NYCDDC Porpoise Bridge

Built in 1937 and rehabilitated in 1984, Porpoise Bridge is a fourteen-span structure which carries Perimeter Road over Flushing River in the Flushing Meadows-Corona Park in Queens, NY. Perimeter Road has two lanes of traffic, one lane in each direction, with a nine-foot wide sidewalk on the south side of the structure. The bridge is approximately 37 feet wide (outside to outside) and 370 feet in length.

Over the years, the bridge developed significant superstructure and substructure deterioration. The superstructure is in poor condition with evidence of significant concrete deterioration. The substructure components are in fair to satisfactory condition with random spalls and cracks, with the most significant deterioration located on the nosing of the piers at the waterline.

The objective of this project is to restore the structure to good operating conditions. In order to meet this objective, AI is providing pre-scoping services for the rehabilitation or replacement of this bridge. A scoping of this nature requires a combination of various disciplines and techniques to accurately assess the condition of the structure and determine its remaining life.

Our highly qualified professionals will quantify structural, geometric, hydraulic, safety and functional deficiencies and develop rehabilitation/replacement alternatives to restore the structure to good operating condition. Operationally functional and aesthetically pleasing alternatives will be developed to minimize the disruption to motorists and pedestrians during construction. The end result will be a structure that provides decades of service with minimal maintenance requirements. The preferred alternative will meet the cost and schedule criteria established by NYCDDC. AI's partners on this project include *WXY Architecture + Urban Design, YU & Associates Engineers, P.C., M&J Engineering, P.C., Paulus, Sokolowski & Sartor, LLC, M.G. McLaren, P.C., Neglia Engineering Associates and Urban Arborist, Inc.*

RIDOT CEI Project

Since 2009, AI has been providing Rhode Island Department of Transportation (RIDOT) with on-call construction inspection services for transportation projects, statewide. This was originally a three-year assignment, and AI was granted two one-year extensions, with 2014 being the final year.

"This has been a great opportunity for us in the Rhode Island office," said Ed Parker, PE, Office Manager. "Our inspectors have been able to learn the ins-and-outs of RIDOT's construction procedures and recordkeeping, while working on so many different projects."

Since 2010, AI has provided RIDOT with inspectors during the construction season from April to December. Last year alone, we provided eight inspectors for twelve projects. They worked throughout the state on a wide variety of assignments ranging from local multi-use trails to major multi-million dollar bridge replacements. Some signature projects include the Reconstruction of the Pawtucket River Bridge, the I-95 Viaduct Replacement, the Jefferson Boulevard Bridge and the Coventry Greenway Bike Path.

"Unless we address the backlog of projects and deferred maintenance throughout the country, the cost to each American family will reach $3,100 per year in personal disposable income."

- Gregory E. DiLoreto, PE, PLS, D.WRE, FASCE - Former President, ASCE

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Services

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  - Sustainable Design
  - M/E/P - Building Systems
  - Structural Engineering
- Design-Build Services

AI News

Volume 10, No. 1 2014

A Newsletter About AI Engineers, Inc.

A ROBUST INFRASTRUCTURE IS KEY TO ECONOMIC DEVELOPMENT

Throughout history, a strong and robust infrastructure has been the cornerstone of every successful civilization. From the greatest empires of the Romans and the Ottomans to the colonial kingdoms of Great Britain and France, the ability to move people and freight freely was central to their influence throughout the world. Mobility of resources, fostered by trade routes, facilitated commerce which translated into economic growth.

Our nation's history is evidence of this fact. The industrial revolution in the United States was fueled by the advent of the railroad system during the nineteenth century. The railroad network made it possible to transport goods and services at great distances which also sprawled new towns and cities throughout the continent.

The second important phase of our nation's growth and prominence coincided with the creation of the interstate highway system between 1950 and 1970. This era witnessed unprecedented economic prosperity as it made a vast portion of our resources and population mobile. This highly interconnected network provided greater economic opportunity which led to a burgeoning middle class. It also led to the creation of suburban America because people were no longer confined to urban centers for their livelihood.

The link between infrastructure investment and growth is irrefutable. So it should come as no surprise that, today, when our infrastructure investment level is approximately 2% of the GDP, a 50% decline since 1960, our economy is experiencing an anemic growth since the financial crisis. As a nation, we have been underinvesting in our infrastructure for the past two decades at the cost of our competitiveness globally. According to *ASCE's 2013 Report Card for America's Infrastructure*, the FHWA estimates that to eliminate the nation's backlog of structurally deficient bridges by 2028, we would need to invest $20.5 billion annually, while the current level of investment is only $12.8 billion. As per a 2013 report by the USDOT, the spending on public transit systems including rail and buses has also fallen behind. It indicated that approximately $24.5 billion was needed annually to improve these systems, whereas the total spending was only $16.5 billion in 2010, the last year for which figures are available.

(Cont. on pg. 3)

SUCCESSFUL COMPLETION OF THE LARGEST ARRA PROJECT IN CT

AI recently received the *ACEC/CT 2014 Engineering Excellence Award* and the *ACEC 2014 National Recognition Award* for the replacement of Amtrak Bridge #00340 over Route 1 in Branford, CT. This project was profiled by CNN and is the largest ARRA (American Recovery and Reinvestment Act) project in CT. The objectives were to resolve the congestion issues by replacing the existing bridge and widening Route 1, as well as to address the flooding issues by adding a new culvert and reservoir.

THE ADVENT OF PUBLIC-PRIVATE PARTNERSHIP (P3)

The rising popularity of Public-Private Partnership, as a source of infrastructure investment, can be attributed to the gap in our reduced federal funding and ever growing transportation needs. According to McKinsey & Co. the total infrastructure investment needed through 2030 is estimated to be $57 trillion worldwide. It cautions that even though P3 alone may not be able to bridge the entire funding gap, it has the potential to be a significant source of investment. Standard & Poor's (S&P) predicts that this type of funding may bring in $200 billion per year to narrow the $500 billion per year infrastructure financing gap.

P3 transfers the project risk from the public sector to the private sector, which is, in turn, rewarded for assuming this risk. Private investors, therefore, ***(Cont. on pg. 2)***

Message From the President

Abul Islam, PE, FASCE

The link between infrastructure development and a nation's prosperity and progress is irrefutable. Funding future improvements is the single biggest challenge our nation faces for our bridges, railways, ports, tunnels and major highways.

Our infrastructure requires trillions of dollars over the course of the next two decades to address its aging needs. Unfortunately, over the past several years, due to congressional gridlock on spending priorities and lack of federal funding commitment, no significant progress has been made in addressing the infrastructure investment gap. However, a number of states have filled this void with novel project financing and delivery methods such as P3s, Design-Build and Construction Management at Risk. They have taken on the politically risky issues of using tolls and local user fees or taxes for transportation projects, and have successfully delivered projects. As the learning curve eases, more states/municipalities will be willing to explore these new and innovative project delivery systems. However, these alone may not address the majority of our nation's projects that lack federal government funding for transportation and freight movement.

Infrastructure projects today require that we take a holistic view of life cycle costs, embrace newer technology such as Building Information Modeling (BIM), spur stronger interest in performance based planning and promote regional approaches.

Future infrastructure demand justifies a significant increase in the next reauthorization of MAP-21. It also requires a national vision where the public and the private sectors bring to bear their respective expertise. In short, a fundamental, positive cultural shift must take place amongst both the public and the private sector for us to keep our economy growing into the 21st century.

- Abul Islam

THE ADVENT OF PUBLIC-PRIVATE PARTNERSHIP (P3)

(continued from pg. 1)

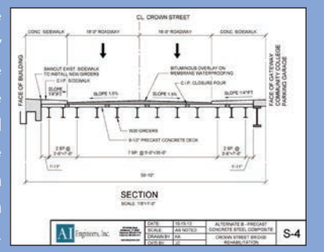
expect a healthy return on their investment to make infrastructure investment attractive. Not only are they looking for a steady revenue stream from such projects but also government assurances that their capital will be preserved. Retirement funds, endowment funds, banks, wealth managers and other institutional investors are ready and willing to invest in this sector provided the conditions are conducive to risk taking. The federal government, therefore, has to provide the necessary revenue guarantees in the form of The Moving Ahead for Progress in the 21st Century Act (MAP-21), Private Activity Bonds (PABs), tolls, insurance, etc. to draw this type of financing.

One of the P3 projects that AI is part of is the New NY Bridge replacement for the Tappan Zee Bridge in New York. Other states such as Virginia, Texas, Maryland, Florida, etc. are leading the way forward with active P3 projects. There are numerous benefits to this type of an arrangement such as lower project costs through innovation and better technology, accelerated construction schedules due to greater project oversight, and general political acceptance due to reduced financial burden on government agencies. Additionally, because such funding is allowing states and local governments to address their infrastructure challenges immediately as opposed to later in the future, it is supporting job creation and technological advances in the industry.

The growth of the Association for the Improvement of American Infrastructure (AIAI), a non-profit advocacy group for Public-Private Partnership, is testament to the increasing popularity of P3 in this country. AIAI has set out with a goal to educate the decision makers of the benefits of P3, encourage private sector investment and promote innovation. It is well understood that P3 financing cannot replace federal funding however, with a better appreciation of the industry's challenges, top decision makers will be able to make informed decisions. "…..*P3s are not only the best way to create jobs and revitalize our economy; they are fundamental to the rebuilding of our country's infrastructure and are critical to the future of this country.*" – Michael McNally, President/CEO of Skanska.

REHABILITATION OF CROWN ST. BRIDGE IN NEW HAVEN, CT

AI is providing bridge design services for the rehabilitation of the Crown Street bridge in New Haven, CT. Originally constructed in 1963, the bridge has been slowly deteriorating with time. The bridge spans over an underground service tunnel and is located directly beneath the entrance to the Gateway Community Parking Garage. Rehabilitation measures will require closure of Crown Street, which carries 4,200 vehicles per day, and more significantly, closure of the college parking garage.



AI has conducted an engineering analysis of the site conditions, critical controls, special requirements and has recommended a prefabricated Precast Concrete Steel Composite (PCSC) superstructure as the preferred structure type alternate for the rehabilitation of the bridge. PCSC has the benefit of minimizing the construction duration, accommodating existing and future utilities along Crown Street without sacrificing vertical clearance in the tunnel, and is readily repairable as necessary. To avoid disrupting the parking operations at the college, Crown Street will be closed for 28 days in the summer of 2015 to allow for the demolition and complete reconstruction of the superstructure of this bridge, allowing for the re-opening of the college parking garage for the 2015 fall semester.

A ROBUST INFRASTRUCTURE IS KEY TO ECONOMIC DEVELOPMENT

(continued from pg. 1)

Infrastructure investment in roads, rail, ports, air, energy and clean water is fundamental to the integration of urban and suburban centers. When you provide employment opportunities within geographical reach, through multi-modal transportation links, it creates economic vibrancy and dynamism in urban areas. At the same time, it also affords people the opportunity to live and raise families in the urban and suburban areas. An easily accessible job center helps both the employer and the employee by better aligning the available skill sets with the job's requirements. As such, both, commuters and businesses benefit from a higher standard of living and increased labor efficiency. Employment has a net positive effect on the economy as employees contribute to the nation's gross domestic product, generate revenues by paying taxes, create economic activity by spending, make investments in housing and retirement plans, etc.

Trade, too, is highly influenced by infrastructure capacity. A modern infrastructure that scales with the ever increasing population and its demands can move products quickly and efficiently as well as reduce the manufacturing and distribution costs. These attributes are vital to staying competitive in the global economy.

Outdated infrastructure puts significant strain on the economy in the form of higher costs, pollution, power shortages and traffic congestion. A report by Building America's Future, a bipartisan coalition of elected officials dedicated to increasing infrastructure investment, puts the annual cost of urban congestion alone at $115 billion, noting that Americans waste 4.8 billion hours per year sitting in traffic. If the costs of delays to freight movement are factored in, congestion costs reach $200 billion per year or about 1.6% of the U.S. gross domestic product.

The obvious challenge to development today is federal funding. With public spending constrained by brinkmanship, states and municipalities have had to consider other alternatives to fund their projects. Alternative delivery methods such as Public-Private Partnership (P3), Design-Build, Construction Management-At-Risk, etc. have, therefore, been gaining broader acceptance in recent years. It is important for the proponents of a stronger infrastructure, to expound on the link between infrastructure investment, job creation and economic growth. Once the public is convinced of the virtuous cycle that this kind of investment sets in; with increased employment opportunities, better wages, greater demand, competitive costs, it will attract not just public financing but also private funding support.

References: McKinsey & Co. Infrastructure productivity: How to save $1 trillion a year, ASCE 2013 Report Card for America's Infrastructure, ENR.com, Reuters U.S. agency warns of urgent need for spending on raods, bridges

17th IRF WORLD MEETING & EXHIBITION

Two of AI's transportation engineers, Muhammad Asif Iqbal, PE, LEED and Muhammad Ali, attended the 17th International Road Federation (IRF) World Meeting & Exhibition in Riyadh, the capital of the Kingdom of Saudi Arabia. This conference, held in November 2013, included technical sessions, poster presentations, an elaborate exhibition, an innovation forum and visits to signature transportation sites in Saudi Arabia. The IRF is a non-profit organization that promotes the development and maintenance of better, safer and more sustainable roads worldwide. Mr. Iqbal and Mr. Ali are both IRF fellows, participants in the prestigious program for graduate engineers to study in fields related to the development of road transportation systems. Mr. Iqbal is also the IRF Sector Coordinator for Asia.

IN OTHER NEWS

- *AI's New York City office continues to grow and has recently relocated to a larger facility at 39 Broadway, Suite 740, New York, NY 10006.*
- *AI was a proud sponsor of the VTCA Spring Transportation Construction Conference and Tradeshow, held in Hampton Roads, VA in April, 2014.*
- *AI is pleased to announce the promotions of James Hamilton, PE and Robert Gallo, PE to Associate Vice Presidents. They have been instrumental in the growth of AI's Construction Services and Civil Engineering departments respectively, and are key members of the management team.*
- *AI was recently profiled by the US Builders Review Magazine, an industry leading construction journal. The article can be accessed at http://www.aiengineers.com/media/2013-Fall-US-Builders-Review.pdf*

Employee Announcements

Awards

Manager of the Year:
Stanley Gwara, PE, LS

Leadership Award:
Jan Pacanski, PE

Employee of the Year:
Christopher Chuck, PE

Ten Years of Service:
Jonanes Joseph, PE

Project Recognition:
Amtrak Railroad Bridge Replacement, Branford, CT