

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

QUALITY MANAGEMENT SERVICES

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QIA No. QIA010

Approved: Brian Strizki

Date: 3/16/98

Process Affected:

Scope Design Right of Way Utilities Environmental Historic Construction

Bureaus Affected: Division of Construction & Materials; All Resident Engineers

Procedure(s) Affected: Construction

Route & Section: Route 80
Deck Patching Contract 96-1

County/Municipality: Township of Roxbury, Boroughs of Mount Arlington and Wharton, Morris County

Project Summary:

This deck patching contract involved the repair of deteriorated concrete on nine bridges located along Route 80 in the vicinity of Roxbury Township and the Boroughs of Mount Arlington and Wharton, Morris County.

Nature of Problem(s):

The contractor removed deteriorated concrete and patched with D.O.T. Repair Mortar (manufactured by CTS) which is an NJDOT approved product. Most of the concrete repair work exceeds 5" in depth. Transverse cracks were observed even though the contractor followed all procedures in accordance with the manufacturer's recommendations. Several areas of the concrete repair work experienced severe cracking and the contractor was directed to remove and replace all defective patches. The contractor claimed that because an NJDOT approved product was used, the Department should compensate for the extra work.

Recommendation(s):

The Bridge SI to be released in June 1998 will contain the following specifications changes regarding full depth concrete deck repairs:

- Type 1A quick-setting patch materials will no longer be permitted for type "C" repairs. Class A concrete will only be permitted.
- Use of Non-Chloride accelerating admixtures will be added to Subsection 905.02 - Chemical Admixtures. Contractors may use these admixtures in conjunction with Class A concrete in order to achieve an accelerated curing time for such work.
- Contractors may use such type chemical admixtures subject to the approval of the mix design as per Subsection 914.02.

A task force was set up to identify any problems with the current quick setting patch materials' specifications. The main issues discussed included applications, construction practices and development of transverse cracking. The specifications and test procedures for quick setting patch materials will be studied to address needed changes concerning these problems.

Before the release of the new Supplemental Specification and any revisions to the current quick setting patch materials specifications by the task force, Resident Engineers should advise the contractor of the potential cracking problems with this type of quick setting patch material and ensure that the Contractor/Subcontractor follows the following procedures when they are using quick setting patch materials for full depth concrete deck repairs:

- Pre-test the materials under field conditions at the patch depth anticipated to determine whether subsequent cracking will occur. The corrective action will be at the discretion of the Resident Engineer.
- If the Contractor is adding more than 6.8 kilograms of size No. 8 coarse aggregate per bag of quick setting patch material, the mix design must be in accordance with the requirements of Subsection 914.02.
- If the heat of hydration is shown to be excessive, the manufacturer's technical representative must be contacted for advice on how to reduce the heat, such as wet curing or adding a retarding admixture.

Implementation: Effective immediately

Impact Assessment:

Schedule Quality Cost Scope

Cost Impact:

Superseded