

HIGHWAY PROJECTS IN PROGRAM MANAGEMENT: CASE STUDY OF PARSONS BRINCKERHOFF



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1. Parsons Brinckerhoff

1.1 About Parsons Brinckerhoff



[Figure 1 CEO of Parsons Brinckerhoff, Korea]

Parsons Brinckerhoff has a rich and proud history that extends more than 125 years. It is rich in the significance of the work our clients entrust to us and historic for the contributions our clients have made developing the infrastructures of their communities. We are privileged to be a part of this process and our clients' successes, and in some small way a participant in their history.

Parsons Brinckerhoff is a global consulting firm assisting public and private clients to plan, develop, design, construct, operate and maintain hundreds of critical infrastructure projects around the world. We know very well that the projects our clients entrust to us significantly impact the lives of those who live and work in their communities because we live and work in those same communities. It is this fact that motivates the Parsons Brinckerhoff professionals who partner with our clients to design solutions to a broad range of technical, logistical and managerial challenges.

Parsons Brinckerhoff's professionals are creative, award-winning, environmentally and socially conscious, and keenly aware of our clients' needs. Parsons Brinckerhoff is an exciting, dynamic, and innovative firm that values diversity in our workforce and welcomes new talent and experienced professionals with the same enthusiasm. Parsons Brinckerhoff has created an exemplary work environment that promotes technical excellence and professional development while maintaining the highest ethical standards and superior service to our clients around the globe (www.pbworld.com).

1.2 Organization of Parsons Brinckerhoff

Parsons Brinckerhoff is a global consulting firm assisting public and private clients to plan, develop, design, construct, operate and maintain thousands of critical infrastructure projects around the world. Founded in New York City in 1885, Parsons Brinckerhoff is a diverse company of 14,000 people in more than 150 offices on five continents.

With a strong commitment to technical excellence, a diverse workforce, and service to our clients, Parsons Brinckerhoff is currently at work on thousands of infrastructure projects throughout the world. These range from the mega-projects that define an entire

region to smaller, more local projects that keep a community humming.



[Figure 2 Worldwide Offices : Africa, Americas, Asia, Australia, Europe, Middle East]

Parsons Brinckerhoff serves both public and private clients, and offer skills and resources in strategic consulting, planning, engineering, program management, construction management, and operations and maintenance. Parsons Brinckerhoff provides services for all modes of infrastructure, including transportation, power, energy, community development, water, mining and the environment. In October 2009, Parsons Brinckerhoff became the professional services division of Balfour Beatty plc, the international infrastructure group operating in professional services, construction services, support services and infrastructure investments (www.balfourbeatty.com).

In January 2010, Heery International, architecture, interior design, engineering, construction management and program management firm based in Atlanta, Georgia (www.heery.com), became the U.S buildings operating company of Parsons Brinckerhoff. In October 2010, the Halsall Group, based in Toronto, became Parsons Brinckerhoff's Canadian operating company (www.halsall.com).

1.3 Ethics of Parsons Brinckerhoff

Parsons Brinckerhoff's reputation as a highly ethical global organization is one of its most valuable intangible assets. This reputation, forged over more than 125 years in the architectural engineering and construction management industry, provides assurances to our clients, teaming partners, vendors, and employees that the organization is committed to the highest standards for honesty, respect, integrity, and transparency.



[Figure 3 Code of Conduct of Parsons Brinckerhoff]

In support of this commitment, Parsons Brinckerhoff implemented a Global Compliance Program with its Code of Conduct and US Supplement as the cornerstone. The Code of Conduct provides guidance and instruction to all stake holders on personal and business integrity, working relationship, sustainability, company property, resources, and information management. The company insists on integrity in all aspects of its business and from those with whom it conducts business.

1.4 Heritage of Parsons Brinckerhoff

Since the founding of our company more than 125 years ago, Parsons Brinckerhoff has seen the world transition from discrete industrial societies to a technological culture. As an integral part of this

transition, the design of large-scale engineering works has proven to be an intensely human activity fueled by innovation and vision.

From its inception, Parsons Brinckerhoff has been at the forefront of this revolution. The story of Parsons Brinckerhoff is one of leadership, and our history continues to be characterized by the imprint of outstanding individuals—starting with the firm’s founder, William Barclay Parsons

2. Highways in Program Management

2.1 Introduction and Background

Transportation agencies face a common challenge: needed maintenance and improvement projects inevitably outstrip traditional funding. A further challenge is that when innovative financing does make major transportation improvement programs financially possible, the work force and expertise must be available to execute that work—at a pace and scale that dwarf typical public sector construction programs.

In South Carolina and Louisiana, the state departments of transportation engaged program management consultants to ensure delivery of specially funded, highly ambitious transportation improvement programs in record time. The approach promises a faster road to project benefits and greater value for each transportation dollar.

2.2 South Carolina’s ‘27 in 7’ Challenge

In 1999, the South Carolina Department of Transportation (SCDOT) faced a list of some 200 essential transportation projects. The Department has been mainly highway improvements aimed at expanding the capacity of hurricane evacuation

routes, relieving congestion near tourist destinations and improving safety. Under the typical “pay-as-you-go” approach, the projects would have taken 27 years to complete. Instead, SCDOT issued bonds against future state and federal revenue and compressed the bulk of the program into just seven years.

Managing such an endeavor in-house would have meant hiring and training 500 new employees, which was not feasible or cost-effective. SCDOT enlisted two firms, one of which was Parsons Brinckerhoff, as construction and resource managers to oversee a portion of the projects. By May 2011, all 45 projects under Parsons Brinckerhoff’s contract for the eastern half of the state—1,000 lane kilometers (622 lane miles) of roadway and 17 lane kilometers(10.5 lane miles) of bridge—were opened to traffic.



“SCDOT was the first department of transportation to turn to the private sector for help managing a multiyear, statewide improvement program,” explains Parsons Brinckerhoff’s Steve Page, who served as Program Director from 2005 through completion. Parsons Brinckerhoff’s responsibilities spanned program and construction management as well as financial management and right-of-way coordination. On six projects, Parsons Brinckerhoff also provided technical services from preliminary engineering through environmental assessment.

2.3 Delivering SCDOT's Vision

Jim van Loben Sels was Parsons Brinckerhoff's original Program Director, with Page serving as Director of Construction. Four project managers focused on pre-construction activities from the team's base in Columbia, South Carolina. In the field, the team had four construction managers, each responsible for about 10 projects in a specific geographic area. "We were able to mobilize quickly and provide the appropriate type and number of staff," says Page. "Within six months we had projects under construction."

The team developed sophisticated project controls tools to monitor all aspects of scheduling, budgeting and reporting. In fact, SCDOT adopted the team's financial management system and integrated transportation management system for use beyond the "27 in 7" program. The latter was a particular advance for SCDOT because it enabled data to be entered once and then be accessible from many other systems.

2.4 Collaborating Toward Completion

Tools aside, effective program management relies on close coordination and communication. "Rather than dictate schedules, it is more effective to develop plans in collaboration with consultants, contractors and other involved parties," says Page. For example, the U.S. 501 road and bridge widening project in Myrtle Beach required relocating a considerable number of utilities, which can cause delays. PB's project controls group generated a typical schedule for the work based on the construction plans. Then, says Page, "We used that baseline schedule as a starting point for discussions with various departments and utilities to demonstrate which utility relocation had to be accomplished by when, in order to complete the overall project within a reasonable amount of time. Our aim was to accelerate the baseline schedule. We

did that graphically until all the utilities—power, water, cable, telephone and fiber optics—and other involved parties were comfortable with the milestones. Then during construction everyone was focused on meeting the milestones they had helped establish."



Summarizing the program, Page says, "SCDOT took advantage of available funds and low interest rates and got much more for its money than if it had taken more time to complete the program."

2.5 The 'TIMED' is Now for Louisiana

Louisiana is bolstering its economy by investing—heavily—in transportation. The \$5 billion TIMED (Transportation Infrastructure Model for Economic Development) Program involves widening 863 kilometers (536 miles) of state high-ways to four lanes on 11 project corridors, widening and/or new construction of three major bridges, and improvements to the Port of New Orleans and Louis Armstrong International Airport.



The program was created in 1989 by the Louisiana Legislature. By 2002, it was estimated that the remaining work would take until 2031 to complete. Instead, the Louisiana Department of Transportation and Development (LADOTD) accelerated the program by issuing bonds and engaging a program management consultant. Parsons Brinckerhoff, in joint venture as Louisiana TIMED Managers (LTM), was selected to structure the financing and provide the management expertise to accelerate the program. LTM continues to manage the financing strategy as well as public outreach, scheduling, pre-construction activities and construction administration. Six years into LTM's contract, 435 kilometers (270 miles) of highway have been completed and two of the program's major bridges (see sidebar) are well under way.

2.6 Program Versus Project

"When managing a specific project, there is a defined scope, schedule and budget with items that must be tracked and managed," explains Parsons Brinckerhoff's Gay Knipper, LTM Program Director. "On a multi-project program, the team creates a program management system to guide execution of the individual projects." LTM developed a strategy manual outlining how to conduct business at each phase of a project. "It guides project teams in who to communicate with, what to track and what to anticipate during project development phases such as right-of-way acquisition." An overall program reporting system monitors comprehensive schedules, costs and progress. "Although the TIMED Program is immense, as the program managers we are able to focus all our attention on executing this one program," Knipper says. "We commit staff to manage the program and pull in specialized technical resources when needed."

2.7 Changing Winds

Even the strongest project controls, of course, cannot control the impact of hurricanes, which threaten Louisiana for six months of the year. The state was especially hard hit in 2005 with Hurricane Katrina and Hurricane Rita, and in September 2008 by Hurricane Gustav and Hurricane Ike. "The hurricanes impacted the entire Gulf Coast and drove up costs related to labor, equipment and materials—especially steel and concrete—directly impacting the TIMED Program.

Additionally, local workers had been personally affected and required time to return from evacuations to assess their own situations," says Knipper. "After Katrina, we responded immediately to assess damage and project delays. We adjusted the schedule and financial plan to continue moving forward under dramatically different circumstances," says Parsons Brinckerhoff's Ron Hartje, who served as Program Director until May 2008. He notes that subsequent material shortages required rapid redesign. "For example, local stone and gravel were consumed by U.S. Army Corps of Engineers projects, so to minimize delays we used more soil cement [a blend of soil, Portland cement and water] than aggregate base [crushed rock] in roadway construction."

2.8 Driving Home Results

The program has generated hundreds of jobs and substantial economic activity. In fact, a major focus of the program—and a legislative requirement—is to employ Louisiana-based workers for at least 80 percent of the work. "On any given day, more than 1,000 local construction and engineering staff are building, designing and managing TIMED projects," says Knipper.

In South Carolina and Louisiana, forward thinking and strategic teaming between the public and private sectors has laid the transportation groundwork for tomorrow's economic growth. And today's tangible benefits are invaluable: effective transportation market, job and smoother and safer journeys.

3. Conclusion

Founded in New York City in 1885, Parsons Brinckerhoff serves both public and private clients, and offer skills and resources in Program Management, Construction Management and Operations and Maintenance. As described above, Parsons Brinckerhoff is also dedicated in achieving the highest standards regarding ethics and code of conduct. Moreover, our capabilities include broad range including various segments: Building and Engineering, Government, Mining, Operations and Maintenance, Planning, Environment, Power, Energy, Program Management, Construction Management, Specialized Services, Strategic Consulting, Sustainable Solutions, Transportation, Visualization, and lastly, Water.

However, transportation is one of Parsons Brinckerhoff's specialized capabilities. Our experience extends to all forms of transportation, including airports, rail systems, buses, roads and ports. For instance, the groundbreaking work on the New York City subway, the Cape Cod Canal, and China's rail line are examples of our project portfolios related to transportation. Parsons Brinckerhoff sees transportation as a method to improve the communities in which we reside, and we apply the latest concepts in sustainable development to improve both social and economic conditions. The examples include sophisticated Pre-construction management of Construction Project, LTM program, TIMED management managed by professional staffs of

Parsons Brinckerhoff. The program has generated hundreds of jobs and substantial economic activity. And we expect that the programs will be fruitful to effective transportation market, job and smoother and safer journey in the future.