

under the surface

MARINE ENGINEERING &
CONSTRUCTION EXPERTS



The Castle Group
Innovation in action

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

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Innovative Foundation Support Design/ Build for US Naval Academy

In April 2015, The Castle Group completed the design/build for the foundation rehabilitation of the Nimitz Library at the US Naval Academy in Annapolis, MD. This project was very exciting, giving us the opportunity to work for NAVFAC and allowing our engineers to think outside the box to find a viable solution. On the surface the project was run of the mill, a simple repair job. In reality, there were several key issues that made this project challenging.

The foundation was exposed to brackish tidal waters, causing

advanced deterioration including spalling, cracking, delamination, and chemical attack on the concrete pile caps and grade beams, as well as the steel pipe piles. The original design concept (by others) included a massive concrete collar extending around and below the pile caps with stub columns bracing up to the grade beams. This design was not feasible for many reasons. Most of the piles caps were in tidal waters which would require dewatering of the entire area. The sheer weight of the concrete would require extensive formwork. Another obstacle was the limited

Bollard Room Hosting

October 20-21, 2015 W.J. Castle, P.E. & Associates, P.C. is hosting the NHI Course 130091B "Underwater Bridge Repair, Rehabilitation, and Countermeasures". Seats still available!

See You There

Visit us at the NSPE 2015 Northeast Region Meeting "Integration of New technologies Enhances Underwater Inspection" on October 9, 2015 at 11:00am.

Hydro-Brace Testing

On March 26, 2015, the **Hydro-Brace®** was tested at Lehigh University to compare the capacity of the deteriorated H-pile both with and without the Hydro-Brace Steel H-Pile Repair System. We are excited to say the test results far exceeded our expectations and definitively confirmed the structural capacity of the repair system.

Company Core Values

It was difficult, but we finally pinned down our company Core Values. There are so many words that would easily represent us, but we felt that the following fit us the best:

- **Professionalism** - Putting our best foot forward and backing it with our actions
- **Team** - Collaboration and Support
- **Innovative** - Creativity and open mindedness
- **Drive** - Motivated and determined

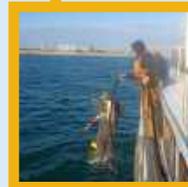
Project Highlights



In 2015 W.J. Castle completed the underwater inspection of Morris Nathanson Bridge over Blackstone River in Pawtucket for Rhode Island Department of Transportation.



In 2015 W.J. Castle performed the fathometric survey of Cross Bay Boulevard Bridge over Jamaica Bay for Triborough Bridge & Tunnel Authority.



In 2015 Hydro-Marine completed the Outfall Anchor Replacement & Repair for the Long Branch Sewerage Authority.



In 2014 W.J. Castle performed the underwater inspection of the William Preston Lane Jr. Memorial Bridge carrying US Route 50 Westbound over Chesapeake Bay for the Maryland Transportation Authority.



In 2015 W.J. Castle completed the subsurface investigation along the Kanawha River in West Virginia for Potesta & Associates, Inc.



In 2015 W.J. Castle & Hydro-Marine completed the design/build for the structural repair of Pier 68S along Delaware River for the Delaware River Waterfront Corporation.

News-worthy

Nimitz Project won the DVASE 2015 Excellence in Structural Engineering Award

Featured in Underwater Magazine in Jan, May, Sept & Nov 2014 as well as July 2015

Presented at the Accelerated Bridge Conference in 2014

Presented at the PSPE conference in 2014 & 2015

Castle will be presenting at the NSPE NE Regional Conference on October 9, 2015

Hope to see you there!

We would like to introduce Hydro-Pus and Hydro-Dog. Working with engineers and construction workers... you need all the hands you can get!



To see these articles in electronic format, please visit www.wjcastlegroup.com/news-pressreleases.html

Innovative Foundation Support Design/Build for US Naval Academy

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access to the work area, which could only be accessed through the water in one location. This greatly restricted the size of materials that could be practically transported by the construction team.

W.J. Castle's alternate design included the installation of a steel grillage system installed below the existing caps, connected to the framing above with steel columns, and supported below using custom designed pile friction clamps. Fiber reinforced polymer (FRP) strips were installed to increase the shear capacity of the grade beams at the new support points. Other repair design work included: concrete spall and crack repairs of grade beams and slabs, stormwater pipe replacement; and protection of existing structural members using pile jackets, epoxy coatings and specialty paints. The steel grillage system was approximately 1/10th the weight of the original concrete collar concept, but was still able to maintain the same load criteria. Another benefit of the system was that the steel was easily transported through the access hatch and was custom designed for each of the pile cap configurations. The repairs to the library foundation were required to have a life span of 70 years with minimum maintenance

costs. This fact was key in determining the protective coatings used on the concrete caps and the steel components.

Hydro-Marine completed all of the construction of the repairs, including the steel grillage system at the pile caps as well as the concrete repairs to the caps and grade beams. Additional deteriorated caps and grade beams were noted in other sections of the library foundation and were repaired in similar fashion. All work, including the additional repairs, were completed approximately one month ahead of schedule and within budget. This project was beneficial for all our employees, highlighting the importance for value engineering, innovative thinking, and constructability.

4 Questions

We asked our employees some pertinent questions and here are their responses:

What recent projects do you believe exemplifies The Castle Group?

A couple projects that stood out in everyone's mind included the Nimitz Library Foundation Rehabilitation Design/Build and Pier 68S Rehabilitation Design/Build. Since both of these projects were design/build, we had the opportunity to provide value engineering and be involved in the projects from start to finish.

What is it that sets The Castle Group apart from other companies?

By incorporating both our engineering and construction knowledge, we can provide practical engineering solutions. Other companies may want to use more cookie cutter solutions, even if it is not the most efficient solution, but we look for the best solution even if we have to think outside the box.

What is your favorite part of working at The Castle Group?

The variety of projects we have the opportunity to work on makes coming to work much more interesting. Working on the same thing day in and day out can be boring so by having such a diverse project list we can look forward to something new all of the time.

What advice would you offer to other regarding working in this field?

Our field crews say "pay attention to your surroundings". The job sites in which you're working are constantly changing, and if you're not paying attention, you can quickly end up getting hurt. A little common sense goes a long way! Common sense goes a long way in the office as well and can be the difference from getting a job done simply and efficiently or going round and round in circles trying to find a solution.



Introducing the newest members of The Castle Group team!



Thea Flores
Human
Resources



Lauren
Puricelli
Receptionist



Deborah
Bragg
Accounts
Receivable



Gregory
DiCamillo
Engineer

Goodbye Muffin. . .



We are sad to say, we lost our Mascot in July of this year. Muffin had come to work everyday for the past 12 years with no complaints about anything. She would greet you every morning with a little wiggle of her tail and a happy bark and set the tone for the day. There wasn't a mean bone in her little body and loved everyone. Although she wasn't a diver she loved to swim. She will be sorely missed here at The Castle Group.



The Castle Group

Innovation in Action

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