



The Castle Group  
Innovation in Action

W.J. Castle P.E. & Associates  
Hydro-Marine Construction  
Simplified Bridge Systems

## Sets the Standard for

Structural & Marine Engineering, Construction, & Design/Build Services

### BULKHEAD DESIGN



**Project:** Design/Build of Two Existing Bulkhead/Seawalls

**Location:** Privately Owned Corporation  
Chester, Pennsylvania

**Description:** In 2009-2010 *W.J. Castle, P.E. & Associates, P.E.* was retained to develop the design and installation for two bulkheads at the privately owned corporation. The first bulkhead was a stone bulkhead to be rehabilitated located in Chester Creek. The bulkhead section to be replaced measured approximately 525 L.F. and due to site restrictions and the clients' safety protocols, most of the work had to be done from the water. The existing concrete seawall located along the Delaware River was also to be rehabilitated and measures approximately 261 L.F.

A new steel sheet bulkhead was installed in front of the existing stone bulkhead along Chester Creek. The steel bulkhead was held in place with a tie-back system anchored into a steel deadman system. This design was utilized due to the limited space, time and money available.

Steel sheeting was attached to the existing concrete seawall running along the Delaware River. Concrete and/or cementitious grout was poured behind the sheeting to create a water tight seal.

Our design combined with utilizing both equipment and personnel from *Hydro-Marine Construction Co., Inc.* allowed us to design and install the two bulkheads to the satisfaction of the client on time and within budget.

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