

Design/Build Award Winner and Precast Showcase: Belt Parkway Bridge over Ocean Parkway, Brooklyn, NY



Main span bridge units included semi-integral abutments with overhung end closure walls, eliminating expansion joints from the bridge
All photos by Fort Miller

There are many notable aspects of this NYCDOT project that are unique and interesting. To do it justice, this project will be this month's prime newsletter story, with many parts.

DESIGN/BUILD

The New York City Department of Transportation became doubtful, back in 1999, that the rapidly deteriorating, heavily traveled Belt Parkway Bridge over Ocean Parkway in southern Brooklyn had much useful life remaining. There were other pressing needs as well, such as substandard interchange ramps, vertical clearances and sight distances, the need for new lighting, drainage, safety improvements, etc. They needed to bring this portion of the highway network up to current design standards, and plan for another 50 years of service life for the bridge.

Carrying 166,000 vehicles daily, this well traveled area is surrounded by two schools, a hospital, apartment complexes, and other normal community attributes. With about 700 trees and other shrubs and vegetation in the immediate

area, the Department of Parks and Recreation and the Art Commission required that conservation be integrated with construction. If that wasn't enough of a challenge, it was required that all lanes of the Belt Parkway be maintained during rush hours.

In summer of 2001, general contractor Granite Halmar, in conjunction with lead design consultant Gannett Fleming, invited The Fort Miller Co. to join their Design/Build Team to bid on the construction of this project. By September, the Team determined that using precast products would be essential to complete the project in the shortest period of time, while still providing superior quality. At the first Team meeting, the following key components of the project were identified which needed to be precast to meet project goals: the bridge and bridge barrier, the abutments, pier caps, and highway barrier.

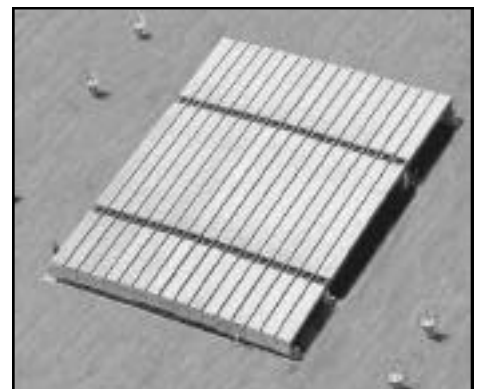
Months of planning, fine tuning, analysis, and preparation went into

building their Team presentation. Seven teams submitted proposals for the project. The local community was deeply concerned with impact to their neighborhood, to their environment, and to traffic flow. Selling their proposal wasn't easy, because the Committee making the decision didn't initially believe this \$50 million dollar project could be completed in one construction season. Nevertheless, in large part on their aggressive construction schedule, superior design, and use of innovative, high quality precast concrete products, this fast track design/build team was selected in February 2002 to perform the work ... despite not having the lowest bid!

THE PRE-ASSEMBLY PLAN

The final plan involved replacing the existing two-span bridge with a longer (215') and wider (135') continuous three span bridge. To mitigate multi-shifting and high jobsite labor crews, while maintaining a one-season schedule, Fort Miller was asked to precast and assemble all 51 bridge segments at their plant. After prefit was checked, the bridge would be dismantled and shipped to the jobsite in detailed order, using designated truck routes to minimize local traffic impact. This pre-assembly process was completed prior to building the piers and abutments at the construction site, and the survey information generated was used during that construction.

(continued on page 2)



Belt Parkway Bridge (continued from page 1)



Steel splice plates and connecting diaphragms were pre-drilled at this time to minimize jobsite time.

PRECAST T-WALL ABUTMENTS

Precast T-Wall™ units were used to retain the soil at the abutment and wingwall locations. The units were placed around the pipe piles that supported the concrete abutment cap beams.

PRECAST CAP BEAMS

The columns that support the precast cap beams were constructed prior to demolition of the existing Belt Parkway bridge. The precast cap beams allowed construction to proceed at a rapid pace once the demolition of the existing structure was complete.



The units were placed around the pipe piles that supported the concrete abutment cap beams

Belt Parkway Bridge (continued from page 3)

ASSEMBLY OF PRECAST ELEMENTS

Inverset™ units, weighing up to 80 tons each, were shipped to the jobsite on

specialized hauling equipment. The 9 main span units over Ocean Parkway were set over a two night period, interrupting traffic for only ten minutes per closure. Each of the two approach spans

were erected in one day without traffic closures. The 1'-0" closure pour featured a stainless steel rebar loop-on-loop connection to make the concrete deck continuous. The project was completed in 2004, as promised, in under 12 months.



Bridge Design Workshop Soldout Success

PCANY continues to offer educational workshops (with PDH credits) on varying precast concrete related subjects of interest to engineers, architects, county, state and building officials, and contractors. The February 23rd morning seminar on three different aspects of precast concrete bridges was, by analysis of the attendee reviews, useful, pertinent, and of value to their work. It was so well attended that we regrettably had to turn down the last twelve people who applied.

Dr. Larry Feeser opened the morning with an overview of the many changes, corrections, and improvements made to the PCANY/NYS DOT Culvert program Version 3.1.0. He then briefly went through an example using the program to show its ease of use and extensive variety of available output. The program can be used for precast or c.i.p. concrete, in design or analysis mode, for single or multiple cell culverts. It is available from PCANY for \$495.

Ralph Verrastro, Delta Engineers, then presented an extensive survey of his first hand experience involving best practices to managing the coordination process for the design and construc-

tion of land development bridges. He touched on the responsibilities of the many players involved in a bridge project, outlined the many and diverse variables needing investigation, and pointed out many parts often overlooked or poorly executed. He illustrated numerous projects with many different precast concrete shapes and types, offered thoughts on other materials sometimes used, and was able to present some actual project costs.

The last segment was presented by Rita Saradarian, PCI New England, and Peter Stamnas, New Hampshire DOT. Rita talked about her work with the DOT's in her region on standardization of details, and her successful work in introducing and promoting the accelerated bridge concept being used with increasing regularity. Using examples, including the 104' span all precast concrete bridge replacement in New Hampshire completed last summer in 7 days, both speakers explained how project needs justified this rapid technique, and gave details of design and construction used. Pete completed his presentation with a very useful summary of what worked well, what needed improvement, what they learned, and why they will be using these techniques more often in the years to come.

It is expected that this bridge design workshop will be repeated May 19 in cooperation with the Western NY Chapter of ABCD. Look for more details in future newsletters.



Bridge Design Workshop was a sellout

Calendar of Coming Events:

- March 30-31** PCI Zone 5 Meeting, Bethlehem, PA
- April 5-9** PCI Committee Days, Chicago, IL
- April 17-20** ACI Spring Convention, New York, NY
- April 20-24** ASCE Structures Congress, New York, NY
- May 16-18** PCI QC Levels I/II, Nashville, TN
- Sept. 23-26** NPCA IOC (Industry Outlook Conference), Sarasota, FL

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Page 4

PCANY Board and Annual Meetings Held February 22

Producer, Associate, and Professional Members met in Albany to review the Association's finances and activities of the year past, and to discuss current and future initiatives for the group. It is expected that we will continue to offer educational workshops with PDH credits, hold meetings with the NYSDOT, expand our newsletter coverage and website opportunities and offerings, support the activities of the two-year-old Septic Tank Group, and participate in numerous meetings and activities throughout New York to educate and inform the entire construction community about the advantages of precast concrete. George Biro, Chief Engineer of Associate Member Stelcrete Industries, gave a presentation on the many advantages and diverse uses of special welded mats and pre-fabricated steel assemblies. Notes taken at the meetings will be sent to all members.

Salute to Excellence

The Fort Miller Company received two awards at this years MCPX Convention: first, recognition for completing 15 years in the NPCAPlant Certification Program; and second, a Quality Award of Excellence, given to each of the top three scoring companies out of nearly 200 in the Plant Certification Inspection.

Road and Bridges Magazine recently featured Top Ten Bridges of the past year. One pick was the Belt Parkway Bridge, Brooklyn, NY, which they described as including the following "innovative features: precast inverset deck units; precast t-wall abutments; precast cap beams; precast parapets; and precast approach slabs. This was a jointless bridge." And that's why it is featured in this months' newsletter.