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

Official Newsletter of The Castle Group: *Volume 6*

Walkway Over The Hudson

The Castle Group Delivers Innovative Solutions for World's Largest Pedestrian Bridge

How do you pour concrete for a bridge foundation repair when neither working from the land nor working from above are options? The Castle Group was faced with this dilemma in late 2010 after being contracted to perform substructure and foundation repairs for the Walkway Over the Hudson in Poughkeepsie, New York. Formerly known as the Poughkeepsie-Highland Railroad Bridge, the Walkway Over the Hudson was once the largest bridge in the world. With a length of approximately 1.3 miles, it currently claims the title of the longest pedestrian bridge in the world and has drawn more than 750,000 tourists since its opening to the public in October 2009.

Spanning the Hudson River for close to 125 years, the Walkway Over the Hudson had suffered damage to two of its piers. Damages on Pier 2 were likely caused by natural deterioration and settling, while the damages on Pier 3 were likely caused by barges with anchors. Overall the bridge foundations were in good condition, considering that they were built with timber in the late 1800's. Hydro-Marine Construction (HYDRO) was awarded the construction portion of the contract as the lowest bidder at $890,000 and worked alongside Bergmann Associates, who provided the engineering services.

With construction starting in September 2010, HYDRO was immediately faced with a difficult situation. In order to repair the bridge foundation, the damaged piers required concrete to be pumped into the voids. Since the damaged piers were located in the middle of the Hudson River, repairing the bridge foundations from land was not an option. With the bridge standing at 212 feet tall, pumping the concrete from above also wouldn't be a possibility due to safety concerns. Only a small amount of concrete was needed for the repair, so using a concrete batch plant would not be cost effective. Taking all of these challenges into consideration, HYDRO needed

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Bill Castle & Rick Parisi Give Presentation at TRB

The Transportation Research Board (TRB) 90th Annual Meeting was held on January 23-27 in Washington, D.C. The TRB involves all aspects of transportation including highway, rail, freight, water, and air. Bill Castle & Rick Parisi presented a paper on the Roebling Bridge Rehabilitation project during Session 219: Steel Bridge Topics.

CASTLE Awarded PSPE OEA

On December 2, 2010 the Pennsylvania Society of Professional Engineering (PSPE) awarded The Castle Group with Honorable Mention at the Delaware Valley Outstanding Engineering Awards Dinner. Castle's Race Street Pier Rehabilitation project competed against SEPTA's Silverline, CBS-3's Mobile Weather Lab, and Maida Engineer's Modifications to Update Essential Electric Generation. Congratulations to everyone on great engineering and presentations!

Have Your Next Meeting at the Bollard Room

The Castle Group is proud to announce the opening of our Bollard Room. The Bollard Room is a new conference space with the latest technology and classroom seating for 40.

- **Room Uses:** Meetings, seminars, conferences, training, workshops, events and more!
- **Technology Capabilities:** 685 Smart Board, computer, and projector
- **Seating:** Comfortable classroom seating for 40
- **Space:** Approximately 1,200 square feet
- **Catering:** Available upon request (breakfast/lunch/dinner/snacks)
- **Room Rental Cost:** Please inquire with Melissa Raduns at mraduns@wjcastlegroup.com

About the Bollard Room:

This room's unique name was inspired by a recent Castle project at Race Street Pier in Philadelphia, Pennsylvania. Formerly known as Pier 11, Race Street Pier is presently being rehabilitated into a one-acre public park. In an effort to preserve history, Castle was given permission to keep two of the old and rusted mooring bollards from Pier 11. These refurbished bollards can now be seen on display in Castle's new conference space.

"There's always one."

Featured Service
Design/Build

Why hire two different firms to perform your engineering and construction? Did you know that hiring one company to manage your entire project could save you up to 30% on your labor and materials costs? Not only do you save money, but you also drastically reduce the project schedule. Design/Build eliminates the hassle of dealing with multiple subcontractors with overlapping responsibilities and objectives. With Design/Build, one company manages your project from start to finish, ensuring consistency, convenience and accountability.

The Castle Group is comprised of three separate, yet interrelating companies. With this synergy, we have the ability to handle every aspect of your project from initial engineering designs and diagnosis to permits and construction. Our approach is to look at every aspect of your project and deliver highly integrated solutions that meet your schedule and your budget.

Why Use Design/Build?
- Lower the overall cost of your project
- Cut months off your project schedule
- Seamless project management

Look How Much Clients Save by Using Design / Build

Walkway Over the Hudson
- Engineering and construction team worked together to deliver innovative solutions
- Final project cost was $600K less than the engineer's estimate

Conrail
- Other bidders wanted to shut down rail operations for construction
- By working from the water and not interrupting the rail service Castle & Hydro saved Conrail $1M per day in revenue

To find out more about The Castle Group's Design/Build services, call us today at 800-644-4713.

Recently Featured In

The Castle Group has recently been featured in the following publications:

CE News
January 2011, Pages 10 - 11

Constructioneer
January 2011, Page 31

Public Works
December 14, 2010, Web Article

Inland Port Magazine
November/December 2010, Page 20

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

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to come up with an innovative and cost effective solution. After consulting with the W.J. Castle, P.E. & Associates (CASTLE) engineering team, HYDRO decided that the concrete would be delivered to the project site via cement trucks. This decision alone helped to save the client approximately $250,000 on the project.

The next challenge was finding a way to transport the cement trucks to the middle of the Hudson River. The CASTLE team decided the best course of action would be to transport the trucks on a barge. The first course of action was finding a cement company that would allow HYDRO to put their truck on a barge. The next step was then finding the barge. HYDRO decided to use a 1,000 ton, 130' x 35' x 11' aggregate barge. After finding a dock facility in Poughkeepsie that would be able to support the weight of the cement trucks, engineers from CASTLE assisted with designing the ramps to load the trucks on to the barges. Fabricated by Joseph Fazzio, Inc., each ramp was 30 feet long, 28 inches wide, and hinged onto the barge. Hinging the ramps required modifications to the barge. After the trucks were safely loaded on to the barges, HYDRO's Devil's Bridge push boat, along with another push boat, helped transport the barges to the damaged piers.

On Pier 3, a wall was built underwater using 14 long grout bags. This wall was able to keep the larger pumpable grout in place. Divers then took the hose from the pumper and filled the grout bags with concrete. On Pier 2, it was determined that the voids were too narrow to use grout bags, so concrete had to be pumped directly into the voids. To contain the concrete, filter fabric and formwork were placed over the voids. HYDRO divers went approximately 42 feet underwater to pump concrete through the ports in the fabric, which were available every 5 feet.

"From our earliest interactions on the scope of work through completion of the as-built drawings you and your team were very professional and most responsive. This work was completed on schedule and at the conracted cost with virtually no issues. This is a sign of excellent planning and execution. Congratulations and thanks to you and all of your team members."

- Mike Duffy: Walkway Over the Hudson Construction Coordinator

"By thinking innovatively, the final project cost came in at $600,000 less than the engineer's estimate for the project," said Melissa Raduns, Marketing Coordinator at The Castle Group. "The Walkway Over the Hudson is yet another example of how CASTLE continues to deliver innovative and cost effective solutions for our clients."

The Walkway Over the Hudson continues to be a popular tourist spot, and is only planned to increase in popularity over next few years. Plans are in progress to build retail and restaurant space along the walkway entrance, as well as an elevator to link the Poughkeepsie side of the walkway to the city's Metro-North Railroad station below. Elizabeth Waldstein-Hart, Executive Director of Walkway Over the Hudson, says, "When you go out there, it's just amazing. You're so high up. You see the Catskills. You see the beautiful river winding its way through the Hudson Valley, and it changes every single day."

Did you *Know?*

Name: Roger O. Weber P.E. (New Jersey)

Member: American Society of Civil Engineers and Engineers Ireland

Hometown: Born in Montclair, NJ. Present permanent address is Drumquin, Co. Tyrone, Northern Ireland

Education: BSce Civil Engineering, Worcester Polytechnic Institute

Recent Castle Projects and your role in them:

1. Sussex County Engineering Design Services related to sub-structural rehabilitation Bridge KO-3 - Project Engineer
2. Camden County Engineering Design Services for the replacement of Bridge 4C-7 - Project Manager
3. Centerton Lake Dam Rehabilitation Design - Project Manager
4. West Milford Township Crescent Road Bridge Design Replacement - Project Manager
5. City of Trenton Engineering Services for the Repair of Trenton Marine Terminal - Project Manager

What do you like best about your job: The diversity, from the different types of project to working with contractors to various authorities.

Word that describes you best: Fun - loving

Volunteer work: Started a basketball club in my local area of Ireland in 1999 as there was very little sport in schools. Acquired qualification as basketball coach and coached all ages from 8 to adult for 10 years. Was also chairman, treasurer and secretary of the club along with the main coach for several years until other individual came along to help. Sat on the steering committees for Basketball Northern Ireland and Basketball Ireland.

Professional goals: Opening an office of WJ Castle in Ireland. Becoming a Chartered Engineer in Ireland.

Little-known fact about you: Played Ultimate for over 20 years, a wonderful field sport using a flying disc but with no officials. It is played worldwide with national and international championships. Every college in the US will probably have a very enthusiastic club. It is part of the World Games but has not yet reached Olympic Status.

Favorite Vacation Spot: Anywhere warm, preferably rural and/or uncrowded.

company*News*

The Castle Group presents at Port & Terminal Techology 2011

This year's Port & Terminal Conference took place in Houston, Texas at the JW Marriot on April 12-13. Bill Castle and Rick Parisi presented their paper on the Quay Pier Rehabilitation Project.

For more information about this project, please visit the Projects Page on our website: www.wjcastlegroup.com/projects

We would like to introduce the newest members of The Castle Group Team:

Suzanne Cutts
Proposal Coordinator
September 2010

Lisa Buarne
Administrative Assistant
December 2010

The Castle Group
Innovation in Action
Tynddol Building
1345 Route 38 West
Hainesport, NJ 08036