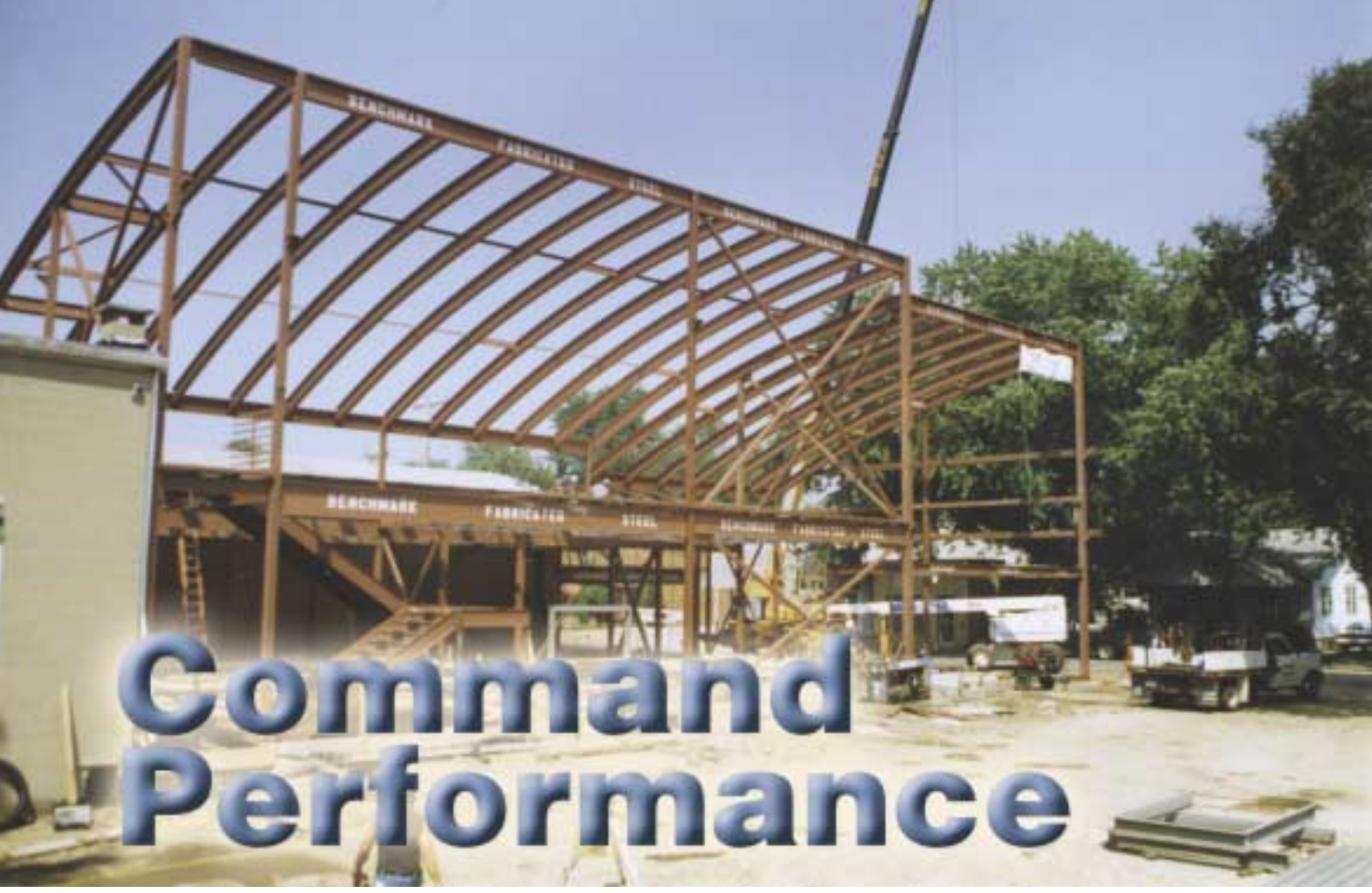


Command Performance

John Cross, P.E.

The experience of the Community Theatre of Terre Haute, Indiana is an excellent example of design-build principles being applied in a design-bid-build project.

Cost control, fast track schedules and enhanced project quality are the hallmarks of design-build project teams. Teams made up of architects, engineers, contractors and specialty contractors who communicate well with each other focus on the successful completion of the project, not just their own niche. But some projects require the Design-Bid-Build project delivery method instead. Does this mean that the benefits of teamwork have to be lost? Certainly not. The principles that make design-build projects attractive can be applied to more traditional types of project delivery. The leadership of the Community Theatre of Terre Haute recognized that a significant enhancement of the facility was required in order to continue impacting the community with quality local theatric productions. Founded in 1926, the Community Theatre of Terre Haute is the second oldest civic theatre in continuous operation in the state of Indiana and functions as an all-volunteer, non-profit organization.

HISTORY

The theater acquired its first permanent space in 1954 in a neighborhood movie house. The Best Theatre at 25th Street and Washington Avenue was a stand-alone theater structure with a seating capacity of just over 350. After a successful fund-raising campaign, it became the Community Theatre's home. But by the early 1990's the theatre structure was showing it's age. Portions of the structure required renovation, rest rooms needed to be updated and expanded, demands for storage and rehearsal areas exceeded the space available, new high-tech equipment required infrastructure upgrades, entry and lobby space was limited and the entire structure needed to be brought up to current code standards. The need was clear, but the funds were not available from normal operations to finance a major renovation and expansion of the facility. The Community Theatre had been self-funding since the community campaign in 1954, but now it would need to turn again to the community for this major project.

PROJECT START

In 1993 a development committee was formed. The committee engaged an architect to provide a conceptual design and budget for the facility. A conceptual budget of $1,033,000 was determined and the theater board voted to initiate a capital campaign. In 1996 the campaign began, and by February of 1999 pledges totaling

$1,033,587 had been received. Design and construction was authorized to begin in conjunction with the capital campaign. The goal was for the facility to be ready for occupancy by September of 1998.

SELECTING DESIGN-BUILD

Terre Haute resident, Ted Hazledine, President of AISC member fabricator Benchmark Fabricated Steel, and long time supporter of the Community Theater, had been tracking the progress of the building campaign. In doing so he recognized several significant challenges that faced the project:

- the lack of an efficient decision-making process on the part of the client — typical in non-profit organizations directed by boards and committees
- an extremely tight construction schedule from May 1998 to September 1998 controlled by the theatre calendar
- the lack of significant contingency funds in the theatre budget to cover cost overruns on the construction project
- the need for the constructed project to reflect the quality desired by the community

Hazledine also recognized that he did not have the personal expertise or time to service as a general contractor/construction manager on the project, but he did know that his expertise with fabricated structural steel could be of benefit if he became involved early in the project. If his early involvement could benefit the project, then why not invite the early participation of other specialty contractors, designers and engineers? And better yet, why couldn't they work as a team?

With the approval of the theater board, Hazledine invited key members of the Terre Haute construction community to participate in a Building Advisory Team (BAT). The mission of this team was to:

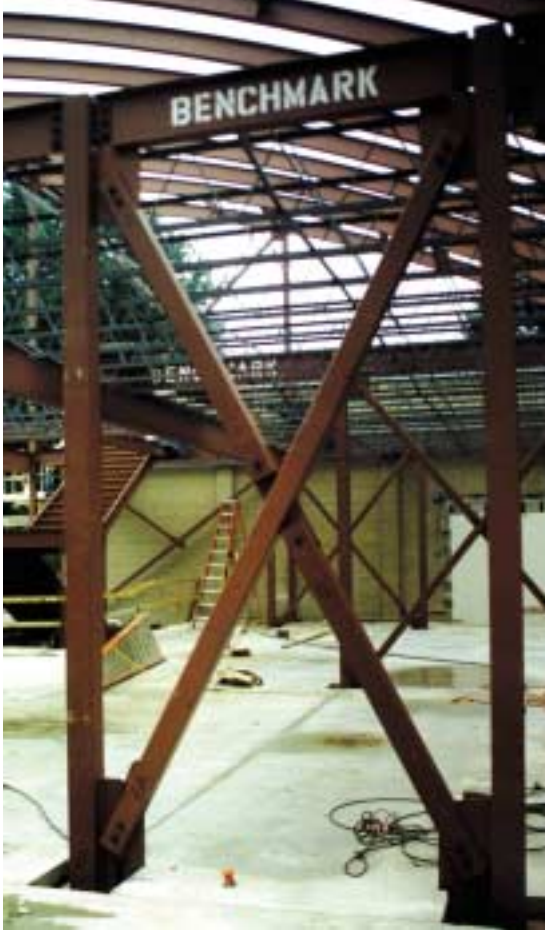
- examine preliminary construction plans which had been prepared
- determine feasibility, practicality, efficiency and quality of various materials, products, systems and designs
- develop a construction timetable and sequencing
- assist with the selection of a final design firm
- participate with the design firm in the development of plans and specifications for building and renovation
- assist with the bid process
- establish criteria for accepting "gifts-in-kind"
- oversee construction
- get the most "bang for the buck"

In essence a design-build team was being formed to design and construct to a fixed budget on a design-bid-build project. In his invitation to participate, Hazledine challenged the potential team members that "obviously everybody in the group will have to be a team player, understand the relationship of their work to the entire project, be willing to share construction knowledge, have a firm grasp of costs, be willing to see beyond their interests for the benefit of the project, and be committed to the spirit of the team concept."

CONSTRUCTION COMMUNITY SUPPORT

The board had reservations about whether local general and specialty contractors would share their expertise on the design side without any guarantee that they would be the low bidder for the actual work. However, local firms representing every phase of the construction process stepped up and volunteered their time and expertise. To ensure that the efforts of this group would not be minimized by the full board's inability to make timely decisions relating to the project, as had been observed on projects with other non-profit entities, Hazledine pushed for the creation of a Construction Advisory Team (CAT) composed of four to five board members empowered by the entire board to make all decisions for the board relating to planning, design and construction of the facility.

The initial task of the combine teams was to select a designer to develop the construction plans for the project. Critical to controlling the cost and schedule of the project was the ability of the designer to accept design suggestions from the BAT and translate them into the architectural and constructions drawings. The architectural firm of MMS & Associates of Terre Haute was selected as the project architect. Final design began in the spring of 1997 with local and state permits ob-



Conventional X-bracing using HSS and angle shapes was used to provide lateral stability for the addition.

tained by the fall of that year. During the critical stages of the design, the Building Advisory Team met monthly on a Monday morning and defined issues that required owner decision. The Construction Advisory Team then met on Monday evening and made those decisions, which were communicated to the architect on Tuesday morning.

Competitive bids were secured on all contract packages during February 1998. Many of the original members of the Building Advisory Team chose to submit bids on the project and were the low bidders selected to perform the work. Those members of the Building Advisory Team that did not continue into the construction phase viewed their participation as a community service and were thanked for their input and support. The design to a cost and bidding process worked well. They kept the project within the budget constraints, with final bids coming at a total of just under one million dollars.

Contracts were awarded in March of 1998 and construction began at the end of the theater season in May 1998. During active construction, the Build-

Above and below: The use of conventional framing details for structural steel connections kept fabrication and erection costs in check.

ing Advisory Team, now consisting of representatives of the contractors on the project, met weekly on Monday morning, again passing questions to the Construction Advisory Team for decisions that evening, and answers the following morning.

PROJECT SCOPE

The construction project consisted of adding a two-story, 10,300 square foot addition to the existing 9,800 square foot facility. The project included the upgrading of the existing electrical, HVAC and plumbing infrastructure to meet current codes and requirements; the addition of areas for ticket purchases; and a new lobby area, rehearsal room and scene shop. The addition was constructed as a slab-on-grade, two-story structure, utilizing standard beam-on-column construction with rolled W14x43 beams framing into W18x35 with CB cap channel to resist torsion, supporting an arched metal deck roof. Several custom bowstring trusses were specially designed to match the original roof and accommodate ductwork above the light and sound booth. Column sizes were typically 6, 8 and 10 inch square tubing with floor beams being W21 and W24 series.

The construction schedule was slightly delayed because of the availability of reinforcing bars for the concrete slab. All other construction materials, including the roof joists and steel deck that had been pre-ordered and noted as a supplied item on the original bids, arrived according to schedule. The original schedule goal had been to have the theatre available for rehearsal by the end of September 1998. That date was not met, but the theatre was open for its first performance in the renovated and expanded building on October 22, 1998. The early involvement of specialty contractors, including the steel fabricator, and a commitment to teamwork kept the project on schedule and produced a structure that is a source of community pride.

SUCCESS STORY

The total project cost including changes that took place during construction met the original project budget of $1,033,000. In fact, the total construction cost of the project was within $27 of the budget amount and $600 below the amount pledged. The project was a success because the principles of design-build had been utilized even if the project had been delivered under a design-bid-build methodology.

The Community Theatre of Terre Haute project is unique in several ways. It was a relatively small project. It engendered the support of community design and construction professionals because of the vision it represented to the community. Contractors were willing to invest their time in a community project without the assurance of "winning" the bid. An experienced steel fabricator was willing to get involved early, take leadership responsibility, wrestle with the dynamics of a non-profit organization and keep the project moving forward.

But in the same ways it is not unique.

Many construction projects are in the one million dollar range. The myth that design-build and early fabricator involvement is only for large projects and large fabricators is wrong. Small- to medium-size fabricators can have a major impact on small- to medium-size projects.

It might be true that contractors (and fabricators) are not so willing to invest their time on commercial projects without being assured of the work, but on design-bid-build commercial projects, some specialty contractors are discovering how to balance the investment of their time with the opportunity to perform the work. In some cases the specialty contractor and owner, architect or general contractor agree up front to a reasonable budget for the construction services to be provided. If after providing practical advice and design input, the contractor feels that he can perform the work at or below the budget, that portion of the work is not bid, but directly awarded. If the specialty contractor feels that cost of the work exceeds the budget, the package goes out to bid and the team member has the opportunity to bid along with other specialty contractors. In other cases, a compensation arrangement is provided to reimburse the specialty contractor for his costs during the design phase if the work is awarded to another firm.

The opportunity for early fabricator involvement, even to the extent of Benchmark Steel's involvement in this project, exists on every project. But just as Ted Hazledine got involved early because of his long-term relationship with the theater, fabricators must be willing to build relationships in the business community that will allow for early knowledge of projects and the ear of the key decision makers.

Today, the Community Theatre of Terre Haute is enjoying expanded and improved facilities. The people of Terre Haute look with pride on a civic accomplishment—a project well done through the early involvement of a steel fabricator and an attitude of teamwork among design and construction professionals.

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OWNER
Community Theatre of
Terre Haute, Inc.

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MMS A/E, Inc., Terre Haute, IN

STRUCTURAL ENGINEER
Construction Consultants, Inc., Terre
Haute, IN

ENGINEERING SOFTWARE
RISA-2D

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Centerline Detailing Services, LLC,
Danville, IN (NISD member)

DETAILING SOFTWARE
SteelCAD and AutoCAD

FABRICATOR
Benchmark Fabricated Steel,
Terre Haute, IN (AISC member)

GENERAL CONTRACTOR
Construction Technology Associates,
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