

Public Projects Favoring Design-Build Format

– Lloyd Miller, President, N Visions Architects

State laws are encouraging shift from design-bid-build to design-build formats, and precast concrete helps create designs within that model, says architect



“The design-build system allows teams to use their expertise to offer their best response, and it gives the owner the chance to evaluate proposals on their full merit, not just cost alone. Everyone wins in this scenario.”

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The design-build approach to seeking bids for construction projects is becoming a more popular model for state governments. It offers advantages to designers and contractors, but they must be aware of the differences between this format and the more traditional design-bid-build format. Precast concrete components can help achieve the goals set out for the design-build format, allowing designers to produce economical, attractive projects on schedule.

Design-bid-build is the traditional project delivery approach to procure public works. The model segregates design and construction responsibilities by awarding them to an independent architect or engineer and to a separate contractor. In this linear fashion, design-bid-build separates the delivery process into the three described phases: design, bid and construction.



With this method, an architectural firm is hired to serve as the owner's agent. The firm provides the design and construction documents for the project and administers the construction contract. Once the construction documents and specifications are finished, the project is bid and awarded to the general contractor with the lowest bid. That company then constructs the project.

Under the design-build format, however, the owner hires the agent to both design and construct the project, using one contract. In this format, the design, budget and timeline are bid as a package, and the owner accepts the one combination that best meets the project's overall goals. That, in turn, makes the agent responsible for the entire process.

Design-build projects are becoming increasingly popular in the private sector. Government agencies are realizing that this same process might be equally effective in the public sector. The benefits include:

- One point of contact for design and construction responsibility.
- Time savings, since design and construction phases overlap.

- Early development of a guaranteed price.
- The ability to consider the qualifications of the project team and technical qualities of the proposal, in addition to cost.
- Better risk management, since the design and construction are performed by the same entity.

A new West Virginia law allows all state agencies to use the design-build process to deliver building projects.

Changing State Laws

Traditionally, construction projects in the public sector have relied on a design-bid-build method, awarding the construction contract to the responsible lowest bidder, based on

construction documents prepared by an architect. Laws are now in place in several states to allow the design-build method of project delivery as an alternative.

In West Virginia, for instance, there is the Design-Build Procurement Act in 1999. Prior to enacting the law, government officials discussed the design-build concept with the local design and construction industry professionals. The Joint Committee of Architects, Contractors & Engineers, of which I was a member, was then formed to recommend and present language to the state legislature and codify the process. The committee comprised members of the Contractors Association of West Virginia, West Virginia Society of Architects - AIA and the West Virginia Society of Consulting Engineers. Then the Department of Finance & Administration was consulted to ensure that the process would comply with state purchasing rules.

With the approval of the professional associations and the Department of Finance & Administration, we lobbied our state senators and delegates. The

The new 975-car precast concrete parking structure on the campus of Fairmont State University added needed parking space, while also connecting the existing super campus with the new lower campus.



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law passed easily in 2004. It reached its legislative “sunset” when it was reviewed and re-enacted. This year, the committee met again to update the law, based on our collective experience with the new process, and the state legislature passed those changes.

Other states, including Virginia, Illinois and Texas, have passed similar laws that allow government agencies to deliver public projects on the basis of the qualifications and technical criteria presented by a single entity, in addition to cost. The result has been a variety of strong success stories — many of them containing precast concrete components.

Precast Aids System

Precast concrete components provide a strong complement to the design-build process, which emphasizes efficient scheduling. Deadlines have become even more critical in today’s market, especially for public projects. More groups are offering input, requiring more time for the initial discussions and more functions to juggle within the limited budget. But the need to bring the buildings online quickly remains constant. Often, leases are ending or new revenues from the project are required to keep the agency running smoothly.

The ability of precasters to begin designing and casting components while finish drawings are completed works well within the design-build system. In addition, casting can continue while site work progresses,



This 400-room dormitory at Fairmont State University was completed in 13 months, thanks to the design-build process. The project features precast concrete hollowcore slabs, which sped construction and saved material.



which would not be the case with cast-in-place systems. And, because the precast design was planned from the beginning of the project, the precaster can ensure the efficiencies of panel sizes and connections are maximized in the initial planning, providing lower costs and faster construction time.

Precast also aids the design-builder, who takes on financial risk with a cast-in-place system, notes David Monroe, president of Carl Walker Construction, which has been involved in several projects with N Visions Architects under this system. “From the contractor’s view, there’s less financial risk with precast concrete, because we’re buying a finished product,” he explains. “With cast-in-place concrete, we incur a labor payroll. With precast, we incur far less risk and receive a high-quality product. That accelerates the schedule.”

Parkersburg Parking

When the Mid Ohio Valley Transit Authority (MOVTA) decided to provide a new intermodal/mixed-use parking facility in downtown Parkersburg, W. Va., they selected the design-build approach. They followed the state law, taking into account qualifications and design, as well as cost. This is done under the guidance of an independent





The new Parkersburg, W. Va., intermodal/mixed-use parking facility was produced on a design-build contract. It features an all-precast concrete structural system that helped meet the deadline and budget.

Criteria Developer who, acting on behalf of the agency, develops both the building concept and the request for proposals (RFP).

Working with parking consultant Desman & Associates, NVisions developed the concept of a five-floor intermodal/mixed-use precast concrete parking structure, with office space for the Transit Authority on the ground floor. The RFP required evaluation of proposals in two parts: the qualitative proposal and the cost proposal, with each part graded by the selection committee using a defined point system. The project was awarded to the company whose proposal had the most points from both categories combined, provided the total cost did not exceed the published budget.

The qualitative proposal required a number of elements, including a minimum number of parking spaces, a transit station, offices, a passenger waiting area, spaces for buses and an architectural appearance that would blend with the area's turn-of-the-century architecture. A number of technical and performance requirements also were spelled out. All design criteria had to be met in order to move on to the next step.

Most Accrued Points Won

Points were awarded for technical merit in accordance with the criteria established by the selection committee, using a detailed formula made known to the proposers in advance. A total of 200 points – 100 in each category – could be awarded. In the scheduling section, for instance, a total of 10 points could be achieved: eight for meeting the proposed deadline, an additional point for beating it, and two extra points if the bid set the earliest date of all proposals. The proposed date also became the date at which penalties were enacted if the project was not completed by that time.

The cost proposals were not considered by the committee, and indeed were not known, until after the qualitative proposals were evaluated. These proposals showed the cost effectiveness of the design, based on the cost per parking space and a maximum \$5.09-million budget.

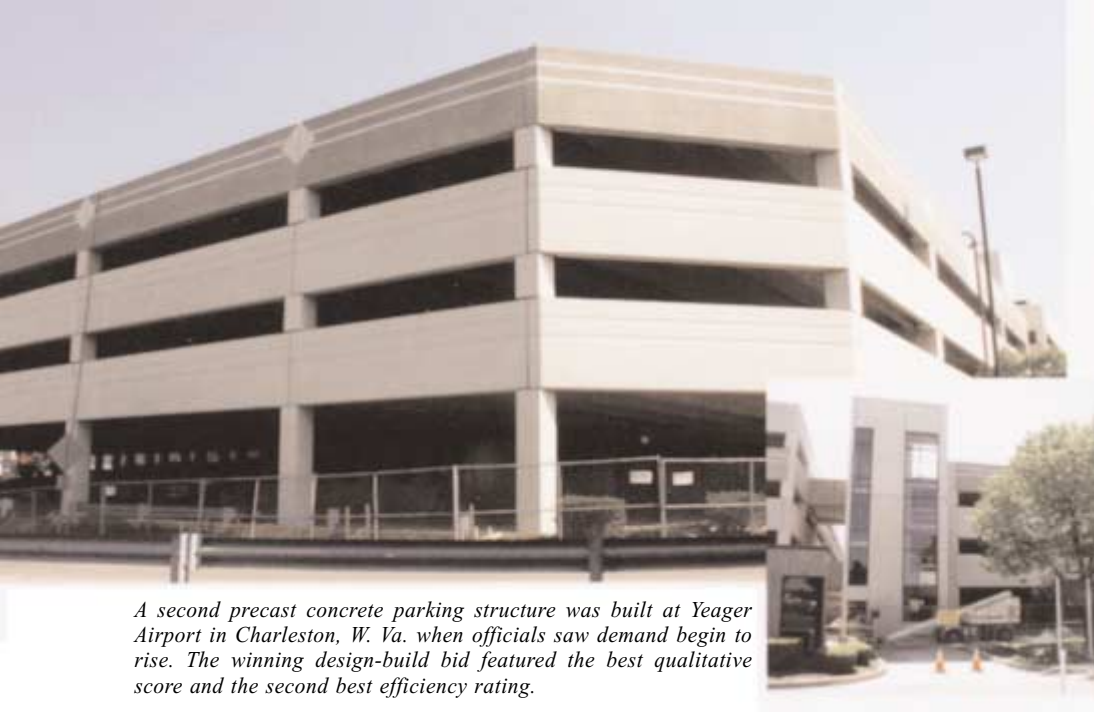
Carl Walker Construction (CWC) created the design that offered the greatest number of parking spaces, 378 in all – 50 spaces more than the next highest-ranking bidder. This resulted in the lowest cost-per-parking-space ranking. CWC also received the highest score for their qualitative proposal. After winning the contract, the company partnered with architectural firm Indovina Associates, Churches Consulting Engineers and Sidley Precast to work with the Parkersburg Parking Authority on the project.

The project featured an all-precast concrete design, including spandrels, beams, columns and double tees. Architect Rob Indovina, who designed the winning plan, told me, "We wanted to design a parking structure that met the criteria established for MOVTA, make it as practical and attractive as we could and use the space to maximum advantage. The choice of a prestressed, precast concrete structure was an essential part of our winning plan. We worked through a number of iterations of structural layout and design with Carl Walker to achieve the maximum design efficiency. Thus, the design process was part inspiration and part perspiration."

Yeager Airport Parking

Officials at Yeager Airport in Charleston, W. Va., saw a 35-percent increase in passengers from the same period the previous year, and expected such demand for

continued



A second precast concrete parking structure was built at Yeager Airport in Charleston, W. Va. when officials saw demand begin to rise. The winning design-build bid featured the best qualitative score and the second best efficiency rating.

the airport's facilities to continue. To meet this growing demand, airport management decided to build a second tiered parking structure.

NVisions Architects again prepared the RFP requirements, reviewed the proposals and conducted the award process for the owner. The RFP called for the construction of a structure adjacent to the existing facility, which had been built with prestressed, precast concrete. The RFP also required bridges at two levels to allow circulation between the two parking garages, a canopy-covered walkway between them, the addition of toll booths, an employee break room and storage facilities.

Design-Build: Not For All

When to Use a Design-Build RFP:

- When the project has simple program requirements, such as for state office buildings, parking structures and student dormitories.
- When the owner is comfortable with delegating design decisions to the design-builder.
- When quick delivery and early cost identification is desired.

When to Use a Traditional Design-Bid-Build Approach:

- When the owner wants to be highly involved in the program and design process.
- When building systems are complicated.

The award process evaluated proposals on a two-part basis. First, a qualitative proposal was reviewed and scored. Proposals had to address five specific criteria, comprising contractor qualifications, project-management plan, schedule, technical requirements, and project design issues. The proposal with the highest score was awarded 100 points, with each of the others rank-ordered on a prorated basis.

Cost proposals then were reviewed, and the proposal with the lowest cost per parking space was likewise given 100 points, with the others ranked behind on a lowest cost-per-space basis. Of the five construction companies bidding, CWC again was ranked number one for its qualitative proposal and number two in cost per space and had the highest combined score.

CWC was awarded a \$6.75-million design-build contract to construct the new precast concrete parking structure. The project was delivered on a fast-track basis. Construction began December 15, 2004, and was completed June 14, 2005. This design also featured an all-precast concrete structural system.

The new parking structure has nearly doubled the amount of parking spaces available at the airport. "Carl Walker Construction's proposal gave us the best use of space, at a price within our budget and within a shorter time period than we requested," says Richard Atkinson, director of the Yeager Airport.

CWC again partnered with architect Indovina Associates to build a precast concrete structure with approximately 157,000 square feet of supported space on 4½ levels. The project provided 706 parking spaces, including an area on grade within the structure and an area immediately adjacent to it.

"We knew that a prestressed, precast concrete structural system was the only system that would enable our design-build team to meet the aggressive schedule," says Monroe. "There was no way we could have provided a 700-car deck any other way."

'The quality between a precast panel and a cast-in-place panel is like night and day.'

Monroe also has been impressed with the finish options he can provide on design-build parking structures using precast concrete. "The variety and quality are unsurpassed in our mind. The quality between a precast panel and a cast-in-place panel is like night and day. The very best cast-in-place panel won't approach the quality of the average precast panel."

Work With Legislators

In our democracy, we can help shape laws to fit the times. Architects, engineers and contractors can, and will, affect passage of similar laws in other states, permitting the use of the design-build method for public projects. I encourage all interested industry professionals to learn about existing laws, talk with local legislators and help expand the available bidding methods in your state.

The success of these projects illustrates that this approach works for the public, as well as the private, sector. It provides design-build teams the opportunity to use their experience and expertise to offer their best response to a project's requirements, and it gives the owner the chance to evaluate proposals on their full merit, not just cost alone. Everyone wins in this scenario. ■

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