be filed in this section for permanent reference and reused or updated during each field inspection.
6. For bridges requiring underwater inspection, list the parts of the bridge requiring underwater inspection. For example, the underwater bridge inspectors will inspect the underwater portions of bents 2 through 5. Note this is an area of FHWA emphasis.

3.6.2.7 Bridge Description and Drawings, Topic G

When a complete set of plans is available for the structure, this section is not required. When plans do not exist, or are incomplete, the following drawings are a minimum requirement for what should be included here:

1. Plan and Elevation. The plan and elevation of the structure should be shown on one sheet, if possible. Long bridges may be drawn without showing every span, so long as every typical span or span with different dimensions is illustrated. The total structure length and each span length must be dimensioned.
2. Element and Member Drawings and Descriptions. Each typical superstructure section should be drawn and accounted for by multiple dimensions. At least, the following superstructure dimensions should be shown: beam spacing and depths; deck and surfacing thicknesses; centerline fascia beam to centerline fascia beam. Measurements of each typical substructure should be drawn and dimensioned including footings and piles (spacings dimensioned) using multiple dimensioning, if desired.

3. Every typical bridge member should be dimensioned and detailed to include the following minimum information: all member dimensions, materials and strengths; details of reinforcement and prestressing steel; pile capacities; and soil type. Three standard views of each typical member should be drawn: elevation, side and plan.
4. These drawings should be in sufficient detail to perform accurate load ratings of the structure.

3.6.2.8 Identification of Fracture Critical Members, Topic H

This topic shall be included for all bridges with Fracture Critical Components and contain the following information:

1. List all fracture critical members as identified by a qualified structural engineer.
2. Provide sketches, copies of drawings, or photographs of all fracture critical members; identifying high stress areas and fatigue critical details by fatigue classification.
3. Include a brief bridge specific narrative describing the types of flaws the inspector should look for.
4. Provide a checklist listing all fracture critical members and identifying high stress areas and fatigue prone details for the inspector's use.
5. Locate and list all fabrication, transport, erection, construction and accident damage or defects (scrapes, dings, flaws, tack welds, plug welds, etc.), in elements of fracture critical members.
6. Identify all subsequent significant damage as it occurs, and note details of any repairs.
7. Identify all gusset plates with measurable corrosion and document remaining section according to the FHWA's Technical Advisory on "**Inspection of Gusset Plates Using Non-Destructive Evaluation Technologies**" dated January 29, 2010.

For further reference refer to ***"Inspecting Steel Bridges for Fatigue Damage"*** by John W. Fisher, Research Project 72-3; ***"Manual for Inspecting Bridges for Fatigue Damage Conditions"***, by John W. Fisher, Research Project No. 85-02; and ***"Inspection of Fracture Critical Bridge Members"*** FHWA-IP-86-26.

3.6.2.9 Channel and Scour Information, Topic I

1. Channel Profile. For each routine inspection, a profile of the channel bottom should be created for both sides of the bridge and should be included here, unless it is attached as part of the inspection report.
2. Scour Screening and In-depth Scour Evaluation. The results and the status of the scour screening process, any recommended corrective action and any plan of action will be included in this topic. The summary sheet of the scour evaluation process shall be kept here. The complete scour evaluation report may be stored elsewhere.

3.6.3 Section III – Communications

All correspondence, including letters, memorandums, notices of project completion, etc., directly concerning the structure shall be filed here in chronological order. The first page of this section should be a chronological log sheet containing the subject of the communications.

3.7 FEDERAL HIGHWAY ADMINISTRATION AND CENTRAL OFFICE REPORTING REQUIREMENTS

3.7.1 Compliance Monitoring with the National Bridge Inspection Standards Inspection Frequencies and Posting Requirements

3.7.1.1 General

This provides a method to monitor conformance with the ***National Bridge Inspection Standards*** requirements for frequency of inspection and load posting.

3.7.1.2 Inspection Frequencies

1. By March 1 and September 1 of each year, each district structure maintenance office shall run the ***Inspection Compliance Report*** (MANG002A in the Bridge Management System). This provides a listing of delinquent bridge inspections. They shall keep a copy and submit a copy signed by the District Structures Maintenance Engineer to the Office of Maintenance. When a district has delinquent bridge inspections on this report, they shall also include an explanation for the non-compliance and a detailed plan to prevent future non-compliance.
2. The above reports shall be compiled and submitted to the FHWA by the Office of Maintenance by March 15 and September 15 of each year.
3. By June 1 and December 1 of each year, each district shall submit the same listing of bridges to the Office of Maintenance. This listing shall identify inspection frequency deficiencies that have been corrected and show the number of months since the last inspection for all bridges that still have delinquent inspections. If there are still delinquencies on this submission, the district shall also include documentation of the district's aggressive pursuit of compliance.
4. The June and December district reports shall be compiled and submitted to the FHWA by June 15 and December 15 by the Office of Maintenance.
5. Acceptable compliance, for the purpose of determining federal aid funding eligibility, shall be based on the degree bridges have been inspected within 24 months of their last inspection date and the degree of effectiveness towards correcting delinquencies in the three-month follow up period prescribed. (The FHWA has acknowledged that occasional delinquencies may occur. It is their expectation that all such delinquencies will be expeditiously corrected.)
6. Inspection frequency deficiencies on bridges beyond the direct control of the Department (owned/maintained by other state agencies or quasi-governmental agencies) may negatively impact on the Department due to loss of federal aid funding eligibility. The Department will aggressively pursue inspection compliance of such structures to avoid sanctions against the Department.
7. Document the pursuit of compliance by providing a copy of letters from the Department to each owner/custodian that explains the purpose of the NBIS program, request compliance and offer to discuss in detail. In addition, any response from the

owner/custodian shall be provided.

Note: The FHWA may act to withhold future federal aid funding eligibility for those geographical areas/custodians not in compliance with the ***National Bridge Inspection Standards***.

3.7.1.3 Posting Compliance

1. By March 1 and September 1 of each year, each district shall run the ***Posting Compliance Report*** (MANG003A in the Bridge Management System). This report provides a listing of bridges not properly posted or closed. They shall keep a copy, and submit a copy signed by the District Structures Maintenance Engineer to the Office of Maintenance.
2. The reports shall be compiled and submitted to the FHWA by the Office of Maintenance by March 15 and September 15 of each year.
3. By June 1 and December 1 of each year, each district shall submit the same listing of bridges described above. This listing shall identify posting/closing deficiencies which have been corrected, and show the number of months since the inspection identifying the deficiency. If there are still deficiencies on this report, the district shall also include documentation of the district's aggressive pursuit of compliance.
4. The June and December district reports will be compiled and submitted by the Office of Maintenance to the FHWA by June 15 and December 15.
5. Compliance for determining whether federal aid funding eligibility may be withheld shall be based on the degree to which bridges have been posted or closed in conformance with the ***National Bridge Inspection Standards***, and the degree of effectiveness correcting deficiencies in the three-month follow up period prescribed. The FHWA has emphasized utmost concern regarding safety with respect to posting and closing deficiencies and has high expectations relative to **full** posting/closing compliance, and the timely correction of any occasional deficiencies.
6. Posting/closing deficiencies on bridges beyond direct department control may negatively impact on the Department due to loss of Federal Aid funding eligibility. The Department will aggressively pursue posting compliance of such structures to avoid sanctions against the Department.
7. Document the pursuit of compliance by providing a copy of letters from the Department to each owner/custodian that explains the purpose of the NBIS program, request compliance, and offer to discuss in detail. In addition, any response from the owner/custodian shall be provided.
8. If a maintaining agency fails to post a bridge that requires posting within 30 days of receipt of an inspection report that identifies the need to post a bridge, the Department shall post the bridge according to the requirements of Topic No. 850- 010-035 "FDOT Bridge Load Rating Manual" and assess the cost for posting to the maintaining agency.
9. If a maintaining agency fails to immediately close a bridge upon notification by the Department of the need to close the bridge, the Department shall close the bridge and assess the cost of closing the bridge to the maintaining agency.

Note: The FHWA may act to withhold future federal aid funding eligibility for those geographical areas/custodians not in compliance with the ***National Bridge Inspection Standards***.

3.7.2 Monitoring Follow-up Action on Critical Bridge Deficiencies

3.7.2.1 General

For Department owned bridges, the work order system sets time limits for the completion of Priority 1 and 2 Work Orders. This is monitored by the Office of Maintenance, and exceeding the time limit for these work orders will result in an area of non-compliance for the district. The Department's procedure ***Reporting Incidents and Management of Damage Repair (850-005-001)*** allows the Department to quickly respond to threats to public safety or other conditions that represent an imminent danger to the public. Deficiencies requiring prompt corrective action are marked on the bridge inspection report cover sheet. This alerts the District Structures Maintenance Engineer that the inspection report needs to be reviewed promptly and the proper course of action determined and taken. For bridges not owned by the Department, once the reviewing engineer has confirmed the seriousness of the deficiencies identified, the bridge owner shall be notified within 3 business days of the need to address the deficiencies identified by the bridge inspection report. For situations which represent an imminent danger to the traveling public, the owner shall be notified as soon as possible after the situation has been discovered.

3.7.2.2 Prompt Corrective Action

The prompt corrective action is checked on the cover sheet of the inspection report when any of the following are present:

- Deck superstructure, substructure or culvert rating is 3 or less.
- Load carrying bridge elements in condition state 4. (Railing elements, joint elements, wearing surface elements, approach slab elements, protective system elements, and movable bridge elements are excluded.)
- Culvert elements in condition state 4.
- Channel element in condition state 4.
- Ancillary structure vertical elements in condition state 4.
- Ancillary structure horizontal elements in condition state 4.
- Ancillary structure foundation elements in condition state 4.
- The reviewing professional engineer may determine that a condition exists requiring prompt corrective action that is not covered by the above conditions. In that case, the box may be checked through the BrM system.

The intent of the prompt corrective action flag is to have the inspection report reviewed, and the proper course of action determined. The reviewing professional engineer will use the Prompt Corrective Action application in BrM to document the result of the review. By addressing these conditions the bridge owner may be able to prevent a critical deficiency from occurring. The district shall maintain records of correspondence with the local bridge owners and their responses.

3.7.2.3 Monthly Critical Bridge Deficiency Report to the FHWA

The ***National Bridge Inspection Standards*** require a statewide procedure to assure that critical findings are addressed in a timely manner and the FHWA is periodically notified of actions taken to resolve or monitor critical findings. For reporting to the FHWA, a critical deficiency exists when the deck, superstructure, substructure or culvert NBI rating is 2 or less or the District Structures Maintenance Engineer determines that there is a critical finding. The Department has no direct authority over other bridge owners; however, if the bridge owner is not promptly addressing the critical findings and an imminent danger exists to the traveling public, the District shall immediately inform the bridge owner of the necessity to immediately close the bridge to traffic until the critical finding is addressed. The District shall notify the bridge owner of the need to post a bridge, or change the posting level within 1 week after a need for posting is identified. The following procedure shall be used to report critical findings to the FWHA.

- At the start of each month, the district will email the FHWA Division Bridge Engineer and the Bridge Management Inspection Engineer a list of the bridges that were identified the month before with critical findings. For each bridge, the district will include: the bridge number; facility carried; feature intersected; the date of the last inspection; a brief description of the critical finding; and what corrective action is proposed by the bridge owner. The status of the bridge will be updated in each monthly report until the corrective action is performed, or the bridge is closed to traffic.
- Monitoring of these bridges will continue until the critical finding has been corrected or the bridge has been closed to traffic.
- If there were no critical findings identified during the previous month and there are no critical findings being monitored, then the district will email the FHWA Division Bridge Engineer and the Bridge Management Inspection Engineer that there are currently no critical findings in that district.

3.8 SPECIAL INSPECTIONS AND INVESTIGATIONS

3.8.1Scour Susceptible Bridge Screening and Evaluation

Most of the bridges in Florida were designed prior to the state of the art knowledge of scour currently available and without scour protection measures. It is important to identify structures most susceptible to scour, and determe countermeasures to preserve the safety of these structures.

3.8.1.1 General

An initial screening of bridges has occurred, which classified these bridges into scour critical or low risk bridges. In addition, bridges with unknown foundations and bridges with tidally controlled flows were identified.

3.8.1.2 Scour Evaluation Process

The scour evaluation process is a four-phase process. The scour evaluation may be stopped at the end of any phase when the bridge is determined to be low risk and thus permissible to skip a phase.

- Phase 1 – Preliminary scour investigation – This phase investigates the general hydraulic characteristics of the bridge site and determines if further evaluation is required.
- Phase 2 – Scour depth calculation – This phase determines the predicted scour depth at the bridge site.
- Phase 3 – Structural evaluation – The structural integrity of the bridge is investigated considering the predicted scour depth.
- Phase 4 – Preliminary design of scour countermeasures – If the bridge has been determined to be scour critical, countermeasures are planned and a plan of action (POA) developed.

3.8.1.3 Unknown Foundations

Any bridge over water with unknown foundations, without a hydraulic evaluation based on HEC-18 or adequate documentation of a scour evaluation is not available shall be evaluated according to the Department's ***"Procedural Manual: Reclassify Unknown Foundation Bridges."*** This will result in classifying the bridges with unknown foundations into three categories:

- Low Risk – Code the NBI Item 113 as appropriate.
- Scour Critical – Code NBI Item 113 as appropriate and develop a plan of action (POA).
- Minimal Risk – Bridge stays classified as unknown for NBI Item 113, but a POA, including a closure plan, is developed. These bridges are designated as minimal risk using the National Cooperative Highway Research Program Report 107 formulas described in the ***Procedural Manual*** above, and recorded in the Highest Evaluation field in the Bridge Management System database.

3.8.1.4 Reporting Requirements

By March 15 and October 15, of each year, the district will report the status of the Scour Susceptible Bridge Screening and Evaluation to the Office of Maintenance in the format requested by the State Maintenance Office. By March 27 and October 27, of each year the Office of Maintenance will compile a statewide report and submit it to the FHWA in the format requested by the FHWA.

3.8.1.5 New Structures

New structures which were designed for scour will not require this process, except at the discretion of the District Structures Maintenance Engineer based on unusual occurrences or inspection findings.

3.8.2 Accident Inspection

A vehicle or vessel impact or discovery of unexpected deterioration, will require a special inspection if more than minimal damage has occurred, to determine the extent of the damage, and determine what corrective action needs to be taken. A formal inspection report is not always required when this occurs. The extent of the inspection shall be determined by the District Structures Maintenance Engineer based on the circumstances of the incident. Note ***Procedure No. 850-005-001, Reporting Incidents and Management of Damage Repair*** requires an incident report be made within four hours of the incident when bridge closure, or major damage to a bridge has occurred. In addition, any time a declaration of emergency is made an incident report is required.

3.8.3 Inspection After a Storm Event

When a hurricane impacts an area of Florida, it is important that a determination be made that the bridges in the impacted area are safe. The District Structures Maintenance Engineer will determine which structures need to be investigated after the storm. The levels of investigation will vary depending on the strength of the storm, and the condition of the structure.

- Level 1 – Inspectors visit the bridge, observe alignment, and verify that approaches are intact and no obvious problems exist.
- Level 2 – Inspectors measure channel profile to compare against previous profiles to determine if scour has occurred. Sometimes due to river flow after a storm, channel profiles cannot be taken for a period of time after the storm.
- Level 3 – Due to findings of the Level 1 or 2 inspections, or specific concern for a specific bridge, an in depth underwater and/or topside inspection is performed. The underwater inspection may be delayed due to high water after the storm.

Directly after the storms, inspection teams will generally be assigned an area to perform all Level 1 inspections, and as many Level 2 inspections as practical. Areas where a Level 2 is required but could not be performed, and where Level 3 inspections are needed are documented. The District Structures Maintenance Engineer shall report the daily progress to the Office of Maintenance.

3.8.4 Plan of Action

3.8.4.1 Unknown Foundations and Scour Critical Bridges

For all bridges on and off the state highway system, with an NBI Item 113 designated as scour critical or unknown foundation (Codes 0,1,2,3 or U), the District will produce and implement a POA based on HEC-18.

3.8.4.2 POA

The POA is considered a living document and must be maintained as long as the bridge is classified as scour critical or unknown foundation. The District has primary responsibility for maintenance of these documents, but shall encourage the bridge owners to provide updated information for their bridges.

3.8.4.3 Frequency of Document Review

The frequency of document review will be based on three conditions:

- Standard Maintenance – review as part of the routine bridge inspection to determine if the POA requires updating. If a determination is made that an update is required this update shall be performed within 6 months of the determination. A statement shall be included in the Inspection Notes in BrM on whether or not an update is required to the existing POA.
- After Storm or Flood Event – if a bridge with a POA is inspected in response to a storm or flooding event, the POA will be reviewed and updated as necessary.
- Active Scour – if active and/or change in the streambed is observed, the District Structures Maintenance office may increase the frequency of reviewing and updating the POA.

3.8.4.4 POA Distribution

The original POA and all following revisions must be stored in the Bridge File, either as a hard copy or in EDMS. For locally owned bridges, a copy of the POA will be sent to the bridge owner, within 30 days of the completion of the POA. The bridge owner will acknowledge receipt of the POA. The District will ensure that the bridge owner has acknowledged receipt of the POA. The bridge owner will also be given the opportunity to discuss the POA for explanation and clarification, and may request changes as appropriate.

3.8.4.5 Contact Information

Maintenance of contact information for emergency responders and other parties listed in the POA will be performed by the District Structures Maintenance Office in coordination with the state and local Emergency Operations Centers.

3.9 INSPECTION OF ANCILLARY STRUCTURES

3.9.1 Inspection of High Mast Light Poles

All steel high mast light poles on state (Department and State Toll) maintained roads must be inspected and the superstructure and substructure rating reported following the guidelines of the ***Bridge Management System Coding Handbook*** every 60 months. Concrete high mast light poles do not require inspection. The District Structures Maintenance Engineer has the option to have a high mast light pole inspected more frequently based on its condition. Inspection reports will be generated using the Department's Bridge Management System. The inspection reports will be reviewed by the engineering staff in the same manner as bridge inspection reports. Work orders will be generated using the Department's Bridge Management System, and handled through the Department's Maintenance Management System.

3.9.2 Inspection of Overhead Sign Structures

All overhead sign structures on state (Department and State Toll) maintained roads must be inspected and the superstructure and substructure rating reported following the guidelines of the ***Bridge Management System Coding Handbook*** every 24 months. All overhead sign structures originally built by the Department on local roads that provide directional guidance for state highways must be inspected, reported and maintained the same as those on state roads unless an agreement has been made with a local agency to inspect and maintain these structures. All overhead sign structures above the bridge deck and supported by the bridge shall be assigned a structure number and inspected as a separate structure, signs that are attached to the bridge rail, or attached to the fascia girder shall be inspected as part of the bridge member and considered incidental to the bridge element to which they are attached. The District Structures Maintenance Engineer has the option to have an overhead sign structure inspected more frequently based on its condition. Inspection reports will be generated using the Department's Bridge Management System. The inspection reports will be reviewed by the engineering staff in the same manner as bridge inspection reports. Work orders will be generated using the Department's Bridge Management System, and handled through the Department's Maintenance Management System.

3.9.3 Inspection of Mast Arm Structures

These structures will be inspected every 60 months and the superstructure and substructure rating reported following the guidelines of the ***Bridge Management System Coding Handbook***. This is a structural inspection of the mast arms and attachments and will not include items related to functioning of the traffic signal. The moment connection, electrical ground and foundations shall receive hands on inspection. The connection slip plates and other portions of the mast arm may be inspected using binoculars, with provision for hands on inspection if problem areas are detected. The District Structures Maintenance Engineer has the option to have a mast arm structure inspected more frequently based on its condition. Inspection reports will be generated using the Department's Bridge Management System. The inspection reports will be reviewed by the engineering staff in the same manner as bridge inspection reports. A copy of the inspection report with repair recommendations will be transmitted to the local government entity responsible for the maintenance of these structures.

3.10 INSPECTION OF LOCAL GOVERNMENT BRIDGES

3.10.1 General

The Department manages consultant contracts to inspect local government bridges. Participation in the local government bridge inspection program is voluntary on the part of the local governments and does not relieve the local government of its responsibility to inspect, maintain, impose and enforce weight restrictions and repair, rehabilitate or replace the bridges in their jurisdictions. The FHWA holds the Department administratively responsible to ensure that all qualified bridges in the State of Florida are inspected and load rated in accordance with state statute and federal code. The Department must report to the FHWA that all publicly owned bridges are inspected in accordance with these standards.

3.10.2 Noncompliance by Local Government

If noncompliance with statutes and procedures is established, the local government will be informed of the areas of noncompliance, informed of the consequences, and requested to bring its program into full compliance.

3.10.3 Limitations

Consultant contracts to inspect local government bridges will be strictly limited to bridge inspection, scour evaluation and load rating. These contracts will be limited to areas reimbursable by the FHWA and all contracts must be approved by the FHWA division office.

3.10.4 District Responsibility

Each District Maintenance Engineer or his staff, will be responsible for planning, budgeting, programming, executing and managing contracts necessary to perform the bridge inspection program.

3.10.5 Public Transportation Facility Bridges

When these structures do not carry a public roadway, they are excluded from this program.

3.11 INSPECTION OF BRIDGE STRUCTURES MAINTAINED BY OTHER STATE AGENCIES

3.11.1 General

The Department shall ensure that all state maintained bridge structures on a pubic transportation facility are inspected in accordance with state and federal law.

3.11.2 Identification and Notification

The Department shall identify all known existing bridges maintained by other custodial state agencies. Each agency shall be provided a listing of those bridges that must conform to the ***NBIS*** and Florida Statutes. This notification shall include the requirements of the ***NBIS*** and state law. It should also include the options available to the custodial agency for compliance. Available options are:

- Inspection by qualified custodian agency personnel.
- Inspection by custodial agency’s consultant.
- Inspection by department personnel.
- Inspection by department consultant.

3.11.3 Inspection Performed by Custodial State Agency Personnel or Consultant

The District Structures Maintenance Office will perform an annual audit of the state agency's bridge inspection program to ensure full compliance with the law and the Department's inspection, records and load rating practices. The results of this audit will be presented to the custodial state agency by the District Maintenance Engineer. If noncompliance, with state law, ***NBIS*** or procedures is established, then the custodial state agency will be given a deadline to bring its program into full compliance with the NBIS or the custodial state agency should request that the Department perform the bridge inspection work.

3.11.4 Inspection Performed by Department State Forces or Department Consultant

The District Maintenance Engineer, upon receipt of a written request, may agree to perform the bridge inspection. Based on available manpower and budget, the district may perform these bridge inspections with state forces or consultant. An interagency memorandum of agreement for bridge inspection identifying each agency's responsibilities shall be drafted and executed by both agencies. Funding to cover expenses should come from the custodial state agency. The custodial state agency retains maintenance, repair, and replacement responsibilities for its structures. Each district bears responsibility for ensuring that all bridges on public transportation facilities maintained by other state agencies are inspected in accordance with ***NBIS*** and state law.

4.0 WORK ORDERS

4.1 GENERAL

After the inspection report is completed the inspection report will be reviewed and work orders issued for maintenance and/or repairs. Work orders shall be issued within 30 days of completion of the inspection report.

4.2 FEASIBLE ACTION AND REVIEW COMMITTEE (FARC)

The FARC meetings will be chaired by the District Structures Maintenance Engineer (DSME) or delegate. The FARC will consist of representatives from the engineering, inspection and repair groups as assigned by the DSME. When the work orders will be performed by an Asset Management (AM) Contractor, a representative of the AM contractor will participate as a member of the FARC. A representative of the inspection consultant will attend. The FARC will recommend the work that needs to be performed. The FARC will recommend whether the work will be accomplished through the work order system or through the work program. The DSME will make the final determination.

4.3 WORK ORDER CLASSIFICATION

The importance of maintenance and/or repair activity will be classified as follows:

4.3.1 Priority 1

Repairs must begin immediately to repair critical damage on the structure and to protect the safety of the traveling public. Typically, this work is initiated immediately and work shall be completed as soon as possible. Priority 1 work orders shall be completed within 60 days of issuance. Typical examples are;

- Critical damage to main structural members that may endanger public safety
- Cracks in Fracture Critical Members
- Unstable Foundations
- Vertical or horizontal displacement of the structure that may endanger structural stability
- Loose expansion joints that may damage passing vehicles
- Serious mechanical, electrical, or hydraulic problems that have or will stop the operation of a movable span or safety equipment

4.3.2 Priority 2

Repairs required to correct deficiencies or defects to protect the integrity of the structure or maintain a desired level of performance. This work is not as critical as for Priority 1 work orders, but requires more immediate action than a routine type of work order. Priority 2 work orders shall be completed within 180 days of issuance. Typical examples are:

- Crutch bent or beam saddle installations
- Serious damage to handrail, guardrail, attenuators, or parapets
- Leveling of approach slabs to reduce impact loading on the structure
- Repair of structural members whose structural capacity is reduced
- Bank and slope protection repair needed to correct moderate scour damage
- Mechanical, electrical or hydraulic problems that will affect the operation of a movable span or safety equipment, if allowed to continue to deteriorate
- Regulatory or warning signs missing or worn

4.3.3 Priority 3

Maintenance or repairs required to maintain an existing level of performance and prevent additional deterioration or to extend the service life of the structure. Priority 3 work orders shall be completed within one year of work order issuance. Typical examples are:

- Repairs of delaminated, spalled or cracked concrete to prevent additional deterioration
- Spot painting steel members
- Channel maintenance done before significant scour has occurred
- Cleaning drainage systems, bearing areas, etc.

- Sealing expansion joints

4.3.4 Priority 4

Work superficial to the integrity of the structure being identified to make the Area Maintenance Engineer or Area Operations Engineer aware of the condition. There is no time limit placed on these work orders. Typical examples are:

- Lane lines and markings are worn
- Guardrail attachment to the structure is functional but not the latest standard
- Bridge deck needs sweeping
- Highway lighting systems on the structure with lighting outages
- Informational signs are worn or missing

4.3.5 Bridge Fund Repairs

Repairs required to correct major deficiencies or defects to protect the long-term integrity and performance of the structure. Statewide Bridge Repair Rehabilitation Program (BRRP) funds are used for this type of work. Work identified for BRRP funds should be programmed as soon as the need arises, but no more than 2 years from identification. Typical examples are:

- Crutch bents or beam saddles
- Repair of structural members with reduced section capabilities
- Major concrete repair/rehabilitation
- Foundation settlement
- Movable bridge repair/rehabilitation
- Expansion joint replacement
- Pile protection systems
- Painting steel bridges

4.4 FOLLOW-UP ACTIONS

4.4.1Timely Completion

The District Structures Maintenance Engineer is responsible for monitoring the timely completion of the work. If the work is not being completed in a timely manner, action shall be taken. This may include:

- Discussions with the Area Maintenance or Operations Engineer
- Discussions with the AM Contractor
- Discussions with the District Maintenance Engineer
- Increase repair work performed by contract

4.4.2 Quality of Repair Work

When the repair performed does not correct the deficiency or is of poor quality the District Structures Maintenance Engineer shall take action, which may include:

- Discussions with the Area Maintenance or Operations Engineer to improve the quality of the repair work
- Change the repair method
- Discussions with the State Maintenance Office, Structures Design Office and/or the State Material Office to find better repair methods

4.5 AM CONTRACTOR REPAIR PLANS

When repairs performed by the AM Contractor require the development of engineering plans, the AM Contractor will submit the plans to the District Structures Maintenance Office for review and approval. The Department will determine if Construction Engineering Inspection (CEI) is required for the repair. The District Structures Maintenance Office and the District Construction Office will discuss and coordinate how to provide CEI services for the repair. After the repair is performed the District Structures Maintenance Office will review and accept the repair in the field and provide direction to the AM Contractor to correct any deficiencies found.

5.0 QUALITY CONTROL PLAN

The bridge inspection process is the foundation of the entire bridge maintenance operation and bridge management system. Information obtained during the inspection will be used to determine needed maintenance and repairs, prioritizing rehabilitations and replacements, allocating resources, evaluating and improving design of new bridges, evaluating and improving maintenance and repair techniques, and for planning purposes. Therefore, it is important that the information gathered during the inspection be accurate and consistent.

Each district shall have a written quality control plan. The following quality control plan is provided as an example. The district's quality control plan will be reviewed during the State Maintenance Office's quality assessment review.

5.1 BRIDGE INSPECTION BY STATE FORCES

5.1.1 Routing Log,

A ***Bridge Inspection Report Routing Log*** is established at the initiation of every routine bridge inspection. The routing log may be an individual log for each inspection report, or a master log may be maintained. The purpose of the routing log is to establish an activity flow chart for each bridge inspection, and a means of tracking each activity to assure that every quality control step is completed. The routing log includes the following information: bridge number, individuals involved in each activity, date of activity, and the length of time for each activity. The routing log is initialed and dated at the completion of each phase of the process.

The routing log is also used as a record to ensure that the bridge inspection is begun and completed within the established time frame. If report processing exceeds 60 days, the routing log can be used to determine the problem areas.

5.1.2 Field Inspection Procedures and Review Activities

5.1.2.1 Late Inspection Reports

Inspection reports that exceed the 60 days processing time should be investigated by the district to determine the causes of delay and prevent reoccurrence.

5.1.2.2 Scheduling Field Inspection Activities

The bridge inspection team leader is responsible for establishing the inspection schedule for bridges assigned, coordinating the scheduling of the dive team, boat, and underbridge inspection machine, etc.

5.1.2.3 Maintaining Inspection Schedule

The District Bridge Inspection Supervisor is responsible for the timely inspection of all bridges inspected by state forces. If it becomes apparent that the schedule cannot be met, the District Structures Maintenance Engineer will be notified. It is the District Structures Maintenance Engineer's responsibility to make the necessary adjustments to bring the inspection schedule into compliance. The District Structures Maintenance Engineer should conduct periodic reviews to verify that schedules are being maintained.

5.1.2.4 Inspection Team Rotation

Inspection teams should not inspect the same bridge on consecutive routine bridge inspections. Consecutive inspections by the same team could lead to complacency because of too much familiarity with a bridge.

5.1.2.5 Field Visit of Inspection Teams

Supervisors should routinely visit the bridge inspection teams in the field, and discuss any pertinent items. Significant items are discussed further during staff meetings for the benefit of the entire inspection staff. The supervisor should observe the inspection team at work during the visit, although the entire inspection need not be observed.

5.1.2.6 Review of Inspection Report

The bridge inspection report and comprehensive data report are forwarded to the Bridge Inspection Supervisor for review. The Bridge Inspection Supervisor will discuss issues with the inspectors and return the reports, when necessary, for revision. Thorough review of the reports is important for the accuracy and consistency of the data. The district is responsible for the accuracy of all data in the bridge inspection report and comprehensive data report.

5.1.2.7 Field Review

Periodically the District Bridge Inspection Supervisor will randomly select a bridge inspection report and comprehensive inventory data report for field review. The work of each inspection team should be reviewed once every three months. The reports are compared to the actual field conditions and discrepancies are discussed with the inspection team. The bridge inspection team shall be informed of the results of the field review. Discrepancies shall be discussed between the supervisor and the inspection team. Any significant or pertinent items are discussed at the next staff meeting for the benefit of the entire staff.

5.1.2.8 Engineering Participation in Field Inspections

During the inspection of complex structures or problem structures, supervisors or engineers from the District Structures Maintenance Office may assist the bridge inspection team. This provides technical assistance to the bridge inspection team and enables a learning experience for both the inspectors and the engineers.

5.1.2.9 Fracture Critical Inspections

The inspectors should review the fracture critical section of the bridge record file prior to the inspection. The Bridge Inspection Supervisor and/or the Structures Maintenance Engineer should occasionally visit the field during the inspection. These visits can be used as opportunities to give direction to the inspectors.

5.1.2.10 Inspection of Scour Critical and Unknown Foundation Bridges

The inspectors should review the scour evaluation reports prior to inspecting scour critical bridges or bridges with unknown foundations. The Bridge Inspection Supervisor should consult with the inspectors prior to the inspection and discuss the scour evaluation report and how it might impact the inspection.

5.1.2.11 Evaluation of Maintenance and Repair Accomplishments

The inspectors should review and comment on any maintenance or repair activity that has been performed since the last inspection. In addition, 100% of all Priority 1 and Priority 2 work orders shall be reviewed in the field within 45 days of their completion, and 10% of all Priority 3 work orders shall be reviewed in the field within 90 days of their completion. If, during a 3-month period, the district finds that 95% of all Priority 2 work orders have been properly performed, the district may reduce the percentage of Priority 2 work orders reviewed to 50%. If, during any 3-month period the percentage of Priority 2 work orders properly performed falls below 95%, then the district shall return to reviewing 100% of all Priority 2 work orders, until the work order repair performance has returned to 95% for a 3-month period. If during any 3-month period the district finds that less than 95% of priority 3 work orders are satisfactorily performed, the district shall increase the percentage of Priority 3 work orders reviewed to 25%, until the satisfactorily performed percentage has returned to 95% for a 3-month period. These

work order review requirements are to be applied to each AM contractor performing work orders in the District.

5.1.2.12 Critical Deficiency

Anytime a critical deficiency is identified during an inspection, the bridge inspection team should immediately contact the District Bridge Inspection Office. If the Bridge Inspection Team Leader determines that public safety is threatened, the local maintenance yard, or operations center, shall be notified to close the structure to traffic, and the District Bridge Inspection Office notified of the closure. The Structures Maintenance Engineer shall evaluate the deficiency to determine the proper disposition. The District Bridge Inspection Office shall also follow ***Procedure 850-005-001, Reporting Incidents and Management of Damage Repair,*** where appropriate.

5.1.2.13 Staff Meetings

The Bridge Inspection Supervisor shall conduct periodic staff meetings with the bridge inspection staff. These meetings will be used to help ensure consistency in the bridge inspection program, provide training, and keep the staff updated on current inspection activities. Consultant inspectors are invited to attend.

5.1.3 Office and Review Activities

5.1.3.1 Engineering Section Review

Any significant items are to be brought to the attention of the DSME and engineering section as they occur. The engineering section reviews all bridge inspection reports for state bridges. The inspector recommendations are reviewed by the engineering section. Any changes made to the inspector recommendations are discussed with the inspection team leader and the Bridge Inspection Supervisor. In addition, the engineering section determines if a new bridge load rating is required.

5.1.3.2 Computer Data Reports

During the bridge inspection, the bridge inspectors shall review the data in the comprehensive data report for accuracy. When discrepancies are found, the bridge inspection team leader is responsible for correcting the data.

5.1.4 Record Keeping

A file will be maintained of all quality assurance and quality control documentation for bridge inspections performed by Department forces. This file shall include a log that tracks the number of each type of review performed, and include the percentage represented by the quality control reviews performed.

5.2 CONSULTANT OR ASSET MANAGEMENT CONTRACTOR (AMC)

BRIDGE INSPECTION

The Department's project manager shall verify that the consultant and asset management contractor performs all contractual services required by the contract.

5.2.1 Consultant (or AMC) Qualifications

The qualifications of the consultant's or AMC's staff shall be confirmed prior to the notice to proceed. Experience and training records for lead, supervisory, and administrative employees shall be reviewed and evaluated. Serious conflicts in registration/certification requirements, training requirements, or experience records, shall be resolved as soon as possible. The District will review and evaluate the registration/certification and training records when key lead, supervisory, and administrative employees change. Professional Engineers serving as bridge inspection team leaders are required to have completed an approved comprehensive class on bridge inspection and meet periodic continuing education requirements as detailed in the document "Team Leader Requirements in Florida." The District Bridge Maintenance Office shall verify that these requirements are being met.

5.2.2 Consultant or AMC Quality Control Plan

The consultant or AMC shall have a written quality control plan. The Department's Project Manager shall verify that the consultant or AMC has a written quality control plan, and shall periodically visit the consultant's or AMC's office to review the consultant's quality control records.

5.2.3 Field Observation of Consultant or AMC Inspection Teams

The bridge inspection office shall review each bridge inspection team, including the underwater inspection teams, in the field once per quarter. The consultant's or AMC's inspection practices shall be reviewed for inspection sequence, thoroughness and completeness. This review shall be documented with a written evaluation.

5.2.4 Field Review of Consultant or AMC Bridge Inspection Reports

The bridge inspection office shall verify the accuracy of the bridge inspection reports and comprehensive data reports. At least five percent of the bridge inspections performed by each of the inspection teams including the underwater bridge inspection teams shall be reviewed. This review shall be documented with a written evaluation.

5.2.5 Review of Consultant or AMC Bridge Inspection Reports

The bridge inspection reports shall be reviewed for completeness, conformance to Department standards, and presence of proper endorsements.

5.2.6 Record Keeping

A separate file shall be maintained for all quality control documentation performed by consultants or AMC. This file shall include a log that tracks the number of each type of review performed, and include the percentage represented by the quality control reviews performed.

6.0 TRAINING

There is no training required for this procedure.

7.0 FORMS

There are no forms required for this procedure.