

## Focus of This Issue: Bridge Structures, a Variety of Types

### New York's' First Decked Bulb Tee Project

The PCEF beam (Prestressed Concrete Committee for Economic Fabrication) has gained use around the country for its' many advantages, including fast installation, no composite deck slab to be formed and poured, and its low, open, accessible profile. For the first such bridge designed by the NYSDOT, 85 foot long, 47" deep beams with a 60" top flange, have been installed on Rt. 31 over the Canandaigua Outlet in Lyons, NY. Troy M. Jenkins, PE, Chief Engineer at Northeast Prestressed Products, LLC said they decided on their own to pre-erect the beams in their yard to be sure everything fit correctly. The joint closure will be made with Ductal concrete of 24,000 psi design strength.



Decked bulb tee beams being set up in Northeast Prestressed Products plant  
Photo provided by Northeast Concrete Products



Beams being erected onsite



Detail preparation – anchorage, connections, etc.

A very specific, detailed erection plan was prepared by Erdman Anthony, specifying crane location, beam tie downs at end abutments, top flange blocking and transverse load binding; it states that intermediate cast-in-place diaphragms shall be installed prior to the removal of beam

tie downs and top flange blocking. The upper part of the beam end tie downs can be seen in one of the photos above; they are the one foot square steel plates with #6 Williams all thread bar protruding on a slight angle, which

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### New York's First Decked Bulb Tee Project *(continued)*



Jacking frame used to adjust beam cambers

go through the beam flange to anchor below into the end abutment. Reinforcing (all epoxy coated) for the vehicle barrier was cast in the outer beams at the plant. Beam cambers must be very close, as a waterproofing membrane and wearing overlay will be placed directly on the beams after intermediate diaphragms and joint closures



Forming and reinforcing for lateral diaphragm

are completed. Thus a mid-span jacking frame was used to adjust all beam cambers (as seen above).

Thanks to Michael Twiss, P.E. and Jerry Fasolt, P.E., New York State Department of Transportation, for the erection photos and help with the details. □

## Moorman Creek Crossing Needed a 40-Foot Span *On a 30-Degree Skew*



Lawton Road Bridge

Photos: by Dewberry-Goodkind, Rochester, NY

The Lawton Road Bridge over Moorman Creek, in Monroe County, NY, was replaced in 2008 with a 40 foot Hy-Span three-sided precast concrete structure supported on cast-in-place footings on steel H-piles. The structure was geometrically laid out on a 30 degree skew (a uniquely large span and skew for a three-sided precast structure), effectively conveying stream flow beneath the roadway. The wingwalls are comprised of two precast wingwalls and two cast in place wingwalls to avoid utility

impacts. The structure is owned and maintained by the Monroe County Department of Transportation. Dewberry-Goodkind, Inc. was the design engineer, Keeler Construction Co., Inc. was the general contractor, and the Hy-Span units were fabricated and supplied by the Fort Miller Company. Thanks to Christopher Sichak, P.E., Structural Project Manager, Dewberry, for submitting this article and the photos.

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### Moorman Creek Crossing (continued)



**Hy-Span Installation**



**Setting Precast Wingwall**

Actual design of reinforcing, member thickness, lifting and handling details, etc. were handled by the Fort Miller engineering staff, using their own design program, according to Scott Harrigan, P.E. They typically cast these members up-side down inside their plant. □

## Every Where You Look – Precast Box Culverts !



**Start With Two Apron Type Wing Walls....**



**Then Place 7 Box Culvert Sections, and Repeat...**

But look closely, because they go in very quickly. On this NYSDOT project, on Rt. 353 in Dayton, NY, the Contractor, Lakestone Development, Inc. placed these 11 culvert sections (19'-6" x 5'-7" inside dimensions) in less than 8 hours.



**12'-0" x 6'-0" ID Box Culverts make.....**



**Great Septic Tanks, too!**

For the Jelly Stone Camp site in North Java, NY, contractor Mike Curren, working with the NYSDEC and Kistner Concrete Products, used eight 22 ton box culvert sections to construct an oversized septic tank. The culvert sections are made with a very tight tolerance, single offset, watertight gasketed joint. Well done site preparation, using controlled density fill, helped speed the precast installation, which was completed in less than 8 hours. As Mike Kistner, who submitted these four photos says, "That's Fast ...Advantage Precast!!!" □

# Concrete bridges fare best in nationwide structural study

Source: Portland Cement Association, Skokie, Ill.

For all classes of road or highway systems, reinforced and prestressed concrete bridges have a significantly lower rate of structural deficiency than steel bridges, according to a new PCA analysis. "Material Usage and Condition of Existing Bridges in the U.S." reports that 72,749 of U.S. bridges studied were structurally deficient, and of that number, 54.3 percent were constructed with structural steel. Only 23.8 percent were built with reinforced concrete and 6.7 percent with prestressed concrete.

The report analyzes market share of the four major bridge construction methods in the United States. Concrete bridges have lower rates of deficiencies and, further, make up a growing share of the market. Reinforced and prestressed concrete account for nearly 70 percent of bridges built since 1980, versus a 44 percent share of the structures erected from 1950-1959. Additional information on the report can be obtained by visiting [www.cement.org/bookstore](http://www.cement.org/bookstore). □

## Notes from May 21 Joint NYSDOT/PCANY Meeting

The notes and extensive attachments from this meeting are available on our website, [www.pcany.org](http://www.pcany.org). Included are proposed revisions to the QC/QA Materials Procedure, plus a draft format of a revision for the QC/QA Approved List. Members are requested to review this, and submit comments to PCANY, for a compiled response to the DOT by 6/22/09. Not on the website but available from PCANY are advance copies of plans for another decked bulb tee project and the state's first NEXT beam project, both in the New York City area. □

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