Public Private Partnerships and Schedule Risk Management: a Case Study of Akron

Patrick J. O'Brien, David Di Perna

Abstract:- Collaboration between private entities supplying capital for public projects presents unique challenges and risks for the contracting entities. In Ohio, universities can select developers to design and build facilities using a privately selected CM at Risk on their behalf but the developer is required to retain elements of public construction practices in their project execution, most notably, the CM at Risk must procure their subcontractors via the traditional public bidding process. On a project with a very challenging schedule, the Thomarios Construction Group, as Signet UA Development, LLC's CM at Risk, building a 158,800 SF, six story 531 room residence hall, instituted a series of innovative schedule management practices as part of the prebid preparation, validated subcontractor acceptance of the proposed practices during the procurement phase, and successfully executed the project implementing the risk management tools established as part of their planning processes to overcome a series of unforeseen conditions.

Keywords: PPP, risk management, construction management, schedule management, preconstruction, cost management, transparency.

I. Introduction

Collaboration between private entities supplying capital for public projects presents unique challenges, opportunities and risks for the contracting entities. In Ohio, universities can select developers to design and build facilities using a privately selected CM at Risk on their behalf but the developer can be required to retain elements of public construction practices in their project execution, most notably, the CM at Risk must procure their subcontractors via the traditional public bidding process. On a project with a very challenging schedule, the Thomarios Construction Group, as Signet UA Development, LLC's CM at Risk, building a 158,800 SF, six story, 531 room residence hall, instituted a series of innovative schedule management practices as part of the prebid preparation, validated subcontractor acceptance of the proposed practices during the procurement phase, and successfully executed the project implementing the risk management tools established as part of their planning processes to overcome a series of unforeseen conditions.

II. Project Parameters

In all jurisdictions, public funds for projects lag behind facilities master plans. The increasing use of private entities to build on behalf of public owners comes with challenges related to the legal and financial obligations public owners can and have placed on their private development partners.

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Private entities evaluation of project risk profiles in turn can drive decision-making to participate or pass (Ke, Wang, & Chen, 2011) on public-private ventures compared to remaining in the private arena. Construction law reform in the state of Ohio has loosened some of the constraints on project delivery methods but the backbone of requirements for private entity participation in public sector work was not altered in Ohio's sweeping 2010 reforms. At Akron University, as with other four year degree granting public institutions in the state of Ohio, the university's ability to build a residence hall to expand on campus housing with private money still incorporated facets of public bidding procurement of trade subcontracts, one of the most risk intensive elements of public project execution (Doloi, 2012). A private entity willing to commit to meeting strict deadlines of a complex project while concurrently taking on the legal liabilities associated with the traditional public process for procuring subcontractors, would need to have their team develop unique solutions to the risks associated with the project before proceeding. Akron University's South Residence Hall project, as funded by Signet, started with the RFQ process to evaluate the marketplace's determination of the feasibility of the project.

III. Project Definition

In 2010, Akron University had approximately 3,400 residence hall rooms on campus. for approximately 25,000 students. The strategic vision for the University is to have 40,000 students on campus by 2020. This will require more residence facilities! The 2010-2012 biennial funding cycle for capital projects at the Akron University campus that was approved in the state capital did not include funding for any dormitories. If Akron University was going to meet their strategic plan for growing student enrollment and the directly related amount of on campus housing, they would have to enlist the support of the private sector. The laws of the state of Ohio would allow the University to lease a dormitory space from a private developer with the developer paying 100% of the cost for construction. In many states, a private developer building a private project to be leased back to the University could execute the project with the project delivery method best suited to the developer's perspective on risk management for cost, schedule and quality. In Ohio, the developer would be required to adhere to certain elements of the public process, which would increase the risk profile of the project, regardless of schedule or budget.

There are several legal constraints that are frequently applied to private developer on a private project that have positive attributes for public owner's goodwill and funding partners, such as guaranteeing a maximum price, future management/operation of the facility, and demonstrating

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transparency in bidding to an open market via an number of arrangements for competitive bidding (Devitt, 2010; Johnston, 2012; Marques, R.C. & Berg, S., 2011; Report of the Ohio Construction Reform Panel, 2009). Requiring elements of open market, competitive selections for engaging trade contractors or subcontractors can diminish the potential perception that the private entities are overcharging the public owner. Using a CMR process instead of a single General Contractor or a Design-Builder creates accountability mechanisms within the developer team that both mirror pure public projects and reinforce the message that the developer is taking risk. Even prior to engaging trade contractors, using a competitive Request for Qualifications/Request for Proposals process for engaging the CMR, similar to public projects, is a good business practice and removes opportunities for claims of unethical conduct. Regardless of whether or not layers of transparency are required by legislation, policy or practice or not, adding layers of transparency to the procurement process to illuminate an open and fair process is a benefit to any public entity (Landow & Ebdon, 2012).

IV. Selection of a Private Partner

The request for proposals from the University of Akron for a developer gave the developer latitude in how they would propose to deliver the project and was a qualifications driven evaluation. Signet's decision to team up with Thomarios as their CM at Risk (CMR) created several traditional strengths for the Signet team. Thomarios' approach to the project gave the Signet team a competitive edge when they decided to include a section in their proposal on innovation and risk management. This paper will describe the time and cost management risks associated with this project that were uniquely solved by a creative public-private partnership team.

V. Risk Assessment by CM at Risk

The biggest risks to construction projects built in parts of the country with a defined winter season are schedule related, which in turn drive construction costs when a schedule has a fixed deadline. The biggest risk for a public owner in a public bidding process is the quality of the contractor with the lowest bid. The innovations by the Signet/Thomarios team in this project were to identify the schedule constraints and assign contingency and allowance allocations both internally to contractor contracts and externally as the CM at Risk's (CMR) contingency in direct correlation to their assessment of the risks while factoring in the bidding pool of public contractors that would be tasked with the work on the project.

The key milestones for this project, as identified by the CMR, were getting the building to bearing height to allow the roof to complete for enclosure before December 31, 2011, and subsequently completing permanent power and heat by January 31, 2012 to allow interior finishes to complete in a normal cycle. The CMR prepared a plan for diminishing the risks of weather or unforeseen conditions to improve the probabilities that the roof would be on the building before inclement weather could force temporary enclosure methods and their related costs. Thomarios' plan included detailed planning and scheduling for the sequence and durations for the masonry work that included allocations of contingency dollars to work additional shifts, hours and weekends for the inevitable lost days due to weather. By determining the most likely schedule path duration, Thomarios then calculated the difference between most probable completion and required completion with slightly worse than average weather conditions and masonry productivity to determine the magnitude of the potential recovery efforts they would need to invest in to be able to make the enclosure schedule milestone.

The methodology of creating a project bid schedule that would reflect manpower loaded durations for bidding masonry contractors would have been risky for the CMR. Unforeseen issues and weather delays would be the subject of potential claims and disagreements regarding impacts between the CMR and their subcontractors (Mills, Jr. & Gorham, 2002; Appelbaum, Currie, Welin, 2009). The innovation by the CMR was to quantify those risks and pre-allocate contingency as an allowance in the bid package the contractor was required to carry WITH notification to the bidding subcontractors that extended shifts or premium time days would be required. As an incentive to the bidding subcontractors, the CMR included a provision that the contractual allowances included in the bid as line items in pricing were nevertheless going to counted as part of the lump sum bid contract, which, if unused, could still be billed by the subcontractor. This accomplished the following items:

1. The CMR removed risk of a bidding contractor in a critical trade claiming they could perform the job without premium time or extra shifts, setting up a future potential argument of staffing, production and the costs associated with both.
2. Removed or significantly diminished the risk of the selected subcontractor claiming hourly rates well in excess of their normal operating costs for premium time due the incentive to collect the balance of allowance dollars as pure profit if unused.
3. Decreased the risk that the project contingency funds would be re-allocated to alternate work scope or priorities before they were needed for supplemental manpower to meet enclosure.

VI. Risk Management Assessment and Tools

The risk management assessment of this project conducted by the CMR identified critical schedule activities and milestones that would become a focus of the contingency allocations and special conditions for bidding subcontractors. Based on a May 2011 start date and a completion requirement of July 1, 2012 for the 153,000 square foot building, the milestones included starting setting the roof trusses by November 1, 2011, enclosure of the roof and shell by December 31, 2011, and permanent power and HVAC operational by January 31, 2012. Several assumptions, not seen on traditional projects, were included in the bidder information for the subcontractors as prepared by the CMR to reduce project risks associated with hitting these dates. To be able to complete finishes in time for occupancy inspections and turnover, all finish trades specifications included mandatory double shifts to do four to five months of work in three months. The permanent

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HVAC and electric were required so the finish trades could move forward with their work. The HVAC contractor was advised that they would need to build their air handling units (AHU) inside the trusses after they trusses were set due the lead time on the AHU's. Taking weather into account, the assumption on the roof was that shingles may not go on until the Spring of 2012, so a rubber roof vapor barrier was specified as a temporary measure in the Fall of 2011.

In advance of responding to the RFQ/RFP, the CMR also identified potential problems with the pool of competent, quality subcontractors. Specific subcontractors identified as most risk intensive to project success were masonry, in a load bearing masonry building, and roofing. Common bidder pool constraints from fully developed specification criteria with the pre-allocated contingency dollars from the manpower loaded tasks for the building shell (concrete foundations, load bearing masonry, roof) was the strategy the CMR decided to employ to negate the requirements associated with public bidding. Delving into an additional potentially risky problem area, the CMR made the precat plan floor subcontract part of the masonry contractor's bid package to avoid having to manage issues related embedded structural supports, elevations, tolerances and installation scheduling. As a subcontractor to the masonry subcontractor, the precast supplier and installer would come to the project as s single entity with the mason who had selected the precast vendor. At this second tier level of subcontractors, the precast vendor would not be subject to the public bidding constraints and the mason could select a vendor at their discretion, based on quality, compatibility, past working experience and price.

An additional risk management tool implemented by the CMR was a 5% contingency fund for their own use for managing problems with materials, subcontractors or unforeseen conditions on the $27.8 million project. The CMR had a contract penalty of over $500,000 for missing the August 1, 2012, 100% completion turnover date for the project.

VII. Project Execution

This section of the paper will describe the risk events that occurred on the project and how the CM team was able to manage them with their advance planning tools. The project started on time in May of 2011 but the following items were unforeseen conditions that the CMR had to manage and still hit the project completion deadline:

a. Owner natural gas line relocation through the site delayed by 4 months; no permanent gas service until December 12, 2011 (was required by August 11, 2011 for use with temporary utilities and plumbing piping/connections.)

b. Asbestos containing material (ACM) found in existing buildings on site to be demolished despite AHERA report provided by Owner to the contrary.

c. Final Building Permit not released by State Department of Industrial Compliance until March of 2012.

d. Additional smoke detectors required by code official above and beyond original plan.

e. Drywall subcontractor could not maintain pace/staffing/production required for the project.

VIII. CMR Implementation of Risk Tools

The CMR team's planning and preparation for the project significantly reduced the threats and risks to normal project execution. Subcontractor selections were able to be based on the normal qualitative criteria related to past performance, management team, financial capacity as well as the predetermined special schedule durations and staffing requirements. The combination of price, past performance and ability to communicate and demonstrate an awareness of the unique challenges of the project made subcontractor selections, from a pool of public respondents, successful to the extent that only one subcontractor had to be removed or have their workforce supplemented on the project.

The ACM delay for remediation, three weeks on the critical path, at the commencement of the project, pushed the mason and roofer into time frames later in the Fall than they would have started. However, the built-in contingency allocations for overtime for the foundation crews and masons were able to be tapped without harming the overall project contingency and the enclosure milestone was met. The gas line delay, while not 100% on the critical path, created issues for the plumber's ability to run their piping from the main service into the building as would normally happen. The CMR provided direction to make assumptions regarding locations and the CMR set aside contingency dollars to manage costs associated with making the connections to the gas line when it was finally relocated by the local utility on behalf of the Owner. While the relocation of the gas line was uncertain, the CMR also switched plans to use propane for temporary heat and made the appropriate coordination. The CMR had included the costs for temporary heat as an allowance so there was no dispute over who would provide what type of heat or when. Additionally, less than 10% of the temporary heat allowance was actually used because the project was able to get enclosed on time and get the permanent HVAC up and running on time.

Building permit and building department issues are not unusual. In Ohio however, partial permits for foundations and then for shell/structure can be issued if managed correctly by the design team and coordinated with the CMR who can provide specific and relevant shop drawings. The CMR team was prepared for the late change to add additional fire detection devices by setting up their first temporary occupancy inspections in June of 2012. When the request by the Authority having Jurisdiction (AHJ) came to add devices, the completion and turnover date was not in jeopardy because of the early inspections.

IX. Conclusion

The 153,000 square foot Akron University South Residence Hall was completed and turned over to the University on time and on budget with an aggressive schedule with no claims, litigation or disputes at the end of the project by Signet UA Development and their CMR, the Thomarios Construction Group. In public private partnerships, close attention must be given to the pre-construction planning for project schedules for maximum risk reduction. Creating subcontractor bid packaging plans tailored to the project risk assessment and apportioning contingency assets accordingly as well can ensure greater

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probabilities of completion on time and under budget. Detailed planning allows private partners to procure the most visible aspect of the project, the project contractors/subcontractors and suppliers, as closely as possible to the processes used by their public counterparts, creating transparency, whiling reducing risks to success for all parties involved.

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