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Reducing Capital Project Risk: Lessons Learned from Cedars-Sinai

Overview

Reducing risk on capital construction projects is crucial for ensuring a project's successful completion within the established budget and schedule. Effective risk management minimizes the potential for unexpected costs and delays, which can significantly impact the financial viability and overall success of the project.

By proactively identifying, assessing, and mitigating risks, project teams can avoid common pitfalls such as design changes, construction errors, and supply chain disruptions. This not only enhances the predictability of project outcomes but also fosters a collaborative environment where stakeholders have confidence in the project's progress and can make informed decisions. Ultimately, reducing risk translates to higher quality construction, improved stakeholder satisfaction, and a greater likelihood of achieving the project's objectives.

A prime example of a successful project is the 2013 completion of the Cedars-Sinai Advanced Health Sciences Pavilion (AHSP), a massive undertaking that was applauded for accomplishing all its major objectives. What did the Cedar-Sinai project team purposefully do to predetermine a positive outcome? What lessons learned did they apply from past projects? How can they apply these lessons to recent projects and beyond?

First, the Cedars-Sinai project team defined "success." Broadly speaking, it was the achievement of the institution's program objectives within the established schedule and budget. The goals were to provide a major expansion of existing clinical and research programs that would:

- Serve as a new model of practice integrating clinical practice, research, and education
- Elevate the level of patient care
- Provide a flexible building that would broadly serve the organization's growth well into the future, with a focus on high-quality, environmentally conscious design.

The Advanced Health Sciences Pavilion was the last major capital project completing an ambitious campus master facility plan that transformed the infrastructure and capabilities of the institution. Prior to the AHSP, the master plan included an expansion and modernization of the Central Plant, a new Imaging Facility, and a new Critical Care Tower. While all of these projects were reasonably successful, they left something to be desired in their delivery.

The AHSP project won a number of awards including the ENR California Best Project 2014, Award of Merit and the AIA California Architecture Merit Award.

About Cedars-Sinai Medical Center

Since its inception in 1902, Cedars-Sinai has become the largest nonprofit hospital in the western United States. The Cedars-Sinai Medical Center main campus, encompassing nearly 24 acres and over 1.75 million square feet of space, includes a multitude of buildings providing inpatient acute care and outpatient services to the Los Angeles County area population of approximately 13 million people. The Cedars-Sinai Facilities Planning, Design and Construction (FDPC) team is currently managing the implementation of the Facility Master Plan.

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The Approach to the Project

As Cedars-Sinai Medical Center (CSMC) approached the development of the AHSP, the leaders focused on three factors that they believed would contribute to a more successful outcome, which included:

Contractual terms that would promote better performance and less conflict

Effective processes and cloud-based solutions

Building the right team

Contractual Terms That Would Promote Better Performance and Less Conflict

The AHSP was designed and constructed in very unusual times. Planning for the project began at the tail end of the relentless cycle of construction inflation that was the course of business through 2008 when the economy crashed. Prior to the crash, it was becoming extraordinarily difficult to manage and predict cost and to get the highest quality resources committed to the project.

As planning started for the AHSP, these considerations weighed significantly on the project team's choices, forcing them to look for ways to mitigate these issues. Some of these were addressed through revised contract provisions. The team reevaluated key areas of their standard contract for construction. They then developed new contract language that they thought would enable the project's performance and focused on the following areas:

- **Contingency:** They spent a significant amount of time defining the allowable usage of contingency and administratively how it would be managed and approved. They ended up with an approach that allowed broad control of the contingency allocation by the contractor, but with clear rules for its use and approval for use, when necessary, by the owner. They felt that this provided the project management firm, Hathaway Dinwiddie (HDCCO), the leeway to manage the project activities associated with gaps in the bids, reworking faulty work, and judging when to use overtime to maintain the project schedule -– all with the knowledge and oversight of CSMC.
- **Allowable costs/costs not allowed:** Again, a significant effort was devoted to this contract language, with the result being a clear basis for taking advantage of multiple bid strategies in assembling the final contract GMP. The project was able to approach the subcontractor community of the "new" construction market, post-crash, with multiple bid strategies that included negotiated GMP contracts, negotiated fixed lump sum contracts, negotiated design build contracts, and competitively bid fixed lump sum contracts. Hathaway Dinwiddie entered into GMP's with mechanical, plumbing, electrical, drywall, and concrete, giving them transparency with all of the long duration trades on the project. This greatly facilitated their ability to monitor cost and to address changes to the work fairly.

- **Milestone Closeouts:** One of the most frustrating challenges on any job is settling the end of project claims, the "Hail Mary" claims that come in many forms, but which all prove difficult to accurately assess and settle after a significant time lapse. In collaboration with HDCCO, the team established critical construction progress milestones. These milestones were chosen because they represented significant accomplishments in critical sequences of work or building systems; and in some cases, reflected opportunities to close out major trades. The contract requirement instituted when a designated milestone was reached triggered a 60-day window to identify and settle any and all cost and schedule issues that had arisen during the period leading up to that milestone and subsequent to the prior milestone. It included any and all costs associated with RFI's, construction change directives, and field conditions. To date, this proved a powerful tool in surfacing and settling hidden costs.
- **Project Scheduling:** The team established fairly traditional scheduling requirements through Division 1 of the specifications and the General Conditions of the Contract for Construction, except they allowed the contractor to make any and all necessary adjustments to the schedule as needed to meet the contract milestones, as discussed above, without their direct approval. Their approval was only required if the scheduled activity re-sequencing affected a contractually established milestone. They believed the latitude allowed HDCCO to manage and refine the schedule on a continuous basis to accurately reflect project trends on the job. CSMC retained an outside scheduling consultant to help them monitor the project schedule changes, and all were reviewed on a monthly basis as a team.
- **Allowance Allocations:** The project was subject to the impacts of the economic recession in a big way. Originally, the team had structured a fast-track approach with excavation and foundation packages to be followed by a core and shell package and a tenant improvement package. The fast-track approach was in response to the prior market conditions as a hedge against the inflationary cycle of that period. When the economy tanked, the start of construction was delayed for a year while the institution evaluated the cost of the project, the cost of money, the impacts of healthcare reform, and the health of their business. Rather than remain idle during this time, they accelerated the completion of the design with the objective to contract the project as a single package.

  When they decided to go forward in the fall of 2009, they hit the construction and finance markets at an optimal time. However, their risk was that they were not fully complete with the design of the project and they knew that subsequent design changes were going to be required. In response to these factors, they inserted healthy allowances into the GMP that they (CSMC) could execute to make these changes and to deal with other anticipated costs that were difficult to precisely identify. Also, as the final program of the building would still be determined during the course of construction, this allowed them to execute these changes without having to go through a full contract modification to the GMP. In combination with the transparency of the contracts and the clear rules for allowable costs discussed above, this allowed them to make significant changes to the project in a managed and controlled manner.

Effective Processes and Cloud-Based Solutions

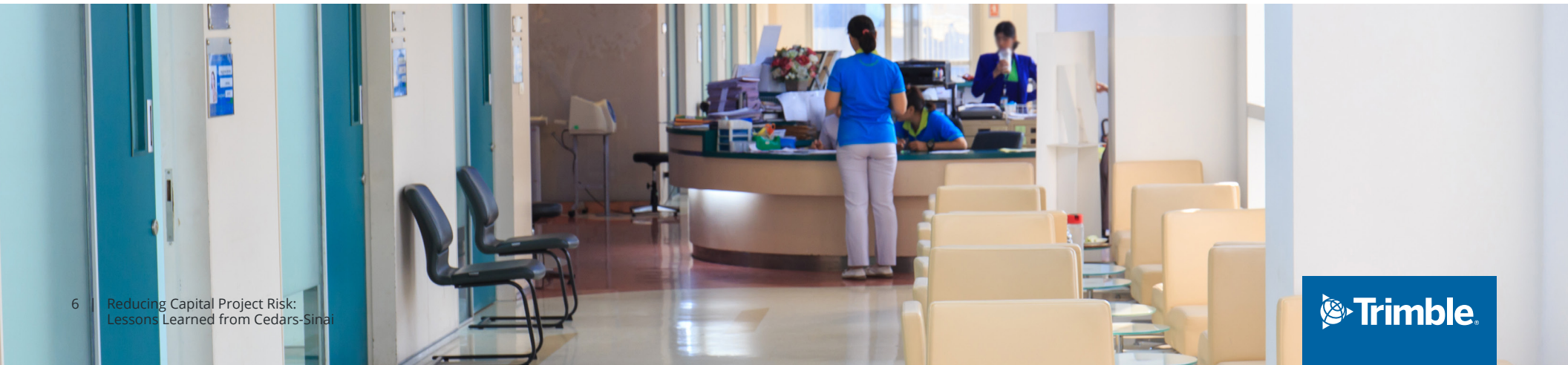
Significant developments in the way project information was developed and managed changed the way project teams worked together. For this project, embracing Building Information Modeling (BIM) and cloud-based project management software (Trimble Unity Construct, powered by e-Builder) had more of an impact than any other.

- **Cloud-Based Project Management Software (Trimble Unity Construct):** The project team aspired to be a collaboratively structured from the outset, in contract and spirit, but it was the mutual adoption of a shared cloud-based project management system that really put them on the path to functioning and acting as a truly collaborative team. While CSMC mandated the participation of all the project team members' use of the system, it was benignly structured and implemented. CSMC desired all the benefits of a central source of project information, a project accounting system tailored to the project needs, and a robust platform for administration of the project.

  The first real collaborative commitment as a project team came as they collectively determined how they would use the system for the project and subsequently tailored specific processes for administration of the project to suit what the team considered best practices for them. The adoption of a web-based project management system meant that they all shared project information and communicated through the system in a mutually agreed upon manner.

- **Building Information Modeling (BIM):** Perhaps no other development in the industry had as great of potential to change how projects were practiced and executed. Clearly, BIM had the ability to improve design, coordination, and sequencing of construction resulting in much better project outcomes. But its impact went well beyond those areas to fundamentally affect how the design and construction process was performed. The team chose to implement BIM in the later stages of design and completion of the documents for construction.

  With a full complement of committed subcontractors on the project in design, they were able to work as a single team to test, refine, and coordinate the design through completion in construction documents, and take that working relationship forward into construction with the utilization of the model in preparing shop and coordination drawings. The conversation between designer, builder, and owner was unprecedented and yielded significant, demonstrable results in the field. It broke down the barriers of the historic linear, sequential process and yielded a process that got all the members of a project team working together to build a digital twin of the building that resulted in better actual construction of the building.



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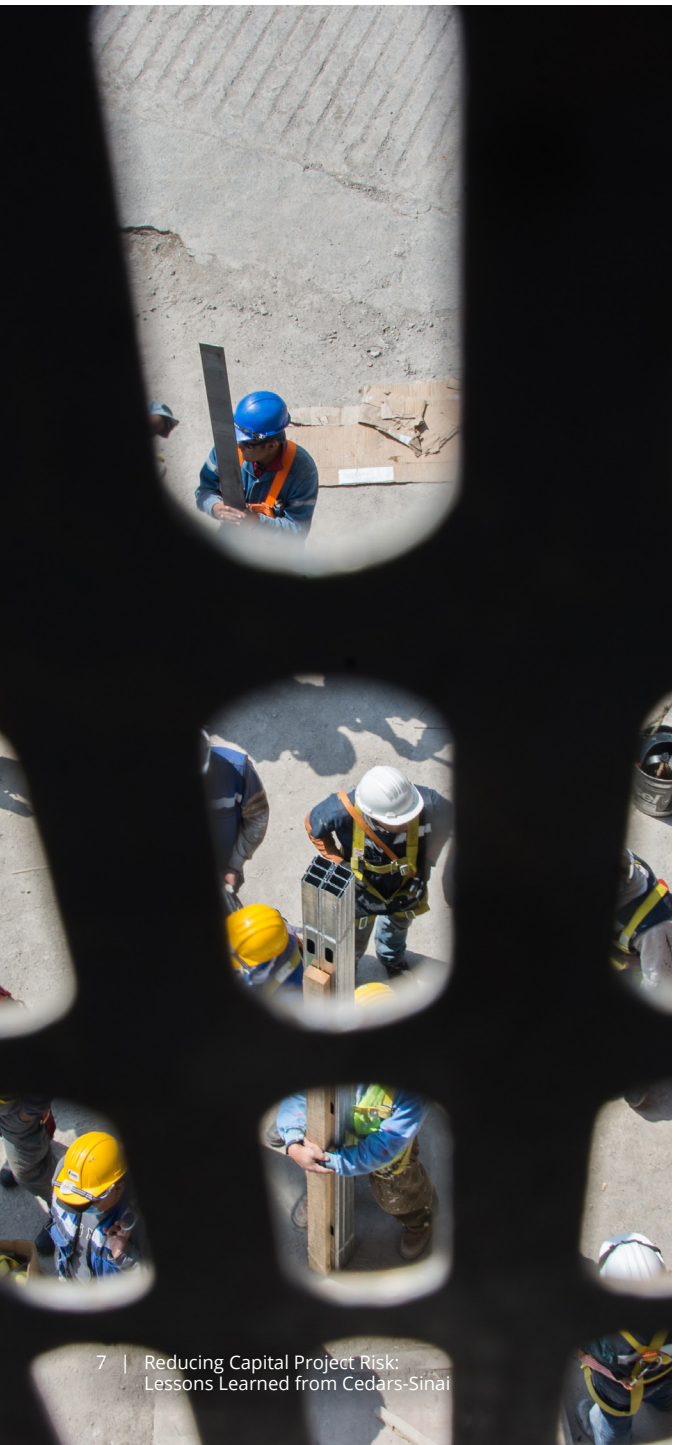

Building the Right Team

Ultimately, successful projects are a result of experienced project team members working collaboratively under strong leadership. They translated this concept into working principles for successful project delivery by focusing on how to build the team.

- **Team Structure:** While technically they did not have an Integrated Project Delivery (IPD) contract (a joint agreement between the Architect/Contractor/Owner with shared financial incentives), they structured their team and their contracts to foster an integrated, collaborative approach. The owner elected to provide project leadership and resources to manage the project directly rather than through an outside company acting as the agent of the owner. This was partly in response to a sentiment that the project management communication had not been as transparent and direct as desired under the consultant owner agent model. In the selection of the architect, they made a conscious decision to seek out architects who had demonstrated experience in working with contractors and owners in design-build or design-assist team structures and that understood the benefit to the design process that came from broad access to significant technical resources.
- **Team Environment:** For the construction phase, the Owner/Architect/Contractor teams were physically collocated in a single space. While it was quite conventional to locate construction team members in trailers on the job site, the physical sharing of working and conference space directly adjacent to the construction site dramatically changed the working character of the project team.
- **Code of Conduct:** Partnering was often considered a trivialized activity of the construction phase as it was frequently an exercise accomplished without true commitment. Perhaps because of the long relationship of the team through the design process and the physical collocation on the job site, the project team developed a code of conduct that truly reflected how they wanted to work on the project and the respect that they felt should be afforded to every member of the project team. It remained a consistently referred-to standard on the project and demonstrably modeled appropriate project behavior.

> "The enhanced confidence the executive leadership has in the project team because of our ability to share information with them as necessary has been tremendous."
>
> – former Executive Project Director for Advanced Health Science Project, Bob Cull

Summary

The above case study recounted what the Cedars-Sinai project team believed were key factors in the success of the Advanced Health Sciences Pavilion Project. Many of the steps taken for the project were informed by the organization's strategic goals and the project team members' collective experience. While the team members believed that key factors contributed to the specific success of the project, they acknowledged that certain strategies could not be replicated in the next major project or blindly applied across a serial building program. However, their project could be used as an example of a successful project delivery and could help establish sustainable guiding principles that could be applied broadly to projects of differing scales, program types, and procurement methods.