Bruce Podwal Seminar Series

March 23, 2010, 12:10 – 1:00 PM
Venue: Exhibit Room, Steinman Hall

Design of Woodside Avenue Bridge over LIRR Main Line in Queens

By

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Abstract

Woodside Avenue Bridge is a three-span bridge over the Long Island Rail Road (LIRR) Main Line in Queens, and was built in 1915-6. About 650 trains pass underneath each day. It is very near the LIRR’s Woodside Station and NYC Transit Authority’s Woodside/61 Street Station on the No. 7 line. The bridge is owned by the NYCDOT.

The bridge has outlived its useful life, and needs replacement. Because of a very large skew angle (64° - 39° – 00”), it is not possible to build one-half of the bridge at a time while maintaining traffic on the other half. The solid wall piers have cracks and are blocking view of the train drivers. Eight alternatives were studied, and to reduce future maintenance costs and interference with the operations of the LIRR, the NYCDOT selected the alternative to design a single span bridge. The real challenge was to design the new bridge without increasing its depth even though the span was almost tripled. The LIRR required that the existing minimum vertical clearances over its six tracks must be maintained. The elevations at the top of the bridge along the Woodside Avenue could not be changed because it would affect the drainage and entrances to the buildings. The next big challenge was to devise an erection scheme that would cut down the track outages as the construction work could only be done during night and on weekends. The presentation covers design of the bridge which is almost completed. The project is on “Hold” pending availability of funding.

Bio

Lawrence King (Larry) has been in City service since 1972 holding various positions ranging from Assistant Civil Engineer to Deputy Assistant Commission of Parking as well as Director of Bridge Quality Assurance. Presently, Larry is the Deputy Chief Engineer for Roadway Bridges a position he has held since 1998. In this capacity he manages some 70 professional and administrative staff who are responsible for the design and construction of 73 bridges valued at $1.6 Billion in the current 10 year plan. Larry is a graduate of CCNY and holds a Bachelor of Civil Engineering Degree with a Professional Engineers License in NY.

Kirti Gandhi received his Bachelor’s degree in Civil Engineering with Honors from the University of Bombay. He received three advance degrees; a Master’s in Civil Engineering, a Master’s in Management Science, and a Ph.D. in Civil Engineering, from Rensselaer Polytechnic Institute in Troy, NY; where he also taught for four years as a Teaching Assistant. He started his consulting engineering firm in 1975; and in the last 35 years Gandhi Engineering has completed rehabilitation and reconstruction of more than 250 infrastructure projects, such as bridges, highways, high-rise buildings, schools, tunnels, subways, parks, parking garages, waterfront structures, etc. for 30 public agencies. One interesting project Gandhi Engineering is currently working on for Mr. Larry King is City Island Cable-Stayed Bridge in the Bronx, and the design of this bridge is 90% complete. In the last 10 years Gandhi Engineering has participated in the design of 6 award winning projects; one small reason for this success is its in-house library which contains more than 6,600 technical books and 30,000 technical articles covering a period of more than 150 years. Dr. Gandhi is licensed as a Professional Engineer in New York and four neighboring states. He is a member of three national honorary and a dozen professional societies. He has received half a dozen awards including the New York State Governor’s “Award of Excellence” for his outstanding achievements.