



P-118 Pier 5002 Sub-Fender Install, U.S. Navy

NAVAL BASE POINT LOMA, CA Completion: November 2009

Contractor: Marathon Construction Corp, San Diego, CA

Challenge: The US Navy in San Diego, California, needed to upgrade shipyard berthings at its Point Loma Naval Submarine Base. The upgrade included installation of Sub-Fenders and HarborCamel, the latter of which spread the weight of a vessel to ensure that no individual pile or point on a dock is stressed while the vessel is docked. The materials provided were 36” HarborCamel with the eyebolt design. These were 40’ (x2) and 47’ (x2) feet long.

Constraints: Repairing existing pilings with this high level of extensive damage would require a unique solution.



HarborPiles are designed for fender or structural applications and offer tremendous durability in the harshest environments. They are strong, tough and durable and can be installed with standard equipment. HarborPiles are available in a wide range of diameter (8” to 36”) and wall thicknesses (0.125” to 1.5”) and in any transportable length (103 feet is the longest to date) and can be tailored to meet an infinite range of engineering properties.

Benefits include:

- Fendering: Tremendous ability to absorb the energy of vessel (lateral) impact through repeated recoverable deflection
- Load bearing: Axial pile capacity of 70 kips (18” 0.75” wall)
- Durable: Proven UV resistance, will not rot, decay, nor be eaten by borers
- Enormous design flexibility through “tailoring” of laminate, diameter and wall thickness
- Pile designed to be installed hollow: no requirement for concrete fill
- Lightweight, thereby reducing freight cost & carbon footprint
- Corrosion resistant



Harbor Technologies HarborPile and HarborCamel installed in Point Loma, CA

- Smooth consistent surface, does not suffer from blotches and dimples
- Environmentally safe: will not leach chemicals into the natural environment
- Piles driven by traditional pile driving equipment but more efficiently than plastic/ FRP rebar piles
- Cut and drilled with carbide bit tools
- Excellent structural properties
- Eliminates possibility of cracking as a result of thermal mis-match between plastic (HDPE) and FRP rebar
- Electrically and thermally insulating
- Standard colors are black and grey, although can be produced in virtually any color

For information on Harbor Technologies, LLC or this project visit www.schraderco.com

*Schrader Co. presents **environmentally-conscious products** for the industrial marine market and other applications for a variety of uses including piers, wharves, marinas, bridges, boardwalks, and seawalls.*