

“A Shot in the Arm”

Armeni Consulting Services helps many clients address estimating and scheduling challenges as the array of delivery and construction methods grows.

by Craig A. Shutt

As the demands for bridge construction grow, and the array of available techniques, materials, and delivery methods expands, many in the industry look for help with pre- and postbid services, such as estimating and scheduling. Armeni Consulting Services has grown steadily since its founding in 2007 by filling that niche.

“Contractors aren’t especially weak in these areas, but their staff can become stretched, and they can get into areas they aren’t as familiar with,” explains John Armeni, founder and president of the company based in Suwanee, Ga. “That can leave them feeling uncomfortable about their projections and calculations, so we provide an independent check on their work.”

This type of consulting service is gaining importance as projects become more

Armeni Consulting Services helped develop cost estimates and constructability methods for the segmental concrete base being used by RUTE Foundation Systems for modular wind-turbine towers. The components are cast at a precasting plant and post-tensioned at the site. Photo: Armeni Consulting Services.

complicated, budgets tighten, and schedules compress. “Contractors don’t want to over- or underestimate and get in trouble, so they want an experienced eye to review what they’re planning. We’re that ‘shot in the arm’ that lets them be confident going ahead.”

The nature of the firm’s work often leaves them in the background, which Armeni doesn’t mind. “I like to say we’re like BASF,” he says, referring to the chemical manufacturer that ran ads in the early 1990s explaining they didn’t make the products, they made the materials that made the products better. “We’re behind the people on the frontlines who lead the work.”

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In some cases, partners on the projects don’t realize Armeni’s staff is involved until they arrive at a meeting. “We often don’t get the credit, but that’s fine with us. We’re happy as long as the client’s happy and they pay on time.”

A Change in Direction

Armeni opened his consulting firm after his former company was bought out and he decided it was time to try something different. The original plan was to consult with local contractors in the Atlanta area, but he found they didn’t need his help. So Armeni switched his focus.

As the past president of the American Segmental Bridge Institute (ASBI) and the chair of the publications committee for two editions of ASBI’s *Construction Practices Handbook* (2005 and 2008), he was well known in the segmental bridge industry. “I had friends in ASBI and at departments of transportation, and I was surprised by the number of them who needed help with estimating and scheduling,” he says. “I saw there was a need, so I focused there. It wasn’t what I set out to do, but I found I enjoyed providing those services.”

Armeni’s segmental construction experience has made his firm especially popular for those types of projects, although the firm handles all types of designs. “Segmental designs are very useful for specific needs, and their use is growing,” he says. “They offer solutions to a number of specific challenges.”

For example, owners appreciate that segmental designs use concrete, which mean the structures are durable. “They require less maintenance over their lives. That’s important when looking at costs, as those lower maintenance needs can overcome the potentially higher initial cost to make a concrete design the best option.”





For Bridge 85851 in Winona, Minn., which opened in 2016, Armeni Consulting Services provided independent cost estimates. Photo: Armeni Consulting Services.

Recent Segmental Projects

In recent years, Armeni has consulted on a wide range of notable projects using segmental designs. In Portland, Ore., RUTE Foundation Systems is creating a precast concrete segmental system that reduces concrete use. The design is being used as the foundation for a modular wind-turbine tower, with the components cast in precasting plants and post-tensioned after erection. For this project, which won the 2019 Merit Award from the Post-Tensioning Institute, Armeni worked with the designer to develop detailed cost estimates and constructability methods. "Precast concrete segmental foundations that use bridge technology are new to the wind industry, and RUTE's patented technology allows wind-farm owners to reuse the foundation for multiple turbine repowering events," RUTE said.

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A more traditional segmental design project was Bridge 85851 in Winona, Minn., which opened in 2016. On this project, Armeni provided independent cost estimates. The goals for the project were to construct a new bridge parallel to an existing historic truss bridge, then rehabilitate the existing

cantilever through-truss (the main three spans) and replace its approach spans. Challenges included an aggressive schedule as well as requirements to keep the river crossing open and preserve the original truss bridge's historic importance. The 2295-ft-long new structure comprises four spans of cast-in-place, post-tensioned concrete slab and five spans of 63-in.-deep precast, pretensioned concrete girders for the south approach. The structure transitions to a three-span, single-cell, segmental box-girder unit built using the balanced-cantilever method with form travelers, followed by four spans of 63-in.-deep precast, pretensioned concrete girders for the north approach. (Bridge 85851 is featured in an article in the Winter 2017 issue of *ASPIRE*®.)

Growing Demand for Scheduling Services

"The majority of our work has been in estimating, but we're finding that many clients also need help with scheduling," Armeni says. Providing this service to owners is an important component of the company's business. The firm provides critical-path method schedules, schedule monitoring and updating, and incorporation of resources and costs into schedules. Owners often need help handling revisions to the schedule as change orders arise. Armeni works to protect the owner's interests by reviewing the contractor's timeline, providing monthly updates on progress, and explaining details of changes.

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"Owners like having [a consultant's] input, because it provides the contractor's perspective from an outside source," he explains. "Change orders and delays almost always occur, due to unknown obstructions or geotechnical obstacles. It's good for the owner to have people [other than the contractor]

A photo showing the nearly completed base of a wind-turbine tower. Photo: Armeni Consulting Services.





With no standard-bid cost history available for the Sixth Street Viaduct project in Los Angeles, Calif., Armeni helped with cost estimates as part of the CM/GC process. Rendering: Armeni Consulting Services.

who can help keep the game on a level playing field."

Clients don't always like what the consultants report, he notes. "We always tell them the truth and back that up. Change orders and claims can be contentious, and the client may not want to hear what we say about the validity of the delay and who's to blame."

Armeni has been involved in only a few contentious claims over the years, he adds. "We don't like being involved, because we often know people on both sides, and we don't want to have to take sides. We prefer working in partnership."

Scheduling complexities have been eased as software programs have become more sophisticated, he notes. About six years ago Armeni started to use TILOS linear scheduling software, which has been popular in Europe for some time.

"We're one of the few U.S. consultants using it, and we're introducing it to contractors on a regular basis," he says. "Most of our clients love it once they understand its benefits." It condenses the scheduling matrices into one page, with the bridge's length and stations along the x axis and the project timeline and structural components, such as pilings, footings, columns, caps, and superstructure, along the y axis.

"Some [clients] are resistant, but once they see how the software simplifies the key points, especially on complex segmental or cable-stayed bridges, they embrace it. They don't want to have to leaf through stacks of output if they can see the entire project in a nutshell on one page."

New Delivery Methods

Demand for Armeni's expertise is growing as delivery method options expand and

more departments of transportation encourage the use of new techniques. "We're starting to pick up more construction manager/general contractor (CM/GC) projects," Armeni says. "Owners are seeing the need for independent cost estimates. It's a definite trend."

As it did on the 85851 Bridge project, Armeni Consulting provided independent cost estimates for the Sixth Street Viaduct, a prominent infrastructure project in Los Angeles, Calif. Planned for completion in 2022, the structure will replace a 1932 bridge spanning the Los Angeles River. The structure features 10 pairs of illuminated concrete arches, which create a dramatic nighttime effect along its 3500-ft length.

"The Sixth Street Viaduct project is unique and challenging to construct—and it was equally challenging to estimate," Armeni says. "There was no standard-bid cost history for a structure like this." The firm worked with engineering firm HNTB to create an engineer's estimate, which was developed in parallel with the independent cost estimate and the Skanska/Stacy and Witbeck (SSW) joint-venture cost estimate as part of the CM/GC process. For each construction package, estimates were compiled at the 30%-, 65%-, and 90%-complete stages, and for a guaranteed maximum price. "This gave city officials more confidence in SSW's budget costs and also helped stakeholders make design decisions."

Design-Build and Public-Private Partnership Opportunities

The firm also has been involved in more design-build projects and public-private



Erection of precast concrete box-girder segment on the Cline Avenue Bridge in East Chicago, Ind. Armeni helped the design-build firm find the most cost-effective techniques for the project. Photo: FIGG Engineers.

partnerships (P3s) as clients look for new ways to shorten project timelines and control budgets. "The trend toward more design-build projects began in the mid-1990s and has gained momentum ever since," Armeni says. "It's really taken off today."

Armeni participated in his first design-build project in 1995 and has completed a large number since then. One of the most recent success stories is the Cline Avenue Bridge replacement project in East Chicago, Ind. The new, 6236-ft-long elevated expressway crosses the Indiana Harbor and Ship Canal. The segmental superstructure consists of sustainable, post-tensioned concrete single-cell box girders designed with low-maintenance features to achieve a service life of more than 150 years.

On this project, Armeni Consulting Services worked closely with bridge design-build contractor FIGG Bridge Builders from the earliest stages to find the most cost-effective strategy to resolve a variety of obstacles. The firm helped maintain cost estimates and construction schedules throughout construction.

"Design-build projects play to our strengths," Armeni says. "As a national company, we see many design ideas that states use and can help adapt them to new locations." Some concepts don't translate to new projects due to variations in soil conditions and other circumstances, he notes. "Often, the first thing a client asks is if we've seen anything that could help reduce costs or time. We present concepts we've seen that might work. They often lean on us to offer suggestions."

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The firm's involvement in P3 projects has also grown. "From our perspective, P3s aren't really that much different from design-build, except for the financing aspect—and we stay out of that completely," Armeni says.

Design-build projects typically are more challenging than design-bid-build jobs, he adds, but that's what is appealing



On the Interstate 59/20 Central Business District Bridge replacement project in Birmingham, Ala., Armeni consulted on cost estimates, schedules, and options for construction methods. Photo: Armeni Consulting Services.

about them. "Design-bid-build projects have everything laid out, so they're not as interesting and we aren't as helpful to our clients."

Still, Armeni does consult on design-bid-build efforts, such as the Interstate 59/20 Central Business District Bridge project in Birmingham, Ala. The state's busiest highway and its 36 bridges were replaced to handle vehicle demand that had tripled since the highway's construction in the 1960s. Armeni developed estimates, schedules, and construction means and methods for both pre-and postbid operations for the Alabama Department of Transportation. The firm also reviewed the contractors' monthly schedule submittals. Notably, a variety of segmental precast concrete bridges were cast offsite and delivered while other work was progressing at the site, which helped project stakeholders achieve their schedule goals. (For more details of the project, see the article about Alabama in the Spring 2019 issue of *ASPIRE*.)

What's Ahead

Armeni sees a strong future for concrete bridges, especially if tariffs drive up the cost of steel. However, the cost of reinforcing steel also will be affected by changes in international trade and other economic factors, he notes. "It's important for engineers to keep abreast of trends affecting reinforcing bar and materials such as galvanized steel, epoxy-coated, and stainless steel. The desire for 75- to 100-year service lives continues to grow, and every option needs to be examined."

The firm's own future looks bright. "Owners will continue to need help with estimating, as they can't award bridges that are overbudget to begin with." Requests for proposals often require independent estimates, which further increases the demand for the company's services.

"Every project is unique and can't use averaged estimates or schedules, and prices can be all over the place. Standard inflation increases aren't accurate enough."

Going forward, Armeni intends to retain the firm's independence. "We've had chances to get bigger and have had people look at us," he says. "But we like what we do and what we've got here. We're a small firm, but we do big work." 

Armeni's History of Help

Armeni Consulting Services was founded in 2007 and quickly began helping owners and contractors with scheduling and estimates, including updates throughout the construction process. John Armeni's resume includes more than 25 years of experience with heavy civil/bridge engineering, 18 years of onsite management experience, and over 10 years of estimating experience.

Armeni Consulting Services currently employs nine people, with most working from Suwanee, Ga., and one based in Gates, N.C.