

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

QUALITY MANAGEMENT SERVICES

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QIA No. QIA008

**Approved: B. Strizki
Date: February 23, 1998**

Process Affected:

Scope Design Right of Way Utilities Environmental Historic Construction

Bureaus Affected: All CPM Units
All Design Consultants

Procedure(s) Affected: Design Development
Construction

Route & Section: N/A

County/Municipality: N/A

Project Summary:

A beam guide rail audit was performed by the Bureau of Construction Engineering on eleven contracts during the 1997 construction season. These audits were performed to evaluate various requirements related to the installation of beam guide rail.

Nature of Problem(s):

The audit revealed that on two contracts guide rail end treatments were incorrectly specified on the contract plans. Because of the existing grades and also the proximity of drainage ditches in the area, the designed guide rail end treatments which were specified (SRTs and BCTs) were not appropriate and had to be removed. To correct the situation, these guide rail ends were either buried in the slope or an alternate end treatment was installed, as appropriate. As a result, extra construction costs were incurred.

The audit revealed that on another contract, the subcontractor was damaging or altering guide rail posts during installation because of the presence of rock in the area. In these locations the subcontractor failed to observe the Construction Detail specifying the proper method of beam guide rail post installation in rock and as a result, numerous posts were damaged from overdriving. Posts were also improperly altered at locations where the subcontractor encountered difficulty driving them to the required depth. After discovery, the damaged posts were removed and replaced at no cost to the Department, and the Construction Detail for post installation in rock was directed for use in further installations under these circumstances.

Recommendation(s):

The extra material costs, as well as the costs accrued in rework would have been avoided if the designer had indicated the proper end treatments for the specified plan locations. As a quality improvement to the design plans and reduction in the construction costs due to rework, the designer's effort **must** include, but not be limited to the following:

- **Designing guide rail end treatments in accordance with Section 8 - "Guidelines for Guide Rail Design and Median Barriers" of the NJDOT Roadway Design Manual.**
- **Correlating the construction plans with the cross sections in order to properly design guide rail end treatments.**
- **Performing formal field reviews, as necessary, to determine the existing field conditions (i.e. drainage ditches, etc.)**

In addition, Resident Engineers should ensure that the Contractor/Subcontractor follows the proper procedures when installing guide rail posts in rock areas as specified in the Construction Details.

Further, if the Department determines that the contract documents contain errors or omissions, the consultant designer shall be liable for all damages and shall reimburse the Department for the costs incurred by these errors or omissions in accordance with the Consultant Agreement.

Implementation: Effective Immediately

Impact Assessment:

Schedule Quality Cost Scope

Cost Impact:

