

**New Jersey Department of Transportation**  
**QUALITY IMPROVEMENT ADVISORY**

**QUALITY MANAGEMENT SERVICES**

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QIA No. QIA002

Approved

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**Process Affected:**

Scope  Design  Right of Way  Utilities  Environmental  Historic  Construction

**Bureaus Affected:** All CPM Units

**Procedure(s) Affected:** Project Delivery Schedule

**Route & Section:** I-295 , Section 1BF & 6D

**Project Summary:** This project is currently under construction and involves reconstruction of approximately 10.5 miles of interstate from MP 1.0 to 11.5 +/- . There are 10 bridges within the project limits which are to receive deck rehabilitation. The item "concrete deck repair" is called for on all 10 structures, with quantities ranging from 10 SF to 326 SF, and a combined quantity of 672 SF.

**Nature of Problem(s):** The I-295 NB structure over the Salem Canal and the NJ Turnpike originally called for 23 SF of concrete deck repair. However, the resident engineer's sound testing found the potential of this quantity reaching 800 SF on this particular structure. The structure was repaired in 1992 and received a Latex Modified Concrete (LMC) overlay. For this reason the designer was informed not to perform a detailed bridge deck condition survey. As a result, the concrete deck repair item was significantly underestimated.

**Recommendation(s):** To determine the amount of concrete deck repair required for most rehabilitation projects, the design engineer should evaluate **all** bridge decks prior to the final design phase to ensure accurate quantity estimates. This should be performed regardless of the findings of the bridge inspection report. The following are bridge deck evaluation survey techniques which are used to detect existing defects and actively deteriorating conditions of the deck. These techniques should be used in sequence and, if warranted, in combination. By using the combined results, engineers can better evaluate the condition of any bridge deck.

1. Visual Survey.
2. Concrete Delamination Detection:
  - a) Hammer Method
  - b) Chain Drag Method
  - c) Delamtect Method
3. Chloride Analysis.
4. Half Cell test.

With any of the above methods, an appropriate contingency amount should be included to ensure that estimates accurately reflect actual repair quantities.

**Implementation:** On future deck rehabilitation projects.

**Impact Assessment:**

Schedule  Quality  Cost  Scope

**Cost Impact:**

Approximately  
\$22,000