



"NEXT" PRACTICES IN PROJECT DELIVERY DRIVES SUCCESS OF NISKU SPINE ROAD PROJECT

BACKGROUND

The Nisku Spine Road is located within the Nisku Industrial Business Park, the largest business park in Canada and the second largest in North America. Nisku is a major economic driver within the Greater Edmonton Capital Region with more than 450 businesses of a local, national and international nature providing employment to approximately 25,000 people. Businesses based in Nisku include PCL Constructors Inc., National Oilwell Varco, Ritchie Brothers Auctioneers, Precision Drilling, Halliburton, Weatherford, Trinidad Drilling and Manufacturing, and many more.

When completed, the Nisku Spine Road will provide an important alternate transportation link to the Queen Elizabeth II Highway, which is presently the single major connection between the City of Edmonton, Nisku Industrial Park and the City of Leduc, as well as being the main north/south transportation corridor in the province. Over 90,000 vehicles commute daily between these areas which includes the strategically located Edmonton International Airport.

Phase 1Ai of the Spine Road between 37th Avenue and 30th Avenue / Township Road 510 was constructed in 2015 by Sureway Construction under contract to Leduc County. The scope of work had a tendered value of \$14.8 million and included 3300m of 450mm water main, construction of 1.9 km of new 4 lane paved roadway, realignment and reconstruction of 600m of existing roadway along 30th Avenue / TWP Rd 510, a new signalized intersection, and a new stormwater outfall to Irvine Creek.

PROCUREMENT OF CONSTRUCTION SERVICES

The traditional means of procuring construction services for heavy civil construction in the Edmonton area has been through the Design-Bid-Build (DBB) model utilizing standardized unit price contracts. However, the "low price" focus commonly associated with DBB often results in an adversarial relationship between the engineer, owner, and contractor due to misaligned expectations, poor pre-planning, and lack of project documentation.

The Nisku Spine Road project represents the single largest value capital project undertaken by Leduc County in its history. In order to provide additional resources and expertise, the County contracted RPM Consulting Services to provide overall Project Management for this phase of the Spine Road. Throughout the planning and design phases of the project, a number of risks and issues related to the construction were identified. In an effort to mitigate these potential risks, the use of an alternative procurement model was proposed by the Project Manager. The Best Value Business Model (BVBM) developed by Arizona State University (ASU) addresses many of the key issues that had been identified and had the potential to increase the overall success of the project. The model applies best business practices to the DBB delivery method by simplifying the selection process, involving all key parties in a structured pre-planning period, and measuring project performance during construction. While still utilizing an open bidding process, contractors are selected on the basis of factors that include price, but also technical capability, proposed key personnel, quality, and expertise. The model does not change the owner's standard requirements or process; rather, it overlays on the existing contracts / documents and creates new efficiencies.

A number of public organizations throughout Canada have begun using the model. In 2011, the University of Alberta was the first Canadian organization to integrate the BVBM into their capital project delivery program. They have delivered over 20 projects totalling \$200M+ with great success (less than 3% contractor schedule delays and change orders). The City of Spruce Grove has also used the approach on three projects (\$12M, 0% change orders), and is expanding their application of it to other projects. In January 2015, Leduc County Council approved the use of the Best Value Business Model for the Nisku Spine Road Phase 1Ai and entered into an agreement with ASU to lead the process. As a result, Leduc County, in partnership with RPM



Consulting Services Inc. and Arizona State University became the first organization in Canada to utilize this new model for the procurement of a heavy civil construction project.

BEST VALUE BUSINESS MODEL

For the past 20 years, the Performance Based Studies Research Group (PBSRG) at ASU has been testing and refining this business model. It has been most frequently utilized in the procurement of construction, design, and facility services. The underlying concepts are simple:

- Attract and hire “Experts” using an efficient performance-based selection process
- Have the expert pre-plan the project from start to finish, and identify potential risks with mitigating strategies
- Align owner and contractor expectations before the contract is signed
- Measure performance as well as any deviation from the plan during the delivery of the project

To date, 1,750 projects and services worth \$6.3 Billion have been delivered with a 98% customer satisfaction.

Specific to Canada, over \$730M in spend has been delivered under the BVBM since 2011. Of the delivered projects, 15% possessed a clear prior condition or previous performance level that has allowed clients or third party auditors to perform ROI calculations of implementing the BVBM. The resultant independent quantitative measures have documented over \$33M in cost savings or cost avoidance, which equates to a ROI of over 2400%. Qualitative and client opinion measures of value put the ROI even higher.

There are three phases of the BVBM process:

Phase 1: Identifying Potential Best Value

During the first phase, the Owner identifies the potential best value proponent by soliciting and evaluating responses to the public proposal call. In addition to submitting pricing to complete the work, contractors are also required to include additional information such as past performance of both the company as well as key personnel that will be involved in the project. Contractors also submit a risk plan where they identify and prioritize what they perceive to be the key technical and non-technical project risks (as well as strategies for minimizing them). They may also offer a list of proposed ideas that bring added value to the project, milestone schedule, and any owner-specific requirements. All proposals are stripped of identifying information in order for a blind evaluation to be performed by the evaluation committee. Each component of the submission is limited in page length and must be completed on the provided templates in the tender packages. Interviews with the key personnel identified are conducted using a defined process. If there are no significant differentiators between proposers, then the owner moves forward with the low cost.

Phase 2: Pre-planning and Risk Management

The potential best value proponent identified in Phase 1 is provided with a list of concerns and risks that has been identified by the owner and its representatives. The proponent must then clarify the project plan that addresses all of the risks and concerns, as well as any other risks identified by the proponent. Expectations, roles, and responsibilities are clearly identified and aligned. Value options are detailed and can be invoked at the owner’s discretion. Other necessary coordination, verification, and validation activities also occur. The final part of Phase 2 is to coordinate the schedule of the ‘successful’ contractor, write the terms into the resulting contract documents and execute the contract. Due to the simplicity of the Phase 1 evaluation process, most owners have not experienced an increase in time from RFP to award when comparing their traditional practices to the BVBM.



Phase 3: Management Through Risk Minimization

Once the contract is signed, project work begins and the contractor monitors project performance in terms of cost and schedule deviations. The contractor submits a simple weekly report summarizing the project performance (change order rate, schedule delay rate, current project cost, and owner satisfaction). This report monitors project changes by date identified, date resolved, and plan to minimize the impact of the change, cost, and the owner's satisfaction with resolving the risk. This report is the basis of weekly project update meetings. At the project conclusion, the owner completes a closeout survey on their overall level of satisfaction with the delivery process and contractor.

NISKU SPINE ROAD PROJECT RESULTS

Risk Management / Schedule - The number one contractor-identified risk at the proposal submission stage of the project was the relocation of approx. 1.5 km of overhead powerlines, fibre optic cables, copper communication cables and 700m of medium pressure natural gas mains by the various Utility Companies. Even though extensive planning and scheduling has been done with each respective Utility Company prior to award of the contract, the Utility relocations quickly fell behind schedule. Due to the Best Value process, the Sureway Construction has identified the risk in their proposal and had built the risk of the Utility Companies being delayed into their work plan for the site. In the end the Utility company work was 10 weeks behind schedule and the contractor was able to substantially complete the construction and had the Road open only 4 days later than the original project schedule.

Cost / Change Management – The project was tendered at a value **\$14,755,894.21** and is currently certified at **\$15,609,868.42** with approximately **\$60,000** of landscaping work to be completed in 2016, for an estimated total contract value of **\$15,670,000**. As part of their proposal, Sureway Construction offered a number of value options that could provide a potential savings of close to \$1.0 million. By utilizing some of the cost savings offered, the County was able to offset a substantial portion of the costs related to quantity overrun on the topsoil excavation and disposal (increase from 60,000 m³ to 240,000 m³ – 400%) as well as some other design related changes required during construction. Of the **\$915,000** in additional contract value, **\$889,000** was the result of Owner requested additional work (new underground 900mm Stormwater line, landowner improvements in lieu of or as part of land acquisition compensation agreements, etc.). There were only 4 Contractor driven Change Orders in the amount of **\$60,000** were requested and approved.

Public Satisfaction – During the selection process, Sureway Construction demonstrated a clear understanding of the project constraints and the County's concerns with disruption of local traffic and presented a comprehensive plan of how they could deliver the work and minimize impact to the public and surround business that utilize 30th Ave. The Plan resulted in less than 10 complaints in the 6 month construction period. All complaints were minor in nature and were rectified within a few hours of receiving them.

This project was the County's first attempt at implementing a value-based project delivery system. Overall, the use of the Best Value Business Model on this Phase of the Spine Road Project has resulted in a high level of satisfaction for Leduc County, the Consulting team as well as the Contractor. Through the process, the County reduced proposal evaluation time by 75%, implemented a pre-planning clarification and team-alignment phase, and created a project performance-measurement system. The County found that the main advantage of the process was its ability to simplify contractor selection through the alignment of project expertise. This also had a direct affect upon the elimination of contractor-driven change orders and potential project delays. The results of debriefings with Proponents revealed that the process was open, fair, transparent, and enhanced the proposers' ability to differentiate themselves from their competition other than by price.