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## San Francisco Marina Small Craft Harbor Method for Tying to Center Pilings

The below Piling Warranty has been provided to Marina management by the piling supplier/installer.

San Francisco Marina Small Craft Harbor has identified a product for safely mooring vessels to the center pilings that will not adversely affect the piling warranty. The product is called, "Tideminders."

"Tideminders" are 3" diameter, high density plastic, round, floating balls which will accept up to a 1" mooring line. All vessels in the West Marina Basin that wish to tie their vessels to the center pilings must purchase a minimum of nine (9) "Tideminders" per piling, per line. These are readily available through several sources and cost under 50.00 for nine, with a ten year warranty.

Bertholders are responsible for properly mooring their vessels, including the purchase, installation and maintenance of all mooring equipment

The separator piles were designed for accidental berthing of vessels maneuvering into and out of the slips. During the design the separator piles were also checked for mooring conditions and it was found that the berthing requirements controlled. The piles were designed for a service load of 2000 lbs (2 kips) which corresponds to the design berthing criteria. The piles have the structural capacity to withstand an equivalent mooring load.

The primary mooring points for the vessels are the cleats on the concrete floats. The separator piles can be used as secondary mooring points but are not intended to act as the primary means for mooring the vessels. In order to use the separator piles as mooring points the following requirements need to be followed.

1. Vessels should not be moored greater than 12" from the face of the docks and need to be securely tied off to the cleats.
2. Vessels need to be properly moored to the concrete docks and cannot be solely moored to the separator piles.
3. No permanent mooring attachments should be installed on the separator piles. Drilling attachments into the fiberglass piles will void the warranty. Lines around the separator piles need to be able to freely rise or fall with the tide.

Note that the separator piles are flexible relative to the concrete docks and guide piles. They re designed to deflect and absorb the required berthing energy. The fiberglass separator piles have similar stiffness to the 12" dia. Timber piles shown on the original RFP drawings. During mooring the separator piles will deflect. At a load less than 2000 lbs the vessels will start to breast against the concrete docks transferring the load to the dock. The concrete docks have been designed to take the full breasting load.

