

Memorandum

To:	Jeff Norburn	For action by:	Jeff Norburn
From:	Jim Spiers, MHPM	For info of:	Gerry Longson, MHPM
Respond by:		Document number:	890164-0012
Subject:	Multiplex: Value Engineering Report	Revision Date:	January 23 rd , 2012

Jeff,

Find below our review of the 2010 project budget estimate of \$30M.

1.0 Background

MHPM Project Managers Inc. (MHPM) was engaged by the City of Quesnel in 2009-2010 to provide project management services for the initial planning and development of the North Cariboo Multi-Centre project

Consequently a Building Program and Outline Performance Specification were developed for pricing by the Cost Consultant, BTY. A March 2010 class D Cost Report estimated the total project cost of \$30.32M. Based upon the stated preference for the project to be procured using a design-build delivery vehicle, and with a level of estimate at the higher range of a +/-20% Class D level of certainty, the cost estimate was converted into the project budget of \$30M (1% variance).

The preferred use of a design-build project delivery vehicle provides a degree of certainty to the Owner that tender costs will not exceed the stated budget requirements, providing the project design specifications and budget are suitably realistic. Using a stipulated price option, the Owner is able to specify how much it is willing to pay for the building. Using a detailed performance specification, the Owner can accurately prescribe the type, size and specification of facility required. Through a competitive tender process, contractor's compete to present proposals that illustrate a conceptual design and provide specifications for materials and building systems that it is willing to construct for the price stipulated by the Owner.

The Functional Program corresponding to the estimated total project budget of \$30M consisted of:

- A Gross building area of 7,200 sq.m;
- An Arena with spectator seating for 1,600 people;
- A Theater with audience seating for 410 + 40 seats in the Orchestra pit;
- Use of Wood for architectural and structural components throughout;
- A multi-purpose room;
- LEED Gold Certification

The Total Project Budget of \$30M was based upon the Class D total project estimated as identified in table 1.0.

	Item	Estimated Cost
A	Construction (Design-Build)	\$27,429,800
B	Management & Overhead	\$926,900
C	Owner's Project Contingency	\$1,418,000
D	Furnishings, Fittings & Equipment	\$550,000
	Summary Total Project cost (March 2010)	\$30,324,700
E	Escalation	\$0
	Escalated Summary Total Project Cost	\$30,324,700

Table 1.0 Summary Total Project Cost, March 2010.

The March 2010 Cost Report identified components which were excluded from the total project cost estimate.

- Demolition of the existing arena;
- Site development associated with the demolished arena.

The estimated cost of the demolition and site development costs was \$1.2M or approximately 5% of the budgeted construction and infrastructure cost. It was determined that the costs of this work could be incorporated into the \$30M project budget, given the level of estimate classification, and more importantly the stated design-build delivery vehicle methodology.

The itemised costs of the demolition and site development costs are listed in table 1.1.

DEMOLITION & SITE DEVELOPMENT	
Description	Cash Allowance
Site Preparation (cut & fill, site re-grade etc.)	\$100,000
Hard Surfaces (new plaza, sidewalks, parking lot etc.)	\$420,000
Hard & Soft Landscaping	\$50,000
Mechanical Site Services (sewer, water, gas etc.)	\$100,000
Electrical Site Services (power, data, exterior lighting etc.)	\$100,000
Demolition (Demo of existing Arena #1)	\$350,000
General Requirements (site related)	\$89,600
Total Allowance for Site & Demolition	\$1,209,600

Table 1.1 Budget Exclusions.

We understand that the project has to date secured funding of \$22M against the project budget of \$30M. A go/no go decision to start the process to borrow the first \$15M of project capital is to be made in the second quarter of 2013.

Methodology

In 2012 MHPM conducted a review of the 2010 project budget against the proposed scope of work in order to verify the validity of the \$30M project budget. As a part of the review process, escalation was factored into the budget to determine a Q4 2012 baseline from which to make an assessment of the existing budget. Escalation is calculated to the mid-point of construction (forecast to be Q3 2014). Escalation to the mid-point of construction is excluded from this report.

In the event the project does not receive full funding a number of what-if scenarios were investigated. On account of the project's approval being contingent upon the inclusion of the Arena and Theater facility components, it was determined scenarios requiring the omission of either one of these key components would not be considered. It was accepted that theater and arena components may be downsized if the review of the existing budget indicated cost savings to the \$30M budget needed to be found to achieve the target budget. The attached spreadsheet (MHPM Document 890164-0010) indicates the target costs of the various components against incremental levels of overall project funding.

To assist with the preparation of this report, the original design consultant (Cannon Design) and cost consultant (BTY) were engaged by MHPM.

Effort in this exercise focused primarily on market variable factors (i.e. construction costs and percentage based design fees) forming as they do the largest percentage of the overall project cost. Elements such as design fees & contingencies are driven by the actual construction cost, and as a result of savings in this area, a trickle-down effect captures the corresponding cost savings.

A value engineering workshop was convened by MHPM on November 8th, 2012, attended by Cannon Design and BTY Group. The purpose of the workshop was to review the functional program, performance specifications and project budget, and develop governing parameters for the evaluation of cost saving options.

Quantitative Analysis

The break out of the March 2010 total project cost estimate of \$30.32M is shown in table 1.0 below.

	Item	Estimated Cost
A	Land Cost	\$0
B	Construction (Design-Build)	\$23,264,000
C	Contingencies	\$2,888,800
D	Infrastructure	\$1,152,000
E	Program Design	Excl.
F	Connection Fees & Permits	\$125,000
G	Management & Overhead	\$926,900
H	Owner's Project Contingency	\$1,418,000
I	Furnishings, Fittings & Equipment	\$550,000
J	Taxes (excl.)	Excl.
	Total Project cost (March 2010)	\$30,324,700
K	Escalation	\$0
	Escalated Project Cost	\$30,324,700

Table 1.0 Total Project Cost Estimate, March, 2010.

It was noted by the Cost Consultant at the time the estimate was produced that the estimate was based upon program areas and proportional block diagrams. The estimate was primarily based upon historical and unit rate cost data from similar projects, or projects with similar building components. This is standard industry practice, and is reflected in the stated level of estimate certainty (+/-20%).

Note that cost component items C (Contingencies) and H (Owner's Project Contingency) are separate 'pots' of contingency. Item C refers to contingency to be carried by the Contractor, providing coverage against unforeseen or unplanned conditions / events which occur during construction. Item H is a separate contingency carried by the Owner / Client. Owner's Project Contingency is used primarily for Owner related changes and additional project costs.

The estimate upon which the project budget was established was completed in March 2010. To bring the costs in line with today's market prices and provide an accurate assessment of the project budget or cost saving options in 2012, the impact of escalation must be calculated. The revised cost forms a new total project cost baseline from which the project budget can be considered. Table 1.1 below indicates total project cost estimate escalated to November 2012 market prices.

	Item	Target Cost
A	Land Cost	\$0
B	Construction (Design-Build)	\$24,204,074
C	Contingencies	\$2,975,166
D	Infrastructure	\$1,152,000
E	Program Design	Excl.
F	Connection Fees & Permits	\$125,000
G	Management & Overhead	\$973,642
H	Owner's Project Contingency	\$1,471,494
I	Furnishings, Fittings & Equipment	\$550,000
J	Taxes (excl.)	Excl.
	Total Project cost (Nov-2012)	\$31,451,376
K	Escalation	\$0
	Escalated Project Cost	\$31,451,376

Table 1.1 Escalated Total Project Cost Estimate, November, 2012.

Based upon 27 months of escalation, the revised baseline total project cost to provide all user requirements (the project scope) increased to \$31.45M. The escalated Class D project cost estimate of \$31.45M is a variance of <5% against the established project budget of \$30M.

Factoring in the Owner's stated preference for a design-build project delivery vehicle with a stipulated price option to provide the necessary degree of certainty that tender costs will not exceed the stated budget requirements, the <5% variance against the project budget at this stage of the project life-cycle suggests the project's budget can be maintained at \$30M.

The level of complexity, and accuracy of the project's performance based technical specifications, combined with the level of competition amongst bidders, and timing of construction will determine the final tender costs and extent to which the end product meets Owner Requirements and project budget.

Target Cost Savings: Findings

In collaboration with the Project Architect and Cost Consultant, options to reduce the cost of construction while retaining the theater and arena in the scope of the project were evaluated (Table 2.0). A total of \$2.44M of cost savings is achieved through consolidation and efficiencies in existing program space, and reductions in the performance specification.

VE Options	Saving
Building	-\$2,442,800
Change Ice Arena Building to pre-engineered structure	-\$750,900
Change exterior and shear walls to tilt-up panels to remaining portion	-\$454,200
Reduce program area by approximately 520m2	-\$1,049,300
Lowering performance scope and lower finishes to theatre	-\$188,400
Contingencies	\$0
	\$0
Infrastructure	\$0
	\$0
Program design	\$0
	\$0
Infrastructure, Connection Fees & Permits	\$0
	\$0
Connection Fees & Permits	\$0
	\$0
Management & Overhead	\$0
	\$0
Owner's Project Contingency	\$0
	\$0
Furnishings, Fittings & Equipment	\$0
	\$0
Demolition & Site Development	\$0
	\$0
Total VE Options	-\$2,442,800

Table 2.0 Summary Target Cost Savings, November, 2012

Based upon these findings we can quantify the minimum project budget required to deliver both the theater and arena components of the project as \$27.44M. In order to achieve a target project budget of \$27.44M, the Construction (Design-Build) cost must be limited to \$20.76M.

While a budget of \$27.44M will provide both theater and arena components, it is important to note the following scope reduction measures necessary to deliver a cost-effective solution which aligns itself to some degree with the original project proposal:

Specification:

- a. Replacement of a site specific structure with a pre-engineered facility;
- b. Exterior and shear walls changed to tilt-up panel system – replacing use of structural glue laminated timbers
- c. High Performance Energy Building – lower construction capital may increase operation costs
 - a. Lower specification for mechanical and electrical systems;
 - b. Lower performance specification for building envelope;
- d. Extensive reduction of BC Wood First policy scope. Utilised only in areas visible to the public.
- e. Industrial Aesthetic - Interior and Exterior Finishes, sandwich panels.

Scope:

- a. Maintain full size NHL ice surface
- b. Reduced arena seating capacity to 1200 seats (from 1600 seats)
 - a. The reduced Arena facility will maintain a fully functional arena.
- c. Reduced area of associated spectator support area
- d. Deletion of community-user small teams rooms (26m²)
- e. Deletion of multipurpose and bookable meeting program (232m²)

Appended to the report are examples of the envisioned form and character of the revised building at this scope and budget.

Because it is not feasible at this time to deliver the project for a budget below \$27.44 million which includes the theater and the arena components, these options were discounted and have not been explored further in this report.

Conclusions

At the direction of the Client, the project budget has been updated to account for escalation to November 2012. The escalated Class D project cost estimate of \$31.45M is a variance of <5% against the established project budget of \$30M.

Factoring in the Owner's stated preference for a design-build project delivery vehicle with a stipulated price option to provide the necessary degree of certainty that tender costs will not exceed the stated budget requirements, the <5% variance against the project budget at this stage of the project life-cycle suggests the project's budget can be maintained at \$30M.

The level of complexity, and accuracy of the project's performance based technical specifications, combined with the level of competition amongst bidders, and timing of construction will determine the final tender costs and extent to which the end product meets Owner Requirements and project budget.

Against the project budget of \$30M for a comprehensive scope of work, a value engineering exercise was conducted to reduce project budget. It was established the estimated minimum project budget required to deliver both the theater and arena components of the project is \$27.44M. In order to achieve a target project budget of \$27.44M, the Construction (Design-Build) cost must be limited to \$20.76M. This is a Class D estimate which is defined as an estimate with a level of certainty of +/-20%. Development of the project specifications and drawings will enable to the cost consultant to verify their existing assumptions and increase the accuracy of the estimate. While a budget of \$27.44M will provide both theater and arena components, it is important to note the scope reduction measures necessary to deliver a cost-effective solution.

January 23rd, 2012

890164-0012

If you have any questions, or require further information please do not hesitate to contact the undersigned.

Yours truly,

A handwritten signature in black ink, appearing to read "Jim Spiers". The signature is fluid and cursive, with a large initial "J" and "S".

Jim Spiers, MSc., BSc., LEED AP BD+C

Senior Project Manager | Pacific

MHPM PROJECT MANAGERS INC.

C.c Gerald Longson, Principal, MHPM Project Managers.

Encl. MHPM Document 890164-0010

MHPM Document 890164-0013