Using Construction Manager at Risk to Save Time and Money

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Executive Summary

Historically, South Dakota public higher education has used the process of design-bid-build (DBB) to build new facilities on our college campuses. This long-standing method determines the contractor by low bid, based on a detailed set of plans and specifications that outline the scope of work.

Construction Manager at Risk (CMR) is an alternate process to the customary construction contracting of design-bid-build. The CMR process involves the contractor early in the design process to assist in pre-construction support services and then they transition to act as the general contractor during the construction process. This team of owner, architect/engineer, the CMR and other key contributors is a fully integrated project team. Further, the CMR establishes a guaranteed maximum price generally at about the design development stage to help eliminate the prospect of bid-day surprises.

CMR was chosen as the building delivery model for the construction of the new Science and Technology Classroom Building at University Center in Sioux Falls, South Dakota. This 50,000 square foot building project was to replace leased space; which meant the sooner we could vacate that space, the sooner we terminate our lease and save significant lease expenses. The project went from the Governor's signature in March of 2010 to occupancy in August 2011 within budget and with minimal change orders. This success was due to the early collaboration of all the key players and the accelerated construction schedule facilitated by CMR.

If DBB had been used, we projected occupancy in May 2012, but with CMR we were able to accelerate this schedule to August 2011. Not only did this permit us to use the new building for the fall 2011 semester, but it also allowed us to vacate the leased space as of September 1, 2011. The estimated lease savings alone was about $37,000 per month totaling nearly $333,000.

In addition, the leased building was two miles south of the recently established UC campus. Building this new building permitted additional savings in terms of eliminating some duplicate personal services and operating costs. Those savings were realized through the development of the FY 12 budget beginning July 1, 2011. If we had used the DBB process, with an estimated occupancy date of May 2012, we would have had 9 months of these expenses in FY 12. By using the CMR process, we were able to save an additional $128,000.

The advantages gained for UC by using the CMR process compared to DBB will be outlined in this document with details as to specific efficiencies and savings associated with time constraints, design decisions that saved on time and budget, efficiencies gained in the bidding process, and savings in lease and other operating costs.

Introduction of the Organization

University Center (UC), located in Sioux Falls, is an off-campus center under the South Dakota Board of Regents (SDBOR) where five of the six South Dakota public universities operate an integrated partnership. The partners include – The University of South Dakota (USD) located in Vermillion; South Dakota State University (SDSU) located in Brookings; Dakota State University (DSU) located in Madison; Northern State University (NSU) located in Aberdeen and Black Hills State University (BHSU) located in Spearfish. Because of this unique collaboration, University Center is able to offer, in Sioux Falls, over 60 complete college degree programs from these public university campuses.

Sioux Falls is the largest city in South Dakota with an MSA population of about 250,000. Before the collaboration of the public universities in the 1990s, there was only ad hoc and minimal access for Sioux Falls area residents to public higher education within the city. The closest of the public universities is about an hour drive.

In 1999, Legislative approval permitted the SDBOR to lease space from the Sioux Falls School District (District) to be used for the delivery of public higher education programs. The District constructed the space and UC classes began there in January 2001. In March 2006, the SDBOR received Legislative approval and funding for the purchase of 260 acres of land two miles north of the leased space and for the construction of a new classroom building and a research building. This was the beginning of University Center as it is known today.

Statement of the Initiative

In 2009, University Center continued to lease the approximately 50,000 square feet of space from the District while also operating from its new buildings two miles north. The District started planning a new high school concept about this same time and decided that the space that UC was leasing would make the perfect location for their new school. In the summer of 2009, the District approached UC with the idea of a phased transition into the space. The District would need about 17% of UC space the first year (2010-2011) and about 40% the second year (2011 – 2012) and UC would need to be out completely and into a new building for the 2012-2013 year. This space sharing was a challenge for both organizations, but it was necessary. It was clear, however, that the sooner replacement space could be built the better off both organizations would be.

Design: Construction Manager at Risk or Design-Bid-Build?

The plan was to transform the lease payment into a bond payment for a second classroom building at the UC north site and consolidate UC activities into one location. We could not begin the building process until final legislative approval in the spring of 2010 and the traditional DBB process would require the full design stage and creation of bid documents for bidding in the late fall or winter. Thus, the reality of a South Dakota winter would permit work to most likely begin in spring 2011 with completion in spring 2012. While a commonly accepted timeline, it would be uniquely expensive since we would be doubling-up on lease payments for the District's space plus payments on the bonds. If we chose to capitalize interest and delay payments, it would have cost even more to retire the additional debt.

We sought approval to use the Construction Manager at Risk delivery model. We proposed it as the best process for two reasons. First, an accelerated schedule would permit us to leave our leased space earlier and CMR was clearly a better choice as certain aspects of the construction sequence could begin well ahead of the final development of drawings and specifications for interior spaces. Secondly, we believed that the sooner we got into the construction market with bid packages, the more likely we would be able to take advantage of a favorable construction cost climate and, hopefully, fully complete the project.

The Office of the State Engineer (OSE) and the SD Board of Regents approved the use of CMR and proposition SB106 was presented to the Legislature for funding approval. It was passed on March 11, 2010 and Governor Rounds signed the bill into law on March 29, 2010. As of that date, we had neither the A/E nor CMR on board. The timeline was short and our budget was set.

One month after the Governor's approval, on April 27, 2010, three design firms were interviewed and the services of Architecture, Incorporated were contracted. The programming and schematic design phases started immediately. We set an aggressive schedule of meetings with the architect, and UC faculty and staff to determine the requirements for the building, such as types of classrooms and labs, office space, space for specific equipment and locations for utilities, and the technology needs. Architecture Inc. started on the preliminary designs from these meetings and presented the first draft of building layouts on June 3, 2010.

Shortly after the design team came on board, construction companies were solicited to submit qualifications to be the project CMR including a portfolio of projects. OSE and two representatives from University Center determined a set of selection criteria and narrowed the

submissions down to 3 candidates. These 3 CMR candidates were then interviewed, the choice was made, and Sioux Falls Construction was hired as the Construction Manager at Risk in June 2010. They immediately went to work in parallel with the architect design team and owner and participated in every design and constructability meeting.

The use of CMR required a significant commitment of UC staff and faculty time in the planning stages and continued staff time throughout the process. Extensive time commitments were made to the project by the UC Physical Plant Manager and the UC Executive Dean's Program Assistant. They were intensely involved in the discussions, planning, equipment and furnishing purchases, and the follow-up required for this project.

Construction Manager at Risk Implementation

During the preliminary design phase, the CMR worked with the project team to perform cost and constructability studies, systems analysis, and develop key milestones for the implementation of the phased design and construction schedule in order that the aggressive timeline could be met.

The project was divided up into four main bid packages. The first bid package went out on August 26, 2010, and included the site work as well as deep foundation support, foundation and footings, and structural systems. A ground breaking ceremony was held on August 24th to commemorate the event. Dirt started to move the week of September 6, 2010, with much of the design work yet to be done.

The second bid package, for the building shell, went out to bid on September 1, 2010, and included roofing, precast materials, steel and precast erection, concrete slabs, elevator, site utilities, asphalt surfaces, and curb and gutter.

The third bid package, which was distributed in October, was based on the final building drawings and included the entire interior fit-up; the HVAC system, electrical and fire suppression systems as well as landscaping, irrigation and retaining walls. By this time the foundations were in and structural steel had been delivered.

The fourth bid package was issued in March of 2011 and included final site work items such as the parking lot, landscaping and the completion of a new entrance road to campus.

With an accelerated schedule, meetings were held frequently to discuss timelines, RFP/change order items, and other issues as they happened. Having the CMR, architect, engineers, and owner continually involved in the process, facilitated discussion, and fast turn around of decisions and approvals, which kept the process moving. This collaboration allowed for the owner to take possession on August 15, 2011, and the first classes were held in the new classroom building on August 28, 2011.

Benefits

Dick Dempster, Principle Architect for Architecture Inc. states, "*The project benefited from a design team and construction company who had experience and was familiar with the CM/R process and an Owner project building committee who committed to a compressed and keenly focused time schedule. Agreeing to regularly scheduled meetings was necessary for the most effective communications between the design team, the CM/R and the Owner's building committee. The design team and the CM/R were able to give the Owner's building committee adequate time to make decisions with a "look ahead" discussion at each meeting, especially during the pre-construction phase of the project. The building committee was given the*

authority to make decisions and since they were thoughtfully considered, there was virtually no second-guessing after a decision was rendered.

We believe this method of designing and constructing a building is especially valuable for complicated projects and tight time schedules where an Owner can commit to attending meetings that involve more detailed discussions throughout the project. The team atmosphere that is evident in a CM/R project is preferable over the often contentious atmosphere of a DBB (design-bid-build) project."

"Bringing in the CMR on board at the preliminary stages of the project design allowed the team to make informed decisions with regard to the building's design and constructability and how these decisions ultimately affected the overall project budget." Explained Darin Hage, VP, Building Division of Sioux Falls Construction. "This delivery system for the project created a proactive and dynamic process throughout the project's implementation from concept to completion. In addition, this delivery system created a collaborative and team-oriented environment where the Owner, design team, and CMR worked together to achieve a common set of project goals. The CMR delivery model also allowed the Owner to get an accelerated approval for the project because the Gross Maximum Price for the project was set while the project was still in design development."

Measureable time and cost savings were realized using the CMR process. The time span from the date of the Governor's signature, to owner's occupation of the building, was about 17 months total. This delivery date was some 8-9 months sooner than could have been possible with design-bid-build and this saved UC about $333,000 in lease payments.

Another advantage of the construction manager at risk delivery model was having the whole team come together early in the design process. Thus, the architect and construction manager are both estimating and value-engineering the project as design goes along, with the goal of eliminating bid-day surprises.

Using CMR to accelerate the schedule allowed us to take advantage of competitive construction market conditions by providing an open and competitive bidding environment for each bid package. While the value of this is difficult to quantify, we were able to fully complete some classrooms that were planned in the original budget to be only shell spaces. The fit-up of these classroom spaces and a required generator was about $250,000. Thus, when the building opened it was completely finished within budget.

As noted earlier, we knew we would also achieve operating savings when we consolidated our facilities on our new land. While this was going to happen eventually, the accelerated schedule facilitated by using CMR permitted delivery in early FY 12 rather than in late FY 12. Thus; we were able to set the FY 12 operating budget with these savings contemplated. Although this was a one-time savings, it totaled nearly $128,000.

Many other benefits were realized with this project, some measurable, some not. The benefit that students realized by having one less semester to commute between two classroom buildings, two miles apart, is a known benefit but the savings would be difficult to calculate. Another benefit for both the District and UC was being able to move out of the “shared space” as we transitioned to our new space. A third benefit was the opportunity to design the new space to reflect changes that had evolved in UC’s program offerings over the past 10 years.

Retrospect

It was a good decision to use the construction manager at risk delivery model. We were able to accelerate the project even though we had extreme weather conditions from heavy snows and extreme cold weather to one of the wettest springs and summers ever recorded. The CMR process allowed us to get bids on the street early, which worked to our advantage. We gained financial ground at each major bid opening. Retrospectively, we don't feel that we would have done anything differently related to the CMR process and we are very satisfied with the results achieved. We finished on-time and within budget and because of the success of this and one other project similar to it, the SDBOR and the Office of the State Engineer have been prompted to review capital improvement process policies for future projects.