

## **ENGINEERING DIRECTIVE**

Patricia Leavenworth (signature on original)

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CHIEF ENGINEER

### **Inspection of Structural Members for Design of Bridge Preservation Projects**

#### **Purpose**

The purpose of this Engineering Directive is to ensure that contract documents for bridge preservation contracts are prepared using the latest information available on the condition of the structural members to be included in the work. The intent is to minimize construction Extra Work Orders required to address additional deterioration discovered during construction that was not included in the design documents. Because the condition of structural members can change during the design and procurement phases, designers shall ensure that a “quantity verification” level inspection is performed prior to advertisement, and that the results of that inspection are represented in the final contract documents.

#### **Application**

This directive shall apply to projects that include repair or rehabilitation of structural steel or concrete superstructures and/or substructures and to bridge cleaning and painting projects which include steel repairs. For these types of projects, the Procedures detailed below must be applied to all projects initiated on or after July 1, 2019 and may be applied to projects initiated prior to July 1, 2019 and not yet advertised for construction, at the discretion of the Project Manager. Project Managers are encouraged to apply the Procedures detailed below to these types of projects whenever practical, regardless of design status.

This directive shall not apply to full bridge replacement projects or to work done under bridge maintenance contracts and work done under scheduled and emergency bridge repair contracts.

#### **Procedures**

For applicable bridge preservation projects, prior to the start of design (or as early as possible for projects already under design), the designer of record shall conduct a “quantity verification” level inspection of the structural elements to be included in the contract, which shall form the basis of design. The purpose of this inspection is to provide the designer with appropriate knowledge of the level and extent of deterioration of each member for use in preparing design details, specifications, quantity estimates and other contract documents. If appropriate for the specific project, methods other than visual shall be used, such as calipers, “D-meters”, non-destructive testing, ground-penetrating radar, Impact Echo, use of a string line to check for deflection or loss of camber, etc.

Within 2 months of the project being advertised for bids, the designer shall perform a “plans-in-hand” level inspection to verify that the repairs as detailed on the plans can be performed as intended at the proposed locations. At this time, the designer shall also perform a follow-up “quantity verification” level inspection to determine the most current information on the level and extent of the deterioration of the structural elements to be included in the contract documents, as well as any other structural elements that may now need to be included in the contract documents. Upon completion of the inspection, the design plans, specifications and estimate shall be updated to reflect the information from this inspection. The results of the pre-advertisement “quantity verification” level inspection shall be documented in a separate report and submitted with the PS&E documents. If a routine NBIS inspection has occurred within 6 months of the date of advertising, and if it documents member-by-member conditions (as opposed to typical conditions), the results of that inspection can be used to update the contract documents in lieu of a follow-up “quantity verification” level inspection. If the initial “quantity verification” level inspection has been performed and the contract documents have been prepared within 6 months of advertising, a pre-advertisement “quantity verification” inspection need not be made.

The contract documents shall contain adequate details and specifications to address all the known deteriorated conditions scheduled for repair. The contract documents shall provide appropriate quantities and bid items for each type of repair detail, including a description of the measurement and payment for each repair detail.

The Resident Engineer shall coordinate with the District Bridge Engineer and designer (if design was prepared by a design consultant) during the construction to ensure that the work being performed is consistent with the intended scope of the preservation project.