

Focus of This Issue: Culverts and Bridges

Precast Box Culverts Replace Storm Damaged Structures



Lower Cross Road, first pieces going in



(All photos by Lamont Engineers)

The floods of 2006 were a terrible natural disaster for New York's Oneonta region. Lamont Engineers, P.C. were hired to design replacement structures for three culverts that were destroyed, Lower Cross Road, Reservoir Road North, and Sprague Road. According to Francois Vedier, P.E., Principal Engineer who designed and oversaw the projects, precast was chosen to facilitate getting the work out of the stream bed quickly.

The culverts, designed for HS25 loading, varied from 7'x12' (inside) to 12'x16'. In all, 19 sections were used, all made of 6000 psi SCC concrete. Adjacent pieces were pulled tightly together with top and bottom external clamps, seen in some photos, and then removed. This allowed the smooth, continuous application of an exterior waterproofing membrane, placed to add further protection against attack from moisture and road salt over time.

As can be seen in the finished photos, an overburden was next placed on the culverts, guard rails were installed, and then the asphaltic wearing surface laid. Also, a 2 ft layer of local material was replaced on the culvert bottoms, to restore the nature of the original stream. All work was funded by FEMA and SEMO. Lakelands Concrete Products, Lima, NY was the precast supplier ("Very happy with them", said Mr. Vedier);

Eastman Associates, Oneonta was the general contractor. Thanks also to Doug VanDeusen, Lamont Engineers, for originally sending the photos, and Chad Bond of Lakelands for his help ("the culverts were remarkably simple").



Preparing to set toe-wall

(continued on page 2)



L-shaped wing wall being placed



Readying connecting and head-wall pours



Restoring utility and beauty to Oneonta's streams



DOD: Measure Requires Life-Cycle Cost Consideration

The \$612-billion 2009 DOD authorization bill requires the department to consider the long-range cost-effectiveness of proposed future projects, looking not only at their sustainability, but also their durability.

"If a stick-built structure is wiped out by a hurricane, why replace it with another stick-built structure?" asks Bill Plenge, NCMA government affairs liaison, who pushed for the life cycle provision. "If the intent is to have some of these structures last for

50 years or more, it's common sense to build them with materials that will hold up."

"There are lots of materials you can use to get sustainable credits that aren't durable," he adds. But he points out that credits can be garnered for items such as concrete if it contains recycled materials. "Build it out of something durable and rugged that also gets you the credits for sustainable design," he says.

{by Bruce Buckley, ENR Oct '08}

Bridge Design Specifications Become New Industry Standards

Researchers in the Civil Engineering Department at the University of Texas at Arlington (UTA) investigated the shear capacities of precast reinforced concrete box culverts. The team conducted experiments using both finite element analysis and full-scale experimental testing. Twenty eight full-scale culverts with different geometric dimensions and weighing as much as 47,000 pounds were loaded to the point of failure.

Three-dimensional finite element models with coupled non-linear analysis algorithms developed at UTA were validated and used for further parametric study. These were capable of accurately predicting the load deformation and crack initiation and propagation up to failure. AASHTO has notified Dr. Abolmaali, lead researcher for this project at UTA, that the results of his study have been incorporated into the Load and Resistance Factor Design Specifications for both Concrete Design and Culvert Structures, replacing the current national bridge design code.

{from Sept/Oct Precast Inc.}

Congratulations -

Stantec Highway Project Ranked Best in New York

The recent \$140 million reconstruction of the Interstate 86/US Route 15 intersection in Painted Post, designed by Rochester firm Stantec, has earned award of merit honors from *New York Construction* magazine in its Best of '08 rankings. Stantec's design converted the diamond-shaped intersection into a "system" interchange in which free-flow connections between the roadways replaced traffic-light-controlled intersections. This new system not only keeps traffic flowing more smoothly, but it also separates local traffic from the busy highway and reconnects the communities of Painted Post and Gang Mills.

{The Rochester Engineer, Nov '08}



Precast Concrete Traffic Barriers



Precast concrete traffic barriers save lives and serve as security features, temporary barriers in construction zones or as permanent barriers along busy roads and highways. Precast concrete traffic barriers are designed to safely lift, realign and slow stray vehicles. Precast concrete traffic barriers and connections are crash tested in accordance with NCHRP 350 meeting FHWA requirements. Barrier designs vary throughout North America and are often controlled by the respec-

tive departments of transportation having jurisdiction. However, there are three primary barrier shapes: Jersey, F-Shape and Single Slope. Precast concrete manufacturers typically carry an extensive inventory of barrier readily available for rent or purchase. When safety (**and quality**) matters, think precast concrete.

(article from NPCA,
photos by Kistner Concrete Products)

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MONTHLY NEWSLETTER

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Newsletters Via Email

The world is 'going green' and digital at an ever increasing pace. Each year postal costs go up, and more trees come down. Please advise PCANY to receive your copy of this newsletter via email, insuring faster delivery, having all photos in color, and the ability to pass it around to others, save it, delete it, etc. Thanks for your help – *the Editor*.

PCANY ANNUAL MEETING – 1:00 p.m., January 28, 2009, AGC Office, Albany, NY.

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