



Upcoming Events

**Land Development and Younger Member Groups
Joint Event** March 22

**ASCE Aluminum Structural Design with the 2010
Aluminum Design Manual Seminar** March 22 – 23

Construction Group Event March 29

Infrastructure Group Course April 4 – 5

BSCES Student Night 2012 April 5

Francis M. Keville Annual Dinner April 11

**ASCE Structural Condition Assessment of Existing
Structures Seminar** April 19 – 20

2012 John R. Freeman Lecture April 23

Infrastructure Group Course April 24 – 26

2012 Bertram Berger Seminar May 1

Environment and Water Resources Group Event
May 16

23rd Annual Red Sox Outings June 7 and August 22

Further Details Inside



President's Report

*by Stephen F. Rusteika, Jr., CS,
M.ASCE, Managing Principal
& Senior Project Manager
PMA Consultants LLC*

This past month, the BSCES Finance Committee and Executive Committee met at Wentworth Institute of Technology. Both meetings went extremely well and we all thoroughly enjoyed the time spent with Professor Jim Lambrechts and the ASCE Student Chapter members. As we have done at UMass-Amherst in November and Northeastern University in January, the Board invited Student Chapter officers to join us for the Board of Government meeting, to participate in the meeting and to learn more about what BSCES is doing. The Board was welcomed by Professor Lambrechts and TJ Liveston, president of the Student Chapter. Both Jim and TJ, along with numerous ASCE Student Chapter members were fantastic hosts and made board members feel welcome. As I have stated on numerous occasions, both the Board, and I personally, truly appreciate the time and effort expended making our

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BSCES NEWS

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Geo-Institute



Wickford Junction Design-Build Project, North Kingstown, Rhode Island

by Thomas E. Billups, PE, Principal, GZA GeoEnvironmental, Inc., Providence, RI

The Rhode Island Department of Transportation contracted with Manafort Brothers Construction Company (Manafort Bros.) for Design-Build (D-B) services for the Wickford Junction Train Station in North Kingstown, RI in the autumn of 2010 for an amount of around \$22,000,000. The station will serve as the southern terminus of MBTA service providing commuter rail service from North Kingstown to the T.F. Green Airport in Warwick, RI, Providence, and Boston, MA. The station is intermodal allowing for public bus access from locations throughout the state. In the future, service may expand farther to the south to Kingston, RI.

The project is located along AMTRAK's main corridor within a 150-mph rated speed zone. The station consists primarily of a 1,100-space garage for commuter parking with a lobby for ticket purchases and a coffee shop. Other features of the project include a third rail, station-access track with a 1,200-foot-long retaining wall allowing for the third track with a safety walkway. A train platform providing access to the trains from the second floor of the garage was also included. The platform and retaining wall were constructed on the west side



of the existing elevated embankment supporting AMTRAK's main line tracks.

The D-B team was selected on the basis of a proposal, weighted by both technical approach and price. The bid was based on 60 percent design plans for site work and 30 percent design plans for the station. The winning D-B team was lead by Manafort Bros. of Plainville, CT, and the team members included the following agencies and firms.

- **RIDOT** administered the project under the leadership of Mr. James Eng, formerly of the MBTA. The complexity of the stakeholders of the project is shown in the figure below. The work was completed as part of a public-private partnership between RIDOT and Wickford Junction Partners, who own the development in which the station is located and will operate the garage.

- **Parsons Brinckerhoff** of Boston, MA was the lead site engineer including the design for the vertical and horizontal alignment of the third track and platform, as well as the main plaza design and other site features.

- **Walker Parking Consultants** provided the architectural design of the station/garage, intended to reflect Rhode Island's textile mill heritage.

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CORPORATE SPONSORS



President's Report

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meetings both productive and fun. After the official meeting, board members joined several students, Jim and an old friend, Michael Kupferman, for a social event where we were treated to a very professional presentation by the students on their numerous activities and commitments. I also used this opportunity to present a check from BSCES to the Student Chapter president to support their efforts. After the presentation and some pizza and soda, the students gave board members a tour of their concrete lab and showed us their concrete canoe as well as elements of their steel bridge. The students were very proud of their work, and we could see why. For several board members, it brought back great memories of our days spent in a concrete lab or building a steel bridge, and it was a lot of fun. Thank you very much to Wentworth Institute of Technology, Professor Lambrechts, and the Student Chapter for all of their efforts. It is greatly appreciated.

This month, BSCES will be holding our Executive Committee meeting at Merrimack College in North Andover, Massachusetts on March 8th. As always, the Board is looking forward to it and anticipates a great meeting and social event with the students. Based on the three campuses we have visited so far, I expect to be wowed yet again by the strength of the Student Chapter and the students that we meet. The Board's efforts to strengthen the ties between the Student Chapters and the Board have been very fruitful and I expect will continue to be beneficial to all of us.

Just to touch on a few major events that happened in February, The Engineering Center

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Wickford Junction Project

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Station from top of stairs at access platform

- **BVH Integrated Services** of Bloomfield, CT provided the structural engineering and design for the station/garage. The structure consists of precast concrete with a stamped brick façade.
- **GZA GeoEnvironmental, Inc.** of Providence, RI provided geotechnical engineering services for both the station/garage and the site improvements including the safety walkway retaining wall.

The technical approach for the project was developed in accordance with the requirements of the Basic Technical Concepts (BTCs) that were included in the Request for Proposals (RFP). However, the RFP also allowed for the development of Alternative Technical Concepts (ATCs), which provided the D-B team the opportunity to develop creative alternative solutions to the basis of bid documents. The major ATCs proposed and accepted by RIDOT included the following.

- The Building Façade was designed by Walker Parking to resemble textile mills, an important reflection of Rhode Island's 19th and 20 century industrial history.
- The Plaza Layout and Design was modified by Parsons Brinckerhoff to enhance drop-off and pick-up commuters as well as bus service from Route 102.

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Photos pictured clockwise from upper left:
 Ames Building, Boston, MA; Storrow Drive
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 Cambridge, MA; Brandeis University, Shapiro
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Wickford Junction Project

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- The Track Profile grades and relationship of the station/garage to the Platform were modified by Parsons Brinckerhoff for enhanced access.
- The Safety Walkway Retaining Wall was changed by GZA from a soldier pile with pre-cast concrete lagging wall to a gravity retaining wall system (T-Wall). Due to incomplete access agreements with AMTRAK, RIDOT could not complete test borings along the railroad embankment and the alignment of the safety walkway retaining wall. GZA completed the borings in October of 2010, and encountered up to 3 feet of peat underlying the wall alignment. Rammed Aggregate Piers (GeoPiers) were therefore designed and installed by Helical Drilling to mitigate the potential for settlement of the wall, and to enhance global stability. The GeoPiers were installed along 800 feet of the alignment following embankment excavation to the retaining wall subgrade.

Wetland permits from the Rhode Island Department of Environmental Management (RIDEM) and AMTRAK approval of the retaining wall were based on the initial concept of a soldier pile wall with pre-cast concrete lagging. A wetland permit modification and additional approval from AMTRAK were therefore required. After preparation of plans of specifications for the wall, the local AMTRAK representative and their representative took the plans to Philadelphia and approval from AMTRAK was obtained in that same day. The participation of the Local AMTRAK staff and their consultant (HNTB) was a key component of approval for the wall alternative. The wetlands permit modification approval from RIDEM was obtained within several weeks.

- Several aspects of the platform were modified including a change from micropile foundation support to cast-in-place concrete piers on footings, and the use of pre-cast flat slabs with shorter spans instead to T-sections. Pre-cast flat slabs were made in casting beds constructed on the site by Manafort Bros.

Design of the project began in September 2010, and construction started in October.

Conclusions

RIDOT's first design build project was a resounding success due to the pro-active approach by the design-build team members, RIDOT, Wickford Junction Partners, AMTRAK and RIDEM. The project was designed and construction was substantially completed in one year. MBTA service to Wickford Junction begins in April 2012.



Aerial view



The completed retaining wall with track ballast in place—September 2011



GeoPier installation prior to retaining wall construction—note setlands at left side of photo



In September 2011, a year after beginning the design, the construction of the station was substantially complete.

Contribute to BSCESNews

Would you like to contribute to an award winning ASCE section newsletter? The BSCES Newsletter Editorial Board is seeking members who are willing to write articles for publication in *BSCESNews* or join the Editorial Board.

Typically 300 to 700 words, *BSCESNews* featured articles are about technical topics or professional matters of interest to civil engineers. The May 2012 issue of the newsletter for example, will highlight the Boston Chapter of the ASCE Coasts, Oceans, Ports, and Rivers Institute and feature one or more articles on regulatory matters impacting the civil engineering profession.

Editorial Board members meet monthly via conference call to plan upcoming issues of the newsletter. They also solicit, write and/or review newsletter articles.

For more information on how you can become a BSCESNews contributor contact BSCES Newsletter Editorial Board Chair Dave Manugian at dmanugian@town.oxford.ma.us or BSCES Association Manager Rich Keenan at rkeen@engineers.org.