

## COMMODORE COVE IMPROVEMENT DISTRICT

### BULKHEAD INSPECTION GUIDELINES

A bulkhead is a retaining wall along a waterfront, used to establish and maintain a stable shoreline.

The predominant type used in the district is an anchored backfilled type. This type uses wooden piles and timbers that are treated for saltwater immersion. Other types used may include steel, vinyl and fiberglass of interlocking nature.

In maintaining a stable shoreline the bulkhead must prevent the erosion of the backfilled soil from either washing through the joints of the piles or sloughing off under the wall. Basically, if the wall is solid, vertical and straight down the length, without sinkholes on the backfill side, it should be in fairly good shape.

Some approximate dimensions and basic standards should follow these guide lines.

To stabilize the bulkhead wall the piles are driven into the ground of the canal bottom and the top of the wall is anchored to deadmen placed in the backfill.

Treated piles should be tongue and grove, or vinyl sheeting tongue and grove or fiberglass sheeting tongue and grove.

Piles should be driven into the ground  $\frac{1}{3}$  the depth of the wall, i.e., a 6 foot bulkhead needs at least 2 foot of pile driven into the bottom to anchor the wall. A 8 foot pile would be used to achieve this.

The upper portion of the wall is held in position by tie rods that are bolted to a horizontal timber called a wale, on the outside of the wall. These tie rods should be held firmly in place by tension, this supports the upper wall and keeps it from moving back and forth. The distance that the deadmen are positioned from the wall, should be approximately twice the height of the wall and spaced approximately four to five feet apart for the whole length of the wall. These should be covered with backfill to hold them in place.

The backfill should be maintained at a height of at least that of the bulkhead level, this stabilizes the wall and assists in water drainage over the wall.

Any cavitation of the backfill means the bulkhead has failed and is in need of repair i.e., open seams or washed out bottom. Any buckling or movement of the wall means the anchorage has failed i.e., tie rod has broke or wall footing has washed out. Finally there should not be any area where water can accumulate and stand in the backfill area. This adds pressure to the wall and contributes to weakening the wall.