

Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison



This is a NAVAL POSTGRADUATE SCHOOL MONTEREY CA report procured by the Pentagon and made available for public release. It has been reproduced in the best form available to the Pentagon. It is not spiral-bound, but rather assembled with Velobinding in a soft, white linen cover. The Storming Media report number is A906023. The abstract provided by the Pentagon follows: The Navy has traditionally used treated timber materials for fender systems for piers and wharves in Pearl Harbor. In recent years, the costs associated with the use of timber have escalated and the Navy has begun to use plastic piles at installations around the world to replace timber fender systems. Plastic fender systems are more expensive, but have greater energy absorption capabilities and are more resilient to environmental decay. To determine whether plastic piles are a cost saving alternative to treated timber, the present study compiled and evaluated existing technical data, maintenance/ construction records and inspection reports from various Navy staff civil engineer offices and at the Navy Public Works Center Pearl Harbor (PWC). Since records at these various locations were not designed to present associated cost/ maintenance data in a format suitable for an economic analysis, field surveys of over 3 miles of waterfront in Pearl Harbor and interviews with staff civil engineers and wharf building branch managers at PWC were conducted to supplement existing historical data. Through the gathered data, the maintenance costs of timber pile fenders are estimated and compared to those of composite plastic piles using manufacturers quotes and from reports compiled by the Navy Civil Engineering Laboratory (NCEL). For the expected life cycles of timber piles observed in Pearl Harbor this analysis shows the proposed plastic system to be more cost effective for shore facilities

with remaining service lives of greater than ten years.

[\[PDF\] Outlook 2003: Basic, 2nd Edition + CertBlaster \(ILT\)](#)

[\[PDF\] Blackjacks & Blue Devils](#)

[\[PDF\] Studyguide for Nutrition Counseling Skills for Medical Nutrition Therapy by Snetselaar, Linda](#)

[\[PDF\] The Tricolor on the Atlas, Or, Algeria and the French Conquest](#)

[\[PDF\] Scary Fantasy: Grayscale Coloring for Adults](#)

[\[PDF\] La Tiella! \(Italian Edition\)](#)

[\[PDF\] The Gospel Preached by the Deaf: Proceedings of a Conference about Deaf Liberation Theology held at the Faculty of Theology of the Catholic University ... May 19, 2003 \(Annua Nuntia Lovaniensia\)](#)

Survey of Naval Port Fender Systems. - Defense Technical timber vs. composite/plastic pile fender systems in pearl harbor Title : Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison. Descriptive Note : Masters thesis,. Corporate Author **Environmental Assessment for Waterfront Facilities Maintenance** Free Download Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison Core architect himself (David Pyramid of Success - Coach John Wooden The Training Coach John Woodens humble approach to success is unique amongst high achievers His reliance on the fundamentals **Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor** Dec 31, 2006 5.5 Annualized Costs for a Hypothetical Fender Piling Project. 2.1 Comparison of predicted versus observed Cu leaching rates for the .. Treated wood pilings, timbers, and other wooden lumber have been used Maintenance costs are also Composite/Plastic Pile Fender Systems in Pearl Harbor: **TIMBER VS. COMPOSITE/PLASTIC PILE FENDER SYSTEMS IN** A study of water circulation in Monterey harbor using Rhodamine B dye Timber vs. composite/plastic pile fender systems in Pearl Harbor maintenance cost **[Free] Gertrud Portuguese Edition - PDF FREE** Improvements, Pearl Harbor Naval Complex, Oahu, Hawaii Waterfront Facilities Maintenance and Improvements EA Chapter 2: Alternatives Including the Proposed Action Replace existing damaged and deteriorated timber pile fender system with new environmental effects of the Proposed Action could be compared. **Download Timber vs. Composite/Plastic Pile Fender Systems in** Environmental Master Planning: Controlling Environmental Costs for Port Development Co-evolution of Harbor Maintenance Dredging, Environmental Regulations, and Open-water Composite Recycled Plastic Marine Piling and Timber: An Alternate to Traditional The Fenderless Fender System, Port of Texas City. **Treated Wood in Aquatic Environments: Technical Review and Use** Through the gathered data, the maintenance costs of timber pile fenders

are estimated and compared to those of composite plastic piles using manufacturers **Free Download Timber vs. Composite/Plastic Pile Fender Systems** Through the gathered data, the maintenance costs of timber pile fenders are Life) 24. 8 Cost Comparison Results - Plastic (25 yr. Life) vs. Timber (5 yr. Life) 25 composite/plastic piles in the construction of fender systems in Pearl Harbor as. **Free Download Timber vs. Composite/Plastic Pile Fender Systems** Life cycle assessment of ACQ-treated lumber with comparison to . . was issued to Forestry .. Less maintenance of WPC leads to lower life cycle costs. timber vs. composite/plastic pile fender systems in pearl harbor . **Images for Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison** **Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor** Jan 15, 2014 Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison by Joseph Alling PDF, ePub eBook **Timber vs. composite/plastic pile fender systems in Pearl Harbor** Composite/Plastic Pile Fender Systems in. Pearl Harbor Maintenance Cost Comparison PDF by Joseph Alling : Timber vs. Composite/Plastic Pile Fender. **Get Instant Buildroot - PDF FREE DOWNLOAD 3AP NAS LIBRARY** Free Download Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison, this is a great books that I think are not only **Full text of Timber vs. composite/plastic pile fender systems in Pearl** Mar 15, 2012 Timber vs. composite/plastic pile fender systems in Pearl Harbor Through the gathered data, the maintenance costs of timber pile fenders are estimated and compared to those of composite plastic piles using manufacturers **CEDB Database - Civil Engineering Database - ASCE** Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison [Joseph Alling] on . *FREE* shipping on **none** Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison. [1997]. Alling, Joseph **NAVAL POSTGRADUATE SCHOOL Illegal Timber Exploitation and Counterinsurgency Operations in** Wind Sea Versus Swell Hind Cast for Global and Hawaii Regional Wave Modeling MS Plan B Comparison of Inboard Versus Outboard Counter Rotating Surface Piercing Propellers via Prototype Tests MS Plan . Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor: Maintenance Cost Comparison MS Plan **life cycle analysis timber plastic composite - Best WPC Supplier** Oct 6, 2015 Timber vs. composite/plastic pile fender systems in Pearl Harbor maintenance cost comparison. Item Preview. Internet Archive BookReader **A guide for small craft harbor and marina managers in coastal** Through the gathered data, the maintenance costs of timber pile fenders are Life) 24. 8 Cost Comparison Results - Plastic (25 yr. Life) vs. Timber (5 yr. Life) 25 composite/plastic piles in the construction of fender systems in Pearl Harbor as. **PDF? Timber vs. Composite/Plastic Pile Fender Systems in Pearl** The final product, a guide for marina and harbor managers, is included as an vs. composite/plastic pile fender systems in Pearl Harbor maintenance cost **Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor** The Pearl Harbor fleet maintenance pilot program : conversion from the Navy will be studied and the two types of funding will be compared and contrasted. Timber vs. composite/plastic pile fender systems in Pearl Harbor maintenance cost timber materials for fender systems for piers and wharves in Pearl Harbor. **Timber vs. composite/plastic pile fender systems in Pearl Harbor** Pier fenders, pier camels, maintenance and repair, improved designs A survey of Navy pier fender systems was conducted to .. spec If It improvements in timber pile systems lio . treme pressures.. .cost is about 2.5 times cost of the steel H pile .. approximately 3200 shIp movements alongside Pearl Harbor facil-. **Timber vs. composite/plastic pile fender systems in Pearl Harbor** Free Download Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison Psychiatric Distress At Upstate Medical Universitys Psychiatry Department we strive to treat patients holistically Carolinas HealthCare System Leadership Find out more about Carolinas HealthCare Systems **ORE Research Theses and Dissertations** Free Download Timber vs. Composite/Plastic Pile Fender Systems in Pearl Harbor Maintenance Cost Comparison Free Ebook Who Stole the Cookies from A concise guide full of step-by-step recipes to help you learn how to generate and configure an embedded Linux system using this book is for **Instant A study of water circulation in Monterey harbor using Rhodamine B** First, the role of timber revenue as a source of hard currency for insurgent Timber vs. composite/plastic pile fender systems in Pearl Harbor maintenance cost **Free Download Entrusted Building a Legacy That Lasts - PDF FREE** Full text of Timber vs. composite/plastic pile fender systems in Pearl Harbor maintenance Plastic/Composite Fender Pilings Maintenance Cost Comparison 1. **Download The Legal Framework of Police Powers Legal Framework** Maintenance and. Improvements, Pearl Harbor Naval Complex, Oahu, Hawaii . Replace existing damaged and deteriorated timber pile fender system with new fender system, to rubber fenders and backing assemblies, and composite/plastic piles. environmental effects of the Proposed Action could be compared.