



Eastern New York Chapter
of the
**ASSOCIATION FOR
BRIDGE CONSTRUCTION AND DESIGN**



NEWSLETTER

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President's Message

I hope this message finds all in good health and ready for a break from winter to spring. Over the past few months the ABCD Board and Committees have been busy preparing for the many programs that will be offered in early 2008; and taking care of the usual business that keeps this organization running. In this message, I will touch on a few of the areas that deserve your attention.

Programs and Meetings:

Thus far in 2008, we have had a lunch meeting with presentation and participated in Engineers Week presentations. In April and May we have planned two dinner meetings with presentations and a half day technical seminar.

All presentations are expected to provide PDH credits, as well as opportunities for information and peer interaction. Watch for announcements of individual events, or check the Association's web site at www.abcdeny.org for further information on planned events.

Membership:

By now, you should have received a reminder regarding membership dues. As usual, we need every member to help in expanding our ranks. Information on the recruitment program, including how it can save you money, is included in the dues notice.

We have closed out the members' survey that began last fall. The responses and comments you provided will be used in helping Eastern NY ABCD better serve our members and the Capital District Bridge Community. My thanks to all members who took the time to respond.

Annual Bridge Award:

It is not too early to be thinking about projects that you believe should be recognized with our Annual Bridge Award. Submissions will be due in May. For those who tend to get busy in the spring (I think that's most of us) gathering background information and photos during the next few weeks will make the submission process go much smoother. There is a lot of good work going on out there, let's get ready to show it off.

Annual Elections:

It's also time to start thinking about leadership in Eastern NY ABCD. This year we will be seeking to fill three (3) positions on the Board; one each as a representative of Owner, Contractor and Supplier. Some of you indicated an interest in Board service in your response to the Members Survey. I thank you for that. However, these do not necessarily align with the vacancies on the Board, and we do want to keep the balance that is a foundation plank of the association. If you have an interest, and you can spend a little as ten hours a year at Board Meetings, please contact our nominating committee chairman, or any of the association officers with your interest. Contact information is available on the web site at www.abcdeny.org.

John Brizzell, President

The Three Projects highlighted in this newsletter were all submitted for the 2006 ABCD Award Program. The winner was the Hadley Bow Bridge which was featured in the last newsletter

County Route 82 Over the East Branch Ausable River – Bridge Replacement

The original CR 82 Bridge over the East Branch of the Ausable River was a 144-year old historic timber covered bridge. This bridge replacement project involves the realignment of over 1,600 meters of county and town-owned roadways and the construction of a new bridge located 140 meters downstream from the original bridge site as the historic bridge exhibited significant structural deterioration to the extent that rehabilitation for vehicular traffic was not an option. Traffic was maintained on the existing temporary bridge and approach roadways during construction and the existing County Route 82 remained open to traffic throughout the construction of the new bridge and approach roadways. The project was progressed through the Region 1 Office of the New York State Department of Transportation (NYSDOT) under soft-match procedures using federal funds.

Barton & Loguidice, P.C., provided final design services (Phases V through VI). These services included right-of-way (ROW) mapping; preparation of visual impact mitigation measures; development of an extensive landscaping plan; preparation of a wetland mitigation plan; permit coordination with the Adirondack Park Agency (APA), United States Army Corps of Engineers (USACOE), and the New York State Department of Transportation (NYSDOT); and final project design including contract bid documents.

Bridge Specifics

Type: Two-lane, two-span Superstructure: Multiple steel plate girders with concrete deck Spans: 30.0 m and 60.0 m Total Length: 90.0 m Structural Width: 10.0 m Driving Width: 3.3 m lanes with 1.2 m shoulders Sidewalks: None Contractor: Luck Brothers, Inc.

Notable Project Features

- The structure is located in the Adirondack Park and the upstream historic bridge site and recreational area provide a picturesque visual environment. The structure incorporates the appropriate aesthetic treatments in order to blend in with the surroundings and minimize visual impacts. The profile of the structure was kept at a low level in order to meet visual impact mitigation measures stipulated as part of Design Approval.

- The replacement bridge was located 120 m downstream of its original location in order to site it outside the historic district and minimize its visual influence on the recreational and natural surroundings of the covered bridge site.
- The structural steel and guide rail utilize unpainted, non-galvanized (weathering) steel that naturally oxidizes to a reddish-brown color. The use of weathering steel and rustic guide rail provides a low-maintenance structure that is in accordance with the APA's guidelines for bridges over Wild, Scenic and Recreational Rivers.
- The exposed faces of the concrete abutments, wingwalls and piers received Custom Rock #1203 New England Drystack architectural treatment to match the pattern and texture for the abutments on the upstream covered bridge.
- The piers are located at the edge of the stream for aesthetics as well as for hydraulic reasons. Tree plantings were added to the project to blend the piers and substructure units into the surroundings from the viewpoint of the rapids upstream of the bridge.
- The project features include the use of architectural form liners for exposed concrete surfaces, installation of three highway cross-culverts, reconfiguration of six highway intersections, preparation of 20 ROW acquisition maps, reconstruction of abutments at the original bridge location, and relocation of the restored covered bridge to its original river crossing location for use as a bicycle/pedestrian crossing.
- A two-span asymmetric structure was utilized in order to cross the stream without a pier in the waterway and bridge over the recreational walkway which connects the covered bridge site to the residential and park areas east of the bridge.



Interstate Storage Pipeline Bridge

A CASE HISTORY

Background Information:

Due to the construction of a new “Light Rail System” by NJ Transit; Interstate Storage & Pipeline, a major jet fuel supplier, had to create an alternate route to their pump house. THE CASTLE GROUP was retained to design and construct a pre-fabricated bridge. Due to underground gas lines, overhead power lines, fiber optics, and NJ Transit restrictions, the use of Chance® Helical Piles was an integral part of the design. A traditional footing was unable to be utilized due to the restrictions of the site, including the steep slope of the embankments while the Chance Helical Pile Foundation System enabled CASTLE to work around the limitations.



Job Description:

Working with the NJ Transit, US Army Corp, NJDEP, US Coast Guard and local agencies, THE CASTLE GROUP was able to develop, design and construct the project within the budget and in a timely manner. Initial site visits were done to verify field conditions and determine the best layout and design. Since the new bridge was to cross over a small tidal stream, permits were required from various State and Federal Agencies. Efforts had to be made to ensure that all work performed was limited to the designated areas and not to intrude into the railroad tracks or wetland areas located adjacent to the area.

The bridge superstructure was constructed of steel stringers with diaphragms equally spaced along the length of the bridge. The bridge was prefabricated in two 8 foot wide sections, each measuring 39 feet long. The bridge was designed for HS-25 loading due to the type of vehicles that would be using the bridge. Each abutment foundation was constructed of a steel cap beam

supported by five 3½” diameter Chance Helical Piles designed and installed for a minimum of 25 tons each.

The steel cap beams were then attached to the Chance Pilings with specialized brackets designed by The Castle Group. The backwall and wingwalls were constructed of prefabricated galvanized steel plates welded to the cap beam.

Stone riprap was placed at both abutments and along the channel. A gabion wall [wire mesh encased in riprap] was installed along the fence line to act as a retaining wall.

The bridge sections were set into place and assembled within two hours while the metal deck pans and reinforcing steel were placed in one working day. The 7-inch-thick reinforced concrete deck was poured in place in one day as well.

The approach roadway to the bridge was approximately 780 feet long and was constructed of gravel and stone aggregate with asphalt milling. This type of design was chosen due to the location, type of vehicles using the road, and overall cost compared to asphalt or concrete roadway. Galvanized steel beam guiderails were attached to the bridge on the west approach and a metal swing gate was constructed on the east end of the bridge for security. A 5-foot high chain link fence, approximately 800 feet long, was constructed the entire length between the active railroad tracks and the new roadway and bridge.

The entire construction portion of the project was completed within sixty days for a total cost for the entire project of \$270,000.00, including all engineering.

CREATIVITY OF STRUCTURAL DESIGN

In order to achieve exceptional quality control, the Project was designed and constructed by **THE CASTLE GROUP** which ensured no errors or problems would occur during the construction phase. Also the bridge was designed and pre-fabricated off-site and then trucked to the location for installation. This reduced the construction time, cost and provided a superior bridge as compared to field construction.

COMPLEXITY OF CRITERIA/UNIQUE PROBLEMS

The construction of a new “Light Rail System” by *N.J. Transit* disrupted the services of *Interstate Storage and Pipeline Corporation (Interstate)*, a major jet fuel supplier to McGuire Air Force Base located in Burlington County, New Jersey. The direct access route to their pump house was eliminated; therefore, a new route and bridge were required to continue their services

without any disruption. Also, the new route and bridge had to be designed and constructed within a fixed budget.

INNOVATION APPLICATION OF NEW AND EXISTING MATERIALS OR TECHNIQUES

Previous experiences on similar projects provided **THE CASTLE GROUP** the expertise required to successfully complete this project from start to finish. All engineering, permit acquisition, construction and construction management was performed primarily by in-house personnel, which minimized costs and reduced overall project time. Project management included initial site visits and surveys to verify site conditions and determine the best layout and design for the Design/Build project. Since the new bridge had to cross a small tidal stream, permits were required from both the State and Federal agencies. Efforts had to be made to ensure that all work performed be limited to the designated areas, not to interfere with the active railroad tracks located within twenty (20) feet of the new bridge. The new bridge was designed using hot-dipped galvanized steel supported by hydraulically driven 25 Ton “CHANCE” Helical Piles. The galvanizing eliminates maintenance problems as compared to painting or other coatings. The prefabrication of the steel superstructure ensured a superior constructed bridge as compared to field construction and also decreased the duration of the construction. Helical Piling was chosen so that the bridge could be built around the existing gas and fuel lines. This eliminated any temporary or permanent utility relocation and drastically reduced the overall cost that would have been incurred. *This type of foundation is unique and according to our research has not been used on any similar bridge foundations.*

INGENUITY OF DESIGN FOR EFFICIENT USE OF MATERIAL AND LABOR

(THE CASTLE GROUP), consisting of **W.J. Castle, P.E. & Associates, P.C. (CASTLE)**, **Simplified Bridge Systems, Inc. (SBS)**, and **Hydro-Marine Construction Company, Inc. (HYDRO)** and working together with **Charles Denault from Interstate** and N.J. Transit Authority, to develop, design and construct this Project within budget and in a timely manner. *We believe this Project indicates how the private sector and government agencies can team together, work proficiently, and produce a quality and cost effective product!*

SBS and CASTLE designed and constructed a pre-fabricated bridge for the new vehicle access road to their pump house location. Also included in the project was the installation of a new gravel and stone access road approximately 780 feet long, a guiderail system, an access gate, and a new chain link fence.

HYDRO, our construction company was responsible for the construction and construction supervision from the start of the project, including demolition and site preparation, to final construction. A foundation system using a steel cap beam supported by five 3½” diameter “CHANCE” Helical Piles was used due to the presence of underground gas lines and communication cables, overhead power lines, and N.J. Transit restrictions. Once the bridge superstructure was installed, reinforcement was placed, and then the concrete deck was poured in place.

EXCEEDING CLIENT/OWNER’S NEEDS OR EXPECTATIONS

Construction of the bridge was completed in one week and opened to traffic in 3 weeks based upon testing of the concrete deck. The cost was \$270,000.00 for the entire Project.

SUITABILITY OF THE STRUCTURE FOR ITS ENVIRONMENT

The design of this Project used the following criteria when considering value and future maintenance.

1. Standardized bridge components for future replacement if required.
2. Hot-dipped galvanized coating on all steel components to eliminate or reduce future maintenance problems.
3. Helical Pile foundations for “ease” of construction and cost.
4. Prefabrication of the steel superstructure and cap beams for a superior finished product.

Structural Engineer: W.J. Castle, P.E. & Associates, P.C.
General Contractor: Hydro-Marine Construction Co., Inc.

CR 27 (Junction Road) over Schoharie Creek

The project involved the design and construction of the Junction Road bridge over the Schoharie Creek in the Town of Esperance, New York. The project was completed for the Schoharie County Department of Public Works through funding provided by the Federal Highway Administration and New York State Department of Transportation. The original truss bridge was designed and built by the Groton Iron Bridge Co. of Groton, New York in 1896. The bridge was a narrow (18 feet), two lane, steel and iron through truss bridge measuring 284 feet long and composed of a single span with an unusually tall, narrow profile. The bridge used a Pennsylvania through truss style design, a variation of the Pratt type, which has vertical compression members and diagonal tension members. The compression members were made up of riveted steel lattices, while the tension members, measuring less than three inches, were made of wrought iron. Tall (roughly 30 feet) abutments made up of large coursed limestone blocks with rough faces were built into the banks of the creek, which is about 200 feet wide at the crossing. The replacement structure, which was designed by Earth Tech, was chosen to be a simple span modified Warren truss founded on steel piles and reinforced concrete abutments. The Earth Tech design staff completed preliminary and final design phases which included a full environmental and historic review. Alternatives were prepared in accordance with the Federal 36CFR Part 800 (Section 106) and New York State Historic Preservation Office requirements.



Finite element modeling was used to analyze the truss members. Numerous custom spreadsheets were created to catalog member forces, design abutments and retaining walls, and calculate element quantities. All of these applications will be used as a basis for future projects of this type, some of which are already underway. Earth Tech's work included: roadway and stream survey, ROW plan preparation and acquisition assistance, field investigations and data collection, public participation, development of design alternatives, preparation of design approval documents, utilities relocation coordination, and all final design activities. Federal Highway Administration, New York State Department of

Transportation (NYSDOT) and Schoharie County provided funding for the project.

Tioga Construction Co. was the general contractor for the project and completed most of the major elements of work including pile driving, earthwork, concrete pours and steel erection. The contract was awarded to Tioga on October 11, 2005 for \$3.86M. A ribbon-cutting ceremony to officially open the new structure was held on December 1, 2006 and was attended by many of the neighboring towns' dignitaries as well as representatives from the Schoharie County DPW.

Owner: Schoharie County
Designer: Earth Tech Northeast, Inc
Contractor: Tioga Construction Co., Inc.
Engineer-in-Charge: Robert Van Deusen
Key Suppliers:

Truss Members – STS Steel

Concrete – Cranesville Block Co, Inc.

Rebar – Whiteacre Eng./EJ Construction

Stone Fill – Carver Sand & Gravel, LLC

Select Fill – Carver Sand & Gravel, LLC

Asphalt – Cobleskill Stone Products

Signs – Pavilion Drainage Supply Co., Inc. (new

permanent) Donnelly Construction, Inc. (temporary)

Piles – Skyline Steel Corporation

Upcoming events include:

- June 13, Annual Meeting of the General Membership at the Saratoga Raceway



www.abcdeny.org

2007-2008 Key Contacts Board of Directors

<u>Name</u>	<u>Position</u>	<u>Representing</u>	<u>Phone</u>	<u>e-mail</u>
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Committee Chairs

<u>Standing Committee</u>	<u>Chair</u>	<u>Phone</u>	<u>e-mail</u>	<u>Board Liaison</u>
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Membership	Cory Ingerson	465-6254	nccllc4@msn.com	Ingerson
Nominating	Jim Brundige	438-3976	jim.brundige@ahharris.com	Brundige
Newsletter	Scott Davis	(845) 883-5078	DavisS@erdmananthony.com	Olstad
Public Relations	Dominick Izzo	294-9964	dizzo@lancdev.com	Izzo
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