

## **Section 10.11**

### **GENERAL STRUCTURES CONSTRUCTION ISSUES**

#### **10.11.1 Purpose**

The purpose of this section is to establish procedures that are required for use on most or all structures projects and that cover a variety of issues as follows:

- 10.11.3 - Notifying the District Structures Maintenance Engineer (DSME) of In-Service Dates and Acceptance Inspections
- 10.11.4 - Notification and Monitoring of Load Rating Requirements
- 10.11.5 - Electronic Filing of Bridge Construction Documents
- 10.11.6 - Contractor Applied Overloads on Department-Owned Temporary Bridges
- 10.11.7 - Temporary Bridge Activities

#### **10.11.2 Authority**

FHWA Approved: March 18, 2009

Sections 20.23 (4)(a) and 334.048(3), Florida Statutes (F.S.)

#### **10.11.3 Notifying the District Structures Maintenance Engineer of In-Service Dates and Acceptance Inspections**

Within sixty (60) days of the start of work on the project and based on the Contractor's Accepted Work Progress Schedule, the Project Administrator (PA) shall provide the DSME with the tentative date that each bridge will be put into service for public use referred to herein as the in-service date. If these dates change by more than three (3) months as the project progresses, the PA shall notify the DSME of the revised dates as soon as possible.

The amount of time that District Structures Maintenance Inspectors (DSMI) will need to perform a pre-acceptance inspection will vary based on the size and complexity of the structure. Therefore, the amount of advance notice needed to schedule

the inspection will also vary. With this in mind, the PA shall contact the DSME well in advance of the in-service date to find out how much advanced notice maintenance inspection staff will need in order to be able to perform their inspection effectively. Using the DSME's advanced notice duration, the PA shall notify the DSME of the date that the pre-acceptance inspection should begin or the DSME should be notified when the bridge is 90% complete, whichever comes first. When possible, the inspection by maintenance staff should coincide with the 90% inspection recommended by **CPAM Section 12.1** and in which the Construction Engineering and Inspection (CEI) staff and Contractor participate.

Prior to the start of inspection by maintenance inspection staff, the PA shall confirm that the surfaces and components that will need to be inspected are fully accessible and visible for inspection. The PA shall facilitate the need for access equipment with the Contractor. Maintenance inspection staff will provide a written report of findings to the PA which may call for corrective action of defects or damage prior to final acceptance of the project or prior to the in-service date. Once the conditions reported by the DSME have been addressed by the Contractor, the results shall be reported in writing to the DSME who may choose to perform a follow-up inspection which may include the gathering of bridge data needed for the Bridge Management System (BMS).

One (1) week prior to any bridge, temporary or permanent, being put into service for public use, the PA shall notify the DSME of the final in-service date and time. This will allow the DSME to activate the bridge in the BMS in a timely manner in order to facilitate the issuance of permits to special vehicle operators requesting to use the bridge for an overweight and/or over-dimension load, as well as to inform the District Structures Maintenance Office of the existence of a temporary bridge.

The PA shall notify the DSME of the final acceptance inspection, required by **CPAM Section 12.1**, at least 30 days in advance of performing the inspection when there is enough project time left to do so; otherwise, as much time in advance as possible. For bridges that the DSME has inspected prior to final acceptance and that have been in service, sometimes for an extended period of time, the CEI staff should pay particular attention to the final inspection of bridge elements that might have durability or performance problems within the first five years of service including: bearings, expansion joint seals and hardware, lighting and electrical systems, drainage systems, and coatings (paint systems for steel, etc.). Any problems with these elements shall be reported to the DSME who may choose to perform a follow-up inspection of these elements.

#### **10.11.4 Notification and Monitoring of Load Rating Requirements**

The DSME is responsible for making sure that every bridge that is in service has an

accurate load rating and this includes any bridge that is put into service before construction of the overall project is complete. The load rating shall be performed in accordance with the applicable Office of Maintenance **Bridge Load Rating Manual, Topic Number 850-010-035**. For load ratings of temporary bridges constructed using temporary bridging provided by the Department, contact the Office of Maintenance, Structures Operations Section.

Most of the time accurate bridge load rating information for a new bridge will be contained in the Bridge Load Rating sheet of the As-Bid Plans. However, if there are significant structural changes to the As-Bid Plans during construction then the load rating may change and an As-Built load rating will need to be determined prior to putting the bridge into service. To make certain that the DSME receives an accurate load rating before a bridge is put into service during construction, the PA shall notify the Engineer of Record (EOR), enough time in advance of the anticipated in-service date to allow the EOR to assess whether or not the As-Bid load rating has changed. The PA shall provide As-Built information as requested by the EOR which may include materials testing results, bridge member dimensions, differences from predicted prestressed concrete beam cambers and build-up adjustments, or other strength-related data that differs significantly from the As-Bid plans. If the EOR determines that the load rating has changed then the Bridge Load Rating sheet in the As-Bid plans shall be revised to reflect the As-Built load rating and this sheet along with the As-Built load rating shall be transmitted to the DSME prior to putting the bridge into service. For example, if the predicted prestress concrete beam cambers based on field measurements differ by more than +/- 1/2" from the theoretical "Net Beam Camber @120 Days" shown in the As-Bid plans, the EOR shall revise the As-Bid load ratings if warranted. If the EOR determines that a load rating has changed significantly, particularly if reduced, then the PA shall coordinate discussions between the EOR, District Structures Design Engineer, and the District Structures Maintenance Engineer to decide on an appropriate course of action. The revised **Bridge Load Rating Sheet** shall also be signed and sealed by the EOR and the sheet title shall be changed to **As-Built Bridge Load Rating** and shall be added to the final As-Built plans transmitted to the Final Estimates Office at the conclusion of the project.

If the EOR and Senior Project Engineer (consultant CEI projects) or Resident Engineer (In-house CEI projects) agree that the As-Bid load rating does not need to be changed because there were no significant modifications to the bridge during construction then the EOR shall produce a letter stating this and it shall be signed and sealed and be sent to the Senior Project Engineer/Resident Engineer with a copy to the DSME. In the letter, the EOR should also indicate the source of information, as explained below, on which the EOR's opinion is based. A copy of this letter shall be retained in the CEI's project management records and shall be included in the documents transmitted to the Final

Estimates Office at the conclusion of the project. The EOR's decision, that the As-Bid load rating is not in need of revision, shall be based on the final As-Built plans that are signed and sealed by the Senior Project Engineer/Resident Engineer. If final As-Built plans are not available prior to the in-service date of the bridge then the Senior Project Engineer/Resident Engineer shall produce a signed and sealed letter that shall be sent to the EOR. The letter shall state that the Senior Project Engineer/Resident Engineer has notified the EOR as the project has progressed of all changes to the bridge that took place during construction and that could impact the final load rating. In lieu of this statement, the letter may contain an attachment with preliminary As-Built plans showing all changes that could impact the final bridge load rating and shall state which information source is provided.

### **10.11.5 Electronic Filing of Bridge Construction Documents**

The DSMO utilizes several documents in the Electronic Document Management System (EDMS). To facilitate access of these documents, bridge construction document profiles shall be attributed according to the table below. The following structure number types and format shall be entered into the document profile for these records as indicated:

**Bridge Number:** 6 digits, all numbers, and if more than one bridge is represented by the document then each bridge number shall be separated by a comma.

**Overhead Sign Structure Number:** 6 digits, 5 of which are numbers, and the third digit from the left, which with rare exception, is the letter S for "Sign"

**Traffic Signal Mast Arm Structure Number:** same as Overhead Sign except the alphabetic character is M for "Mast"

**High Mast Light Pole Number:** same as Overhead Sign except the alphabetic character is P for "pole"

If there is uncertainty about the structure's number, consult the DSMO for guidance.

<b>BRIDGE CONSTRUCTION DOCUMENT PROFILE FIELDS</b>			
<b>DSMO Document Category</b>	<b>Construction Document Type</b>	<b>EDMS Group/ Type No.</b>	<b>EDMS Document Subject/Description</b>
As-Built Load Rating Documents	Supporting Calculations, Input Files, Output Files, Load Rating Summary Sheets, EOR Letter stating As-Built Load Rating same as As-Bid Load Rating	15/141	As-Built Load Rating
Foundation Documents	Pile Driving Records	15/139	Pile Installation
	Drilled Shaft Records		Drilled Shaft Installation
	Geotechnical Reports & Related Docs.		General Geotechnical
Defect/Damage Records and Documents	Crack Maps, Crack Dimension Tables, Crack Growth Monitoring Logs	15/141	Crack Monitoring
	Request For Correction (RFC) Tracking Logs and Related Correspondence		Defect/Damage Resolution
Shop Drawings	Bridge Bearings	14/134	Bearings
	Electrical Components	14/134	Electrical
	Expansion Joints	14/134	Expansion Joints
	Mechanical Components	14/134	Mechanical
	Substructure Members/Components	14/134	Substructure
	Superstructure Members/Components	14/134	Superstructure
	High Mast Light Components	14/135	High Mast Lighting
	Miscellaneous	14/136	Miscellaneous
Overhead Sign/Traffic Signal Structure Members/Components		14/138	Overhead Sign/Traffic Signal Structure
Punch List Documents	Final Punch List, Explanation of how Punch List Items were Resolved	15/141	Punch List
Post-Tensioned (PT) Bridge Records	Stressing Record/Log, Grouting Record/Log, Casting Record/Log	15/141	PT Bridge Record

### 10.11.6 Contractor Applied Overloads on Department-Owned Temporary Bridges

One purpose of Construction **Standard Specification 7-7.2**, in part, is to prevent the overloading of Department-owned temporary bridge components that might be damaged by such loads. These temporary bridge components are generally designed to carry loads that do not exceed those allowed in the Florida Highway Patrol, **Commercial Motor Vehicle Manual (CMVM)** and; therefore, are not designed to carry overloaded construction vehicles or construction cranes along with the objects they are lifting. Overloading of temporary bridge components can cause serious damage or failure.

Exceptions to the overload policy above are permitted if provided for by the Engineer of Record in the **Contract Documents**. The decision to allow erection overloads will be made prior to bid and will not be permitted through the use of a Cost Savings Initiative Proposal after bid. If overloads are permitted in the **Contract Documents**, then cranes and other heavy loads may only be applied for the purpose of erecting the temporary bridge. Temporary bridges may not be used for the purpose of constructing the permanent bridge.

If the **Contract Documents** allow it and the Contractor wishes to apply overloads to the temporary bridge for the purpose of erecting the temporary bridge, then prior to the start of work the Contractor must submit shop drawings to the Florida Department of Transportation for approval, the contents of which will be specified in the **Contract Documents**. Typically the shop drawings must include calculations, layout drawings, and erection drawings showing how the equipment is to be used so that the temporary bridge structure will not be overstressed. The Contractor's Engineer of Record must sign and seal the shop drawings. The PA shall verify that the submittal package is in full compliance with the plans prior to submitting them to the State Structures Maintenance Office for review and approval.

If the shop drawings are approved then the PA shall confirm that the magnitude of the applied overloads (cranes, construction vehicles, etc.) which may require the use of distribution mats and their specific loading positions on the deck of the temporary bridge, are in full compliance with the shop drawings at all times during the progression of construction.

When the plans do not specifically allow the temporary bridge to be overloaded for erection purposes then the Contractor must comply fully with the CMVM and the PA shall monitor the Contractor's compliance for the duration of the project.

## 10.11.7 Temporary Bridge Activities

### 10.11.7.1 Acquisition of Department-Owned Temporary Bridging

The acquisition of Department-owned temporary bridge components and hardware shall be coordinated by the PA using the process outlined in **Standard Specification 102-6.2**. Upon receipt of the Contractor's letter and accompanying requested components list, confer with the State Aluminum Structures Shop (SASS) as necessary to finalize the components list within the timeframe given in **Standard Specification 102-6.2**. Provide at least one inspector to attend the mandatory training described in **Standard Specification 102-6.2** along with the Contractor's representatives.

### 10.11.7.2 Erection Verification

During the erection of temporary bridging, periodically verify that proper erection procedures are being followed by the Contractor. When temporary bridge components are supplied by the Department, the CEI will consult with the FDOT State Bridge Maintenance and Repair Engineer (SBMRE) of the State Structures Maintenance Office, for instruction regarding how verification is to be performed. Erection procedure violations by the Contractor shall be brought to the attention of the SBMRE immediately and the SBMRE will make recommendations about corrective actions that will be required of the Contractor. The PA shall verify that recommended actions are implemented properly and in a timely manner. When the entire temporary bridge is supplied by the Contractor, the CEI shall verify that the Contractor is constructing the temporary bridge in accordance with the signed and sealed temporary bridge shop drawings and erection plan. If the Contractor does not construct in accordance with the shop drawings and erection plan, the PA shall bring this to the attention of the Contractor and required corrective actions shall be completed prior to use of the bridge by the public.

The State Structures Maintenance Office shall perform a courtesy inspection of Department-owned temporary bridges prior to their use by public traffic. The Project Administrator shall notify the SBMRE at least 30 days in advance of when public traffic will be permitted to use the bridge to schedule the required inspection. The PA shall coordinate with the Contractor to facilitate inspection of the bridge. Completion of corrective actions will be verified by the PA prior to opening any temporary bridge to the public.

### **10.11.7.3 Maintenance Monitoring**

For Department-owned temporary bridges, CEI staff shall monitor that the Contractor properly maintains the temporary bridge components once in service. CEI staff shall consult with the SBMRE for instructions regarding what procedures to use for proper maintenance monitoring. Maintenance lapses by the Contractor shall be brought to the attention of the SBMRE immediately and the SBMRE shall make recommendations about corrective actions that will be required of the Contractor. The PA shall verify that recommended actions are implemented properly and in a timely manner. For Contractor supplied temporary bridges, the PA shall verify that there is a Contractor developed temporary bridge maintenance plan and that the Contractor is in compliance with the plan. The PA shall discuss any maintenance plan noncompliance issues with the Contractor and corrective actions shall be implemented in a timely manner.

### **10.11.7.4 Return of Department-Owned Temporary Bridging**

The PA shall verify that the Contractor has notified the Department at least 10 days prior to return of any bridge components and that all bridge components are listed on the Detour Bridge Issue and Credit Ticket and signed by the Contractor. The PA shall adjust payment due to the Contractor for bridge components that are missing or damaged by the Contractor, components that are not properly packed or for components that are not returned within the specified time in accordance with ***Standard Specification 102-6.2***.