“Synopsis - This paper provides information about the current practice for the design, construction, maintenance, repair, and inspection of adjacent precast concrete box-beam bridges. These bridges provide a popular and economical solution in many states because they can be constructed rapidly and deck forming is eliminated. The bridges may be single or multiple spans. The box beams are generally connected by grout placed in a keyway between each of the units and usually with transverse ties. Partial or full-depth keyways are typically used, incorporating grouts using various mixture proportions. Transverse ties, grouted or ungrouted, vary from a limited number of nontensioned threaded rods to several high-strength tendons, post-tensioned in multiple stages. In some cases, no topping is applied to the structure, while a non-composite topping or composite structural slab is added in other cases. Most shear key details currently used are regional standard details of uncertain origin. This information was gathered primarily from a survey of state highway agencies through the AASHTO Highway Subcommittee on Bridges and Structures and a review of the AASHTO LRFD Bridge Design Specifications.” Taken from the Precast/Prestressed Concrete Institute, PCI Journal, 200 W. Adams St, Chicago, IL 60606.
Alden-Crittenden Road Bridge over Spring Creek, Village of Alden, Erie County, NY

By Timothy E. Major, P.E. Watts Architecture & Engineering

Alden-Crittenden Road is a busy truck route in the area and the bridge is located in close proximity to the village center, the local fire hall and the Alden Central School grounds. Consequently, the Erie County Department of Public Works needed to minimize the time the bridge was out-of-service during construction because of the 5-mile off-site detour route. Watts Architecture & Engineering reviewed several bridge types with Wayne Scibor, P.E., the ECDPW’s Supervisor of Engineering and they determined that a three-sided structure was the best solution.

The three-sided structure offered a number of advantages over other solutions which included: lower initial cost, high-quality precast concrete, smooth underside with ample clearance, an attractive appearance and the strength of arch action. The main arch structure consisted of nine precast concrete ConSpan® arch units each with a 32-foot span and an 8-foot rise. These units were placed on cast-in-place concrete footings founded on steel H-piles. Precast headwalls and wingwalls were also included in the design.

The use of precast bridge components provided the ECDPW with an efficiently constructed bridge that saved time (less than three months construction) and money (construction cost - $550,000) and a structure that will last and perform well for years to come.

Project credits include: Owner – Erie County Department of Public Works; Engineer – Watts Architecture and Engineering, P.C.; Contractor – Concrete Applied Technology Corporation (CATCO)

Congratulations to Our Professional Members Listed In Various Categories in the Engineering News-Record, April 25, 2011 Issue, Which Highlights THE TOP 500 DESIGN FIRMS:

AECOM TECHNOLOGY CORP* • BERGMANN ASSOCIATES INC. • CDM • CHA* • C & S COS* • ERDMAN, ANTHONY AND ASSOCIATES INC. • GREENMAN-PEDERSEN INC* • LABELLA ASSOCIATES PC • MASER CONSULTING PA • SIMPSON GUMPertz & Heger INC* • VANASSE HANGEN BRUSTLIN INC (VHB)* • WILBUR SMITH ASSOCIATES INC*

(* these firms are also listed in THE TOP 100 PURE DESIGNERS)
Route 159 Bridge over the CSX Railroad, Rotterdam, NY

The driving force behind selecting the SpaanSpan® bridge system for the Route 159 bridge over the CSX Railroad in Rotterdam, NY, was to increase the under clearance for the railroad without increasing the profile of the approaches. High performance concrete with strengths in excess of 10,000 psi, pre-tensioned slabs and a post-tensioned finished structure provided the owner with a low-maintenance, highly-durable, precast concrete solution. This project marks the first time the NYSDOT utilized the SpaanSpan® system. The 130-ft span was accomplished with a minimal structural depth of approximately 21”.

Precast, pre-tensioned deck slab units were placed between and supported by the longitudinal edge girders. Temporary bracing and support falsework is also shown.

The longitudinal edge girders were spliced over the active tracks to provide a completed span of 130 ft. Spliced girders were used to facilitate shipping and job-site erection.

Credits: Owner: New York State Department of Transportation, Region 1
Contractor: Kubricky Construction Corp.
Engineer: Janssen & Spaans Engineering, Inc.

Precast structural components, photos, and story: The Fort Miller Co., Inc., PO Box 98, Schuylerville, NY 12871.
New Design Program for Box Culverts and Three-Sided Members

The PCANY CULVERT program, widely used for over a decade to evaluate and design single cell and multi-cell box culverts and three-sided members, has been replaced by ETCulvert™, produced and supported by PCANY Member Eriksson Technologies, Lakeland, FL. Visit LRFD.com for more information, and a demo.

ETCulvert™ is a high-performance Windows-based program that seamlessly combines the functionality of a state-of-the-art structural analysis engine with both fully-automatic design and analysis capabilities. Both AASHTO Standard and LRFD/LRFR Specifications are supported.

Reminder

PCANY Meetings, May 11, 2011; morning Association meeting, afternoon Jointly with NYSDOT, both at AGC Conference Room, 10 Airline Drive, Albany. Advise Carl if you want lunch included.

Conference Call Dial-in Number — 877-229-4100
Participant Passcode Number — 105491