PCANY MONTHLY NEWSLETTER

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New Big Chickees Bridge Replaces Historic Tied-Through Arch Bridge

Designed in 1916 and put in service in 1922, the original reinforced concrete tied arch is believed to be one of only four of its kind in the state of Pennsylvania. The County of Lancaster wanted a context sensitive design that reflected the significant architectural, historical, and structural features of the old bridge. This meant incorporating the same architectural and historical details of the original tied-through arch bridge in the new structure. Similar to their old covered bridges, utilizing supporting beams of any material or shape under the deck was not acceptable; the reinforced concrete arch and deck for the replacement structure must continue to function as load carrying structural members.

Original Auction Road Bridge

Auction Road Bridge (December, 2008)

The Auction Road Bridge needed to be replaced for multiple reasons. First and foremost, the structural concrete arch and deck exhibited severe deterioration, with cracked concrete members and exposed rebar. As a result of the structural deterioration, the bridge load rating was reduced to only five tons. This weight restriction was significant because Auction Road serves as a main thoroughfare for the largest auto auction in the country. Located close by the bridge, the auction handles over 9000 cars per week, and the weight restriction was limiting options for incoming auction traffic and deliveries. Finally, the old structure was limited to one lane with very steep approaches, and did not have a safety curb or barrier.

And rather than replace the former structure by utilizing adjacent prestressed box beams and non-load bearing architectural arches, the county wanted the new structure to preserve the complete historical integrity of the old. Consequently, the precast arches were designed as the main structural elements of the replacement bridge, even as adjustments to the former poor sight distances expanded the bridge from a 58' span with one lane to a 70' span with two 10' lanes plus two 4' shoulders.

The straight bottom chord and arched top chord of the trusses are roughly three feet wide by two feet deep and incorporate approximately 25,000 pounds of reinforcing and temporary post tensioning strands per truss. One of the first challenges in the plant fabrication process was the construction of complex curved forms to a very tight tolerance of +/- 1/16th of an inch! This tight tolerance was necessary to ensure the large quantity of mild reinforcing and post tensioning strands would fit in the form while maintaining necessary clearances to the edge of the form. The trusses were cast using concrete of 8,000 psi strength, and the cast-in-place deck called for a compressive strength of 4,000 psi. The temporary p/t strands were necessary for handling, shipping, and erection. The arches were fabricated, stored, and transported lying on their sides. Once the arches were removed from the delivery trucks during the mandatory nighttime erection, the contractor rotated the arches in the air and then placed them on the reinforced concrete abutments. A large factor in this projects success was the excellent team work, coordination and determination by the players: Lancaster County, project designer RETTEW Associates, Kingsley Construction Corp., and precaster Newcrete Products.

(continued on page 2)

New Big Chickees Bridge *(continued)*

Arch Fabrication

Overnight Arch Erection

Grand Opening of New 'Walkway Over The Hudson' Scheduled in October Celebrating the 400th Anniversary of Henry Hudson's Maiden Voyage

The 121-year-old historic Poughkeepsie Highland Railroad Bridge between the cities of Poughkeepsie and Lloyd, closed to railroad traffic after a fire in 1974, is about to become the world's longest pedestrian bridge at nearly 7,000 feet. After detailed inspection of the existing bridge determined the structure could be repaired and saved, a demolition contract to remove all existing steel rails, timber ties and abandoned utilities, and contracts for steel repairs, materials and fabrication of precast deck panels commenced.

The 973 concrete deck slabs, typically 15 tons and 25 feet wide (some up to 18 tons), were built by the Fort Miller Company. Using a custom hinged form-liner built by the company, each slab was cast upside down to get to better finished top side, leaving a nice walking/wearing surface. Bergmann Associates were the engineers for the work, and Harrison and Burrowes Bridge Constructors was the winning contractor. ❑

Rendering of finished bridge

Installation of precast deck units

Thanks to the providers of stories and photos for this edition (in the order they appear): Dennis Campbell, Alan Derr, Scott Harrigan, and David Wan.

Hollow Core Plank for New Retirement Community Provides Non-Combustible, Sound Deadening, and Fast Construction

Touted as the finest retirement community on Long Island, built on 9 acres bordering Long Island Sound, the project includes a variety of apartment types from standard to upscale penthouse residences; there are a total of 226 independent units with almost half offering full assisted care living.

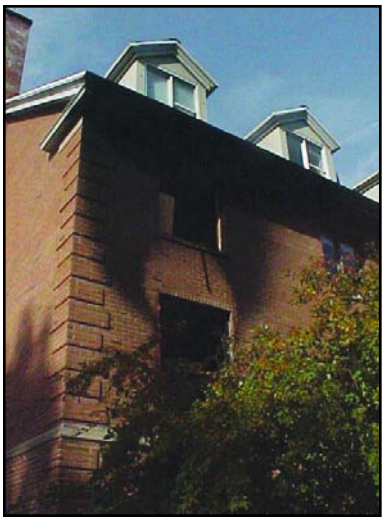
Oldcastle Precast Building Systems supplied 586,308 sf of 8-inch thick hollow core plank for the floor and roof components. Special end slabs were cast to accommodate custom architectural window features. Credits: Perkins Eastman Architects, Goldstein Associates Engineer, Pike Construction GC, Amsterdam House Continuing Care Retirement Community Owner.

Amsterdam at Harborside, Port Washington, NY
Photo by: Oldcastle Precast Building System

More On Non-Combustible Housing

The Institute for Business and Home Safety, a nonprofit organization that advances robust wall construction typical of concrete or masonry methods, is endorsing legislation incentivizing statewide building code adoption and enforcement. They offer substantiating research that strong building codes provide safety benefits and cost-effectiveness. Remember the Rees Hall fire at Hobart and William Smith College?

Reese Hall



Burned out windows

A fire broke out in one room, intense enough to even blow out the window of the room above, crack the concrete lintel, and pop the face off the outside bricks. Inside the room, the temperature quickly rose to 1800 degrees, engulfing the complete room contents in flames. The concrete plank quickly became heated, but provided separation for the room above and the rest of the building. The fleeing occupant left the door open, allowing escaping heat to melt the exit sign and fire alarm at the opposite end of the hall.

In the room above, the floor got hot enough to delaminate the tile floor, and the heat pouring in from the blown-out window melted the light, smoke detector, and other items within the room. Yet the structural integrity of the of the building remained intact due to the precast concrete floor planks on masonry bearing wall construction.

Mr. Christopher Button, Sr. Project Manager, said: “Until witnessing the Rees fire, I believed that in most buildings with fire alarms, fires were a relatively safe event. But seeing the damage that was caused in such a short period of time made me a believer in concrete buildings. Because of its reduced insurance, maintenance costs, and added safety, if I had to build another building, I’d go with concrete…absolutely.”

The then estimated cost to make the repairs was $100,000, for a dorm estimated at the time at $4 to $5 million. The rooms were repaired in one month, The rest of the dorm was back in service within a week.

Recent PCANY Changes

Longtime Producer Member **Schuylkill Products, Inc.,** Cressona, PA. is now **Northeast Prestressed Products, LLC;** new owner Glenn O. Hawbaker, G.C. has retained all former staff members.

Associate Member **St. Lawrence Cement Co.** is now **Holcim (US) Inc.,** Hudson, NY.

Federal White Cement, Eastern Region, is now located in Emmaus, PA.

Consult the PCANY website (www.pcany.org) for all member listings, including contact names and numbers, email addresses and website links, and descriptions of their products and services.

Congratulations to Professional Member **Delta Engineers & Architects, P.C.** on becoming certified as having a management system that fulfills the ISO (International Organization for Standardization) 9001: 2000 standard. ISO 9001 :2000 provides a framework for Delta's Quality Management System that includes documented processes for their production and quality control activities.

Precast Concrete Association of New York, Inc.
2829 East Avenue
Rochester, NY 14610
Tel: 585-249-9564 • Fax: 585-381-0945
Email: pcany@aol.com
Web: www.pcany.org

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