

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

**QUALITY MANAGEMENT SERVICES**

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QIA No. QIA034

Approved: Brian Strizki  
Date: 8/2/02

**Subject: Use of composite fender system and dolphins in marine sensitive environments**

**Process Affected:**

Scope  Design  Right of Way  Utilities  Environmental  Historic  Construction

**Bureaus Affected:**

All Designers (Consultant and In-House)  
Bureau of Environmental Services  
Division of Project Management

**Procedure(s) Affected:**

Environmental

**Nature of Issue(s):**

The use of treated timber structures in marine environments has been a concern to environmental agencies. Wooden piles are treated with chemicals such as creosote or chromated copper arsenate (CCA) to preserve the wood integrity. The U.S. Environmental Protection Agency has considered creosote to be a toxic substance, and the 2001 NJDOT Standard Specifications do not permit the use of creosote in marine environments. The use of CCA in environmentally sensitive areas is also a concern due to the presence of arsenic and its potential effect on wildlife.

In reviewing the preliminary design of one bridge replacement project, NJDOT's Bureau of Project Support raised concerns over the use of CCA due to the presence of clam beds and other environmentally sensitive areas nearby. The Designer proposed the use of a composite fender system as an alternative to the CCA treated timber structures. This was done with the understanding that the increased design life of the composite materials and escalating replacement costs for timber structures due to the requirement that the wood be disposed of as hazardous waste would compensate for the increased initial costs of the composite system. The composite material is also resistant to marine borers attack, and will not corrode or dry rot.

The Bureau of Structural Design approved the use of this fender system, and the specifications were prepared by the Designer and were included in the Special Provisions. Another project also specified the use of a composite fender system, and similar specifications were included in the Special Provisions. These specifications also listed 3 manufacturers that could supply these products.

**Recommendation(s):**

The [NJDOT Environmental Stewardship Policy and Action Statement](#) was approved by the NJDOT Policy and Priorities Board on June 7, 2001. As part of the Environmental Stewardship Action Plan, one initiative includes the reviewing of specifications and inclusion of "greener alternatives". When a project involves construction of fender system and dolphins in a marine environment, designers are advised to contact the NJDOT Bureau of Environmental Services and coordinate with the NJ Department of Environmental Protection and the Army Corps of Engineers to determine if the area is environmentally sensitive. If the area is environmentally sensitive, designers are advised to specify the use a composite marine material instead of chemically treated timber. For a composite fender system, the attached generic specifications can serve as a **guide** for use in the project's Special Provisions.

The Bureau of Structural Engineering will incorporate the composite materials specifications into **Subsection 506 - Bulkheads, Fender System, and Dolphins** of the 2001 Standard Specifications.

**Implementation: *Immediately***

**Impact Assessment:**

Schedule  Quality  Cost  Scope

**Cost Impact:**

N/A