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How to control healthcare construction costs

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As our nation increases in population and age, both acute- and long-term-care institutions find themselves compelled to upgrade or expand their facilities to support technological advances and to meet the expectations of the patients served. But upgrading and expansion mean more construction—and a glance at any major newspaper's headlines reveals almost daily reports of construction cost overruns on projects of all types and sizes.

Today's construction industry is plagued by inefficiencies, delays, and significant cost overruns that cost America at least \$120 billion per year, according to published estimates. In an environment like this, healthcare institutions clearly need to focus attention on managing escalating capital costs.

Healthcare facilities are some of the most expensive projects built today. The cost and complexity of healthcare construction create special burdens on institutional executives and facilities directors. While many have experience in building such projects, they may lack effective tools to control a project's financial outcome. In particular, lack of coordination between the design and construction team inevitably leads to unexpected change orders, delays, contractor claims, and other hidden costs. The ability to identify these pressures early, and to handle them quickly and effectively, is essential from both a construction and a legal standpoint.

The invaluable owner's representative

Successful project completion requires an informed and objective approach that combines legal, architectural, and project management professionals who are acting solely on behalf of the institution. To protect an institution against potential conflicts of interest, the project manager/owner's representative must be totally independent of any design, construction, or real estate interests.

Even if the facilities group within an institution already has in-house project managers, management often still needs to look outside for consultants experienced in healthcare construction to augment their skill sets and to help facilities group project managers carry out their job with maximum efficiency.

Organizations such as the Project Management Institute and the American Society for Healthcare Engineering offer healthcare construction project management courses and programs to increase the effectiveness of facilities group project managers. Additionally, the Construction Management Association of America offers a certification program for professionals who can demonstrate *"knowledge and experience that meet the established practices of construction management."*



Although the right owner's representative is not necessarily easy to find, contacting the organizations cited above can be a helpful first step. The ideal candidate should have design, construction, and legal experience. Thus, in most cases, one person will not be enough to be an effective owner's representative. A team of three or more may be necessary to simultaneously address critical field conditions, review change orders, and meet with prospective vendors—a process happening day after day for the duration of the project, and sometimes all on the same day. Effective owner representatives must be able to perform consistently and accurately at multiple levels, lest they lose control of the project.

Design-bid-build, fast track, or design-build?

What strategy is best for maintaining control? Traditional design-bid-build projects theoretically result in a fixed-price contract, since the price is defined by the scope of work detailed in bid documents. However, economic pressures can often persuade institutions to bid the project and start construction as quickly as possible, even if designs are not 100% complete. But our experience has shown that a decision to utilize fast-track construction inevitably leads to significant cost overruns and delays.

Healthcare institutions are particularly vulnerable to cost overruns based on incomplete designs because of the complexity and redundancy of their MEP and life safety systems and the amount of time needed to successfully coordinate construction.

To mitigate construction cost overruns, healthcare institutions must take the necessary time to plan the project. This means entering into agreements with all team members—architects, engineers, and consultants—for fixed prices that would only be permitted to rise if the owner modifies the scope. This also means requiring the design team to prepare bid documents that are fully detailed, complete in all respects, and coordinated with each other, *and* providing the additional time and fees to do this. Similarly, construction managers need the opportunity to thoroughly review construction documents and field conditions to identify errors and omissions during the bid process. If conflicts or errors are found, the design team should correct them. Only then will contractors be ready to provide true, fixed-price proposals.

Once these proposals are submitted, the sponsor must independently determine the reliability and reputation of the subcontractors proposed for the project.

Note: This is not the "typical" approach to construction project management. A sophisticated team of legal and project management experts dedicated solely to the owner is needed to provide a framework for capital decisions, coordinate the various disciplines required to implement those decisions, and ensure that the project is brought in as scheduled and within the established budget.

An alternative cost-control method is the design-build agreement. A design-builder is a single-source provider that encompasses architectural, engineering, and construction services. The design-builder designs and constructs the facility for a fixed sum. The consolidation of responsibility eliminates contractor claims that allege errors and omissions by the design team. Change orders are limited to owner-initiated changes in the initial design or unforeseen site conditions.

However, the design-build process eliminates the traditional checks and balances that an otherwise separate A/E and contractor would have on each other. For this reason, it is crucial that institutions retain experienced, construction-savvy owner representatives who will properly monitor the design-builder's work.

Minimize change orders

Minimizing or eliminating change orders is essential for proper construction cost management. The best way an institution can minimize change orders is to commit itself to commencing construction only after complete and fully coordinated design and drawings are in place.

Before signing an agreement with a contractor, all parties involved should engage in candid, "up-front" discussions about the potential risks and problems that might be encountered during construction. The text of the contract should specify the ways these potential issues will be addressed and resolved before the contract is signed.

Controlling change orders also requires strongly worded contract provisions that defend institutions against unwarranted or excessive change order-related costs. At a minimum, any change order proposal should clearly define and itemize the scope of work and document the costs required to perform the work. The owner should not be obligated to pay for alleged change order work performed prior to authorization. Contractor "general conditions" should be itemized and profit markup should be determined by the owner-contractor agreement. If the change does not require additional supervision by the contractor or construction manager, general conditions charges may not be warranted. In addition, change order proposals should document their impact on project schedules and include those costs. The contractor should not be allowed to return at the end of a project to seek additional "delay" compensation for change order work.

Agreements should contain provisions that give the owner adequate time to review and approve the proposed change order. In the case of a dispute, the agreement should require contractors to proceed with the base contract and change order work while the dispute is resolved by a preselected, neutral third-party in a short, one-day arbitration.

BIM: Short-term and long-term value

Other than circumstances in which an owner has decided to add scope, change orders almost always result from incomplete and uncoordinated design documents. As noted, reducing change orders plays a vital role in reducing construction cost overruns—and building information modeling (BIM) may be the best way to reduce change orders.

BIM is a relatively new collaborative design process that creates a repository of information for the institution to use and maintain throughout a facility's life cycle. Using BIM, a facility can be designed, virtually "built," and performance-tested in real time before actual construction starts. BIM increases the likelihood that errors, omissions, and conflicts can be identified and corrected during the planning process instead of during construction, when the expense of adding or redoing work, and the resulting delays, can add significant costs. The technology enables faster, smarter decision-making, provides better documentation, and equips managers to predict performance prior to construction.

Owners and contractors use BIM to easily calculate the amount of material needed to build the project, which translates into incredibly precise construction cost budgeting. Contractors also use it to phase and coordinate construction, optimizing trade scheduling and material deliveries. Industry studies have found that the savings resulting from reduced change orders, delays, and designer-contractor conflicts far outweigh BIM's added design fees.

Upon occupancy, BIM accrues additional value to the owner. BIM delivers a database of information about the facility that can be used throughout its functional life. Future upgrades, operational procedures, and scenario planning can all be modeled with BIM technology. The facility's building management system can also be tied to the BIM model.

BIM has the potential to revolutionize the way facilities are designed, constructed, operated, and altered to accommodate future change. The healthcare sector should take full advantage.

Partnering to reduce conflict and costs

The emerging practice of partnering is beginning to redefine relationships among the owner, architect, engineer, and contractor. It has the potential to create a cooperative and mutually beneficial team from among potential adversaries. Partnering aims to promote teamwork, avoid conflict, and ensure on-time project delivery. It can achieve this by establishing ground rules for responsible behavior and open communication processes, and by employing various conflict-resolution techniques.

Partnering is voluntary and does not replace separate contractual agreements with the institution. Rather, it helps to ensure that these agreements will be executed successfully by establishing guidelines for cooperation accepted by all. An integrated set of design and construction agreements, with consistent language and provisions throughout, is crucial to successful partnering.

Partnering sets common goals. Parties agree to standards, communications strategies, dispute-resolution practices, and problem-solving mechanisms. It creates an open dialogue over the risks and responsibilities that are assigned to each team member and fortifies relationships among team members overall. Throughout the life of the project, partnering meetings occur at regular intervals to ensure that the agreement is successfully guiding behavior and performance.

Effective partnering can reduce delays, limit misunderstandings, enhance cooperation, and help people achieve common goals. This collaborative mindset can help avoid or remove bottlenecks that can derail projects. And, by promoting mutual respect, partnering can diminish the inclination to sue. People are less likely to sue other people whom they like and respect.

Construction costs can be contained

Project success is often determined by a strategic combination of legal, architectural, and professional project management services. To effectively manage the complexity and risks associated with healthcare construction, institutions should be prepared to take innovative, project-specific approaches to contractual relationships with design teams and contractors. Institutions need to be confident that their representatives and consultants are capable of delivering actionable insights and measurable results that achieve the sponsor's business goals and maximize its return on capital investment. At the same time, healthcare providers can bolster their construction management capabilities through such emerging best practices as partnering and the use of BIM.

By front-loading discussions of project risk before contracts are signed, and by waiting until 100% complete and coordinated design drawings are in place before construction starts, healthcare facility managers can achieve truly fixed-price contracts that minimize the incidence of costly change orders. Through planning, proper professional assistance, the use of emerging technologies, and other techniques, today's healthcare institutions can effectively control construction costs. **HD**

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