

NAS NORTH ISLAND - NAVY REGION SOUTHWEST NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

POLLUTION PREVENTION

PLASTIC PIER PILINGS

LEAD ACTIVITY

Naval Air Station (NAS) North Island

STATUS

Active

MISSION

Eliminate contamination of sediment and water associated with wood pier pilings, extend service life of pilings compared to untreated wood pilings

REQUIREMENT

Traditionally treated timber pilings pose numerous environmental problems when used for piers. An alternative pier piling material is required. In addition, innovative ideas for using recycled plastic are desired.

DESCRIPTION

Pier pilings made from high-density polyethylene (HDPE) recycled plastics are being evaluated as a replacement for chemically treated timber pilings. In March 1996, at Pier Bravo, a NAS North Island pier, 18 damaged wood pilings were replaced with steel-reinforced plastic pier pilings manufactured by Plastic Pilings, Inc.



Plastic Pier Piling

Based on the anticipated life span and durability of steel-reinforced plastic fender pilings, replacing treated timber pilings with plastic pilings could save the Navy and taxpayers as much as \$37,000 per fender piling over 40 years. Additionally, the use of 100 percent-recycled plastic pilings will substantially reduce the environmental problems associated with chemically treated timber pilings.

A demonstration test plan was prepared and implemented to evaluate the steel-reinforced plastic pilings installed as fenders at Pier Bravo. An evaluation report was completed to document the 3-year piling demonstration, and evaluate the effectiveness of the plastic pilings under heavy use conditions. The plastic pilings were evaluated

primarily for durability, strength, cost savings, and environmental integrity. Use of plastic pilings at other Navy installations in the San Diego area was also discussed.

The Navy is currently working with one technology developer of plastic pilings (Plastic Pilings Inc.) to perform a destructive analysis of a piling from Pier Bravo to inspect for corrosion of the steel reinforcement structure.

BENEFITS

- Saves approximately \$37,000 per piling over 40 years because of the longer life span of plastic pier pilings
- Reduces release of wood preservatives from creosote-impregnated timber piles into the ocean
- Reduces maintenance and replacement costs

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
OCT 1994	Naval Facilities Engineering Service Center (NFESC) and NAS North Island Staff Civil Engineer (SCE) personnel held a meeting to discuss using alternative pier pilings
NOV 1994	Pier Bravo was designated as the demonstration site for retrofitting the steel-reinforced plastic pilings
MAR 1995	Alternative Pier Piling Demonstration Plan was developed; NFESC finalized a draft report on alternative pier piling research
MAR 1996	Eighteen plastic pier pilings were installed at Pier Bravo
NOV 1999	Completed Plastic Pier Piling Evaluation Report on use of plastic pier pilings in San Diego Harbor. The study focuses on assessing the plastic pier pilings' durability, strength, cost, and environmental integrity.

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
Ongoing	Navy working with plastic piling technology developer to do corrosion analysis of piling in service for four years at NASNI Pier Bravo

COLLABORATION/TECHNOLOGY TRANSFER

NFESC has provided expertise and reports on previous research to aid in the evaluation of plastic pier pilings at NAS North Island.

BIBLIOGRAPHY

- NAS North Island Alternative Pier Piling Demonstration Plan at Pier Bravo, NAS North Island. 1995.
- [Plastic Pier Piling Evaluation Report](#), TTEMI, Inc., November 1999.

RELATED GOVERNMENT INTERNET SITES

[NFESC Shore Facilities Home Page](#)

RELATED NAVY GUIDEBOOK REQUIREMENTS

- 10006 Affirmative Procurement Program

UPDATED: 01/23/02