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LEVERAGING THE BENEFITS OF LEAN INTEGRATED PROJECT DELIVERY ON PUBLIC PROJECTS

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1 PROJECT OVERVIEW

1.1 Background

The Town of Oakville, Ontario is currently restoring and re-constructing a 1950's heritage arena and preserving one of the few remaining examples in Ontario of a wooden Hippel truss roof assembly. The \$40M Trafalgar Park Revitalization Project (the "project") includes the expansion of the existing arena to a 65,000 square foot complex with a new NHL size ice pad and new, accessible change rooms; the addition of a new community centre, a fitness centre and a seniors' centre; accessible improvements to the adjacent park, including an outdoor skating rink; and a new, separate 14,000 square foot, three-crew fire station on the property.

1.2 Project Constraints

In addition to the usual constraints of budget, schedule and scope, there were a number of uncommon risks to the project, including: the structural integrity and capacity of the heritage designated wood trusses and crumbling foundations in the arena; the environmental impact of a former gas station occupancy on the property; a tight budget based on 2014 estimates, a very tight site with challenging grading issues; and managing the programming needs and expectations of four different user groups, as well as the public.

1.3 Project Delivery Model

In our past construction projects, we've typically used the more ubiquitous project delivery models, such as Design-Bid-Build, Design-Build and Construction Management. In our experience, these models inherently make it very difficult to meet budget and schedule constraints without impacting the quality of the end product while achieving the expectations of the user groups. These models are essentially adversarial in nature, where the involved parties (the consultants, the constructor and the owner) can only gain at the expense of one or both of the other parties. We investigated other, more collaborative models, and due to the unusual risks associated with this project, we decided to try lean integrated project delivery (IPD).

1.4 Project Team

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David Dow, OAA, Principal, Diamond Schmitt Architects.
Brian Watkinson, OAA, Principal, Strategies 4 Impact! (IPD Advisor)
Dick Bayer, The Realignment Group (IPD Advisor)

2 INNOVATION

2.1 Lean Integrated Project Delivery

Lean Integrated Project Delivery has proven to be effective in the United States, successfully delivering hundreds of large, diverse projects. Oakville's Trafalgar Park Revitalization project is the first Lean IPD project in a Canadian municipality. This revolutionary approach to delivering capital projects has now been adapted by this team to suit the unique demands of Canadian municipalities with respect to public procurement and accountability. Lean IPD aligns the interests of the parties; it creates a collaborative environment where team members all benefit from driving down cost while maintaining the agreed quality, program and schedule for the project. This sharing of risk and reward may be the most significant factor that separates IPD from other project delivery models. It uses established lean principals to increase value to the owner, to reduce waste and to maximize efficiency; the model is an embodiment of sustainability.

3 LESSONS LEARNED

3.1 What Worked

3.1.1 Target Value Design (TVD)

The goal of TVD is to design to the project budget, not to budget a design.

The IPD process ("Validation") revealed that the original 2014 budget estimate was missing significant, required scope. Unexpected site conditions also added cost and risk to the project as well as the falling Canadian dollar. At one point in this iterative design process, the market value of the project was \$4M over budget. Using TVD, we right-sized the facilities, validated the scope and programming requirements with the user groups, identified and quantified all project risks and determined what the budget should be to achieve the required outcomes. Through this process, we were able to save over \$3M. Council approved that budget, as well as some enhancements to the project, and we've now started construction. Because of this process, we now know not only what we're going to build, but exactly how we're going to build it, what it will cost and what we're getting for our money. We have never had this level of understanding at this stage in any of our previous projects, so this outcome alone is a huge success and is exactly what we were hoping to achieve.

3.2 Opportunities for Improvement

3.2.1 Town Staff Time Commitment

Staff involvement has varied over the project to date, but our staff time commitment is significantly more than we've been used to, with staff from across the organization involved in the process (including operations staff). We've learned that this involvement is critical to project success, and must be anticipated and supported by senior management. It's important to have the right people in the room when decisions need to be made.