



YELLOWKNIFE Aquatic Centre

Concept Design Report
November 2020

Appendix F1: Class D Cost Estimate

CLASS D ESTIMATE

YELLOWKNIFE AQUATIC CENTRE POOL OPTIONS YELLOWKNIFE, NORTHWEST TERRITORIES

**Prepared for:
Taylor Architecture Group**

**October 28, 2020
(Revised Oct 29, 2020)**

Hanscomb
Quantity Surveyors - Since 1957

October 28, 2020
(Revised Oct 29, 2020)

Ref # OTT5733

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E: melani@tagyk.com

Attn: Melani Korver, Managing Associate

Re: Yellowknife Aquatic Centre, Pool Options, Yellowknife, Northwest Territories

Dear Ms Korver:

Please find attached our Class D Estimate for the Yellowknife Aquatic Centre, Pool Options in Yellowknife, Northwest Territories.

This Class D Estimate is intended to provide a realistic allocation of direct construction costs and is a determination of fair market value. Pricing shown reflects probable construction costs obtainable in the Yellowknife, Northwest Territories area on the effective date of this report and is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.

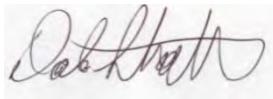
Hanscomb has prepared this estimate(s) in accordance with generally accepted principles and practices. Our general assumptions are included in Section 3 of this report and any exclusions are identified in Section 1.6. For quality assurance, this estimate has been reviewed by the designated Team Lead as signed below and Hanscomb staff are available and pleased to discuss the contents of this report with any interested party.

Requests for modifications of any apparent errors or omissions to this document must be made to Hanscomb within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

We trust our estimate is complete and comprehensive and provides the necessary information to allow for informed capital decisions for moving this project forward. Please do not hesitate to contact us if you have any questions or require additional information.

Yours truly,

Hanscomb Limited
Team Lead



Dale Stratton
PQS
Technical Manager - Ottawa

Hanscomb Limited
Principal / Estimate Reviewer



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Documents and Drawings:

- AA - Documents and Drawings List
- AB - Representative Drawings

1. INTRODUCTION

1.1 PURPOSE

This Class D Estimate is intended to provide a realistic allocation of direct construction costs for the Yellowknife Aquatic Centre, Pool Options, located in Yellowknife, Northwest Territories, with the exception of the items listed in 1.6 Exclusions.

1.2 DESCRIPTION

The Yellowknife Aquatic Centre, Pool Options located in Yellowknife, Northwest Territories is comprised of the following key elements:

There are four design options for this design build project:

- a) With a 25 m long eight-lane lap pool.*
- b) With a 50 m long eight-lane lap pool.*
- c) With a 25 m long six-lane lap pool.*
- d) With a 25 m long six-lane lap pool.*

The project will have concrete spread footing foundations, secured with rock anchors to the exposed bedrock. The lowest floor will be reinforced concrete and the second floor will be reinforced concrete on metal deck, supported on structural steel framing. The metal deck of the roof will be sloped to allow for drainage and will be supported on structural steel. The cladding will be prefinished metal, with a premium for a material, yet to be selected. The windows will be triple glazed units, with an area of 25 percent of the gross cladding area. The doors and partitions will be typical for a building of this type. The scope of work includes but is not limited to mechanical and electrical systems, equipment, new concrete slabs, and new steel structure. No specific LEED designation is targeted but the project will meet all applicable codes and standards.

No work has been included for the existing Ruth Inch Memorial Pool.

1.3 METHODOLOGY

Hanscomb has prepared this estimate(s) in accordance with generally accepted principles and practices. Hanscomb staff are available to discuss its contents with any interested party.

From the documentation and information provided, quantities of all major elements were assessed or measured where possible and priced at rates considered competitive for a project of this type under a design-build form of contract in Yellowknife, Northwest Territories.

Pricing shown reflects probable construction costs obtainable in the Yellowknife, Northwest Territories area on the effective date of this report. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.

1.4 SPECIFICATIONS

For building components and systems where specifications and design details are not available, quality standards have been established based on discussions with the design team.

1. INTRODUCTION

1.5 ESTIMATE CLASSIFICATION AND COST PREDICTABILITY

Estimates are defined and classified based on the stage of a project's development and the level of information available at the time of the milestone estimate.

This Class D Estimate is considered to have an expected degree of accuracy of +/- 20-30%. In other words, bid results might vary by this amount if the construction budget were set at this milestone estimate.

At the initial stages of a contemplated project, the cost accuracy of the estimate is low as there may be little or no information available to inform a first high-level concept estimate or order of magnitude estimate. As a project nears design completion and is ready to be released to market for tender, the level of accuracy of the estimate is high as the detail is generally extensive and typically represents the information on which contractors will bid.

Milestone cost estimates or "checks" are recommended as the project design develops to keep track of scope and budget. Early detection of potential budget overruns will allow for remedial action before design and scope are locked in. The number of milestone estimates will depend on a project's size and schedule and cost predictability will improve as the design advances.

According to the Canadian Joint Federal Government/Industry Cost Predictability Taskforce, industry standards for estimate classification and cost estimate accuracy may be summarized as follows:

COST ESTIMATE CLASSIFICATION SYSTEM						
AACE	Class 5	Class 4	Class 3		Class 2	Class 1
DND			Indicative		Substantive	
RAIC	OME	Sketch Design	Design Develop		Contract Documents	Tender Documents
GOC	OME	D	C	← B →		A
	↓	↓	↓		↓	↓
Design Documentation % Complete		12.5%	25.0%		95.0%	100.0%
Cost Estimate Accuracy (+/-%)	+/- 30%	+/- 20-30%	+/- 15-20%		+/- 10-15%	+/- 5-10%

Legend

AACE Association for the Advancement of Cost Engineering
DND Department of National Defence
GOC Government of Canada
RAIC Royal Architectural Institute of Canada
OME Order of Magnitude Estimate

While the classification categories differ from one authority to the next, the overarching principle for cost predictability remains the same – as the level of detail and design development increases, so does the level of accuracy of the estimate.

1. INTRODUCTION

1.6 EXCLUSIONS

This Class D Estimate does not provide for the following, if required:

- Cost of contaminated soil, and designated substance removal
- Equipment beyond that identified in this estimate
- Escalation contingency beyond that identified in this estimate
- Financing costs
- COVID-19 implications (see separated letter issued)
- Loose furniture, furnishings and equipment
- Special audio, visual, security equipment or installation other than provision of empty conduit systems carried in electrical division
- Winter Construction (Concrete foundation and masonry heating & hoarding)
- Premium for the supply of cold weather concrete
- No work has been included for the existing Ruth Inch Memorial Pool.
- Value-added tax (e.g. Harmonized Sales Tax, Goods and Services Tax, or other)
- Premiums associated with Public-Private Partnership procurement model
- Soft Costs
 - Building permit
 - Development charges
 - Easement costs
 - Fund raising costs
 - Land acquisition costs and impost charges
 - Legal fees and expenses
 - Owner's staff and associated management
 - Preventative maintenance contracts
 - Relocation of existing facilities, including furniture and equipment
 - Right of way charges
 - Value-added tax (e.g. Harmonized Sales Tax, Goods and Services Tax, or other)
- Unexpected labour unavailability and productivity disruptions leading to delays and added costs
- Supply chain disruptions leading to delays and added costs

2. DOCUMENTATION

This Class D Estimate has been prepared from the documentation included in Appendix AA of this report.

All of the above documentation was received from Taylor Architecture Group and was supplemented with information gathered in meeting(s) and telephone conversations with the design team, as applicable.

Design changes and/or additions made subsequent to this issuance of the documentation noted above have not been incorporated in this report.

3. COST CONSIDERATIONS

3.1 COST BASE

All costs are estimated on the basis of competitive bids (a minimum of 4 design bid teams and at least 4 subcontractor bids for each trade) being received in July 2021 from bid teams and all major subcontractors and suppliers based on a design-build form of contract. If these conditions are not met, bids received could be expected to exceed this estimate.

3.2 UNIT RATES

The unit rates in the preparation of this Class D Estimate include labour and material, equipment, subcontractor's overheads and profit. Union contractors are assumed to perform the work with the fair wage policy in effect.

3.3 GENERAL REQUIREMENTS AND FEE

General Requirements and Fee cover the General Contractor's indirect costs which may include but not be limited to supervision, site set up, temporary utilities, equipment, utilities, clean up, etc. as covered in Division 1 General Conditions of the Contract Documents. It also includes the contractor's fees and should not be confused with Design or Consultant fees which are excluded from the Construction Costs and carried separately in the Owner's Total Project Costs.

3.4 DESIGN AND PRICING ALLOWANCE

An allowance of 12.0% has been included to cover design and pricing unknowns. This allowance is not intended to cover any program space modifications but rather to provide some flexibility for the designers and cost planners during the remaining contract document stages.

It is expected that this allowance amount will be absorbed into the base construction costs as the design advances. The amount by which this allowance is reduced corresponds to an increase in accuracy and detailed design information. Hanscomb recommends that careful consideration be made at each milestone estimate to maintain adequate contingency for this allowance.

As a project nears completion of design, Hanscomb recommends retaining some contingency for this allowance for the final coordination of documents.

3.5 ESCALATION ALLOWANCE

All costs are based on October 2020 dollars. An allowance of 10.0% per annum has been made for construction cost escalation that may occur between October 2020 and the anticipated construction start date for the project, November 2022. Escalation during construction is included in the unit rates.

For escalation, the budgeted amount will typically decline as the time to award nears. Forecasting escalation requires careful assessment of a continually changing construction market which at best is difficult to predict. The escalation rate should be monitored.

3. COST CONSIDERATIONS

3.6 PROPONENT DESIGN ALLOWANCE

An allowance of 13.0% has been included to cover the cost of providing construction documents for the construction of the facility, including preliminary approval stages as indicated in the design build contract.

3.7 CONSTRUCTION ALLOWANCE

An allowance of 5.0% has been made to cover construction (post contract) unknowns. This allowance, also known as the Post Contract Contingency (PCC), is intended to cover costs for change orders during construction that are not foreseeable. It is not intended to cover scope changes to the contract. The amount carried in a budget for this allowance is typically set at the initial planning stage and should be based on the complexity of the project and the probability of unknowns and retained risks.

3.8 CASH ALLOWANCE

Cash allowances are intended to allow the contractor to include in the bid price the cost for work that is difficult to fully scope at the time of tendering based on factors that are beyond the Owner and Prime Consultant's control. Cash allowances attempt to reduce the risks by dedicating a set amount for use against a certain cost that cannot yet be detailed. The Contractor is obligated to work as best as possible within the limitations of the Cash Allowance.

Examples of Cash Allowances include hardware, inspection and testing, site conditions, replacement of existing elements during demolition for renovation, hazardous materials abatement, signage, etc.

Any Cash Allowances if applicable are included either in the details of this estimate under the appropriate discipline or at the summary level.

3.9 TAXES

No provision has been made for the Harmonized Sales Tax. It is recommended that the owner make separate provision for HST in the project budget.

3.10 SCHEDULE

Pricing assumes a standard schedule of work appropriate to the size and scope of this project. Premiums for off-hour work, working in an operational facility, accelerated schedule, etc., if applicable, are identified separately in the body of the estimate.

3.11 STATEMENT OF PROBABLE COSTS

Hanscomb has no control over the cost of labour and materials, the contractor's method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of experience, qualifications and best judgment of the professional consultant familiar with the construction industry. Hanscomb cannot and does not guarantee that proposals, bids or actual construction costs will not vary from this or subsequent cost estimates.

3. COST CONSIDERATIONS

3.12 LIFE CYCLE COST ANALYSIS DEFINITIONS

Capital Costs – These are the costs to construct the facility before it goes into operation.

Operation & Maintenance Costs – These costs are the ongoing costs to operate and maintain the building during the 25-year life of the building. Items included within these costs are staffing, communications, custodial & basic maintenance, security, maintenance & repair, water & sewer, building envelope and built-in equipment repairs. These costs have been developed using historical data.

Energy Costs – These costs are the ongoing costs to heat and cool the building during the 25-year life of the building. These costs have been developed using historical data for similar types of buildings. We would be able to better quantify these costs as the design develops and the projected total energy use for the new building is quantified.

Cyclical Renewal Costs and Salvage Value – During the life of a building certain items need to be replaced for the building to continue to be used to its full potential. We have included allowances for these renewals based on the current level of design. We will be able to split these costs into more details as the design develops. The salvage value is the inherent value of the items renewed during the life of the building at the end of the study period. For example, we are assuming that the interior finishes will be renewed every 8 years, so they would be renewed during years 8, 16 and 24. Since the interior finishes were just renewed in year 24 then at the end of the study period the interior finishes are brand new have still have significant inherent value and we deduct that costs from the overall cost.

3.13 ONGOING COST CONTROL

Hanscomb recommends that the Owner and design team carefully review this document, including line item description, unit prices, clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/schemes should be evaluated before proceeding into the next design phase.

It is recommended that a final updated estimate at the end of the design stage be produced by Hanscomb using Bid Documents to determine overall cost changes which may have occurred since the preparation of this estimate. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. Hanscomb cannot reconcile bid results to any estimate not produced from bid documents including all addenda.

This estimate does not constitute an offer to undertake the work, nor is any guarantee given that an offer, to undertake the work at the estimate(s) price, will subsequently be submitted by a construction contractor. Unless explicitly stated otherwise, it is assumed that competitive bids will be sought when tender documents have been completed. Any significant deviation between bids received and a pre-tender estimate prepared by Hanscomb from the same tender documents, should be evaluated to establish the possible cause(s).

3. COST CONSIDERATIONS

3.14 COVID-19 CLASS A ESTIMATE STATEMENT

If this project is expected to be tendered in the near future and because risks related to COVID-19 are a currently known but unquantifiable project risk at this time and therefore may not support a claim under any force majeure contract clause, Hanscomb expects general contractors to include in their bids an allowance for COVID-19 risk unless that risk is mitigated in the bid documents. Inclusion of an allowance for risk related to COVID-19 will increase the overall cost of the project, in some cases materially.

Hanscomb believes inclusion of these risks in bids could impact normal competitive market conditions resulting in a bid price increase by a minimum of 5 to 10% or in extreme situations as much as 10 to 20%.

We encourage building owners and Architect & Engineering teams to address this situation by providing clear directives to the bidders on risk mitigation for COVID-19 within the tender documents.

Items related to COVID-19 that may be included in bidders' risk allowances:

- Reduced site productivity due to:
 - lack of availability of labour for sickness and other reasons
 - delays related to recruiting or unavailability of replacement workers
 - social/physical distancing requirements
 - site shutdowns due to outbreaks among site workers
 - government mandated industry shutdowns
 - delays in delivery of materials and equipment to the site
 - unavailability of materials due to factory closure or shipping interruption
 - delays related to acquiring substitutions for unavailable materials
- Effect of reduced site productivity on project schedule
- Effect of project schedule delays on overheads

If any, or all of these risks are encountered the completion date for the project will be delayed.

4. GROSS FLOOR AND SITE DEVELOPED AREAS

Gross Floor Area

8 Lane Lap Pool	25m Pool	50m Pool
Description	m2	m2
Main Floor	3,615	4,470
Second Floor	1,083	996
Total Gross Floor Area	4,698	5,466

6 Lane Lap Pool	25m Pool	50m Pool
Description	m2	m2
Main Floor	3,471	4,196
Second Floor	1,083	996
Total Gross Floor Area	4,554	5,192

Site Developed Area - 8 Lane	25m Pool	50m Pool
Description	m2	m2
Site	10,315	11,170
Building Footprint	3,615	4,470
Total Site Developed Area	6,700	6,700

Site Developed Area - 6 Lane	25m Pool	50m Pool
Description	m2	m2
Site	10,171	10,896
Building Footprint	3,471	4,196
Total Site Developed Area	6,700	6,700

Site Developed Area is the area of the site less the foot-print area of the building.

The above areas have been measured in accordance with the Canadian Institute of Quantity Surveyors' Method of Buildings by Area and Volume.

5. CONSTRUCTION COST ESTIMATE SUMMARY

8 Lane 25m Lap Pool

New Construction	4,698 m2	5,116.37	\$24,036,700
Site Development	6,700 m2	215.73	\$1,445,400
Demolition & Alterations			
Sub-total	4,698 m2		\$25,482,100
General Requirements	23.0%		\$5,860,900
Fee	10.0%		\$3,134,300
Sub-total	4,698 m2	7,338.72	\$34,477,300
Design and Pricing Allowance	12.0%		\$4,137,300
Escalation Allowance	10.0%		\$3,861,500
Construction Allowance	5.0%		\$2,123,800
Total Construction Cost	4,698 m2	9,493.38	\$44,599,900
Proponents Design Allowance	13.0%		\$5,798,000
Connecting the district heating supply			\$1,654,100
Total Construction Cost - Including Design	4,698 m2	11,079.61	\$52,052,000

8 Lane 50m Lap Pool

New Construction	5,466 m2	5,330.31	\$29,135,500
Site Development	6,700 m2	215.73	\$1,445,400
Demolition & Alterations			
Sub-total	5,466 m2		\$30,580,900
General Requirements	23.0%		\$7,033,600
Fee	10.0%		\$3,761,500
Sub-total	5,466 m2	7,569.70	\$41,376,000
Design and Pricing Allowance	12.0%		\$4,965,100
Escalation Allowance	10.0%		\$4,634,100
Construction Allowance	5.0%		\$2,548,800
Total Construction Cost	5,466 m2	9,792.17	\$53,524,000
Proponents Design Allowance	13.0%		\$6,958,100
Connecting the district heating supply			\$1,654,100
Total Construction Cost - Including Design	5,466 m2	11,367.76	\$62,136,200

Variance \$10,084,200

NOTES

1. An allowance for connecting the district heating supply to new facility, an additional cost of \$1,654,100.
2. A separate letter regarding COVID-19 Concerns has been issued for this project and should be reviewed in conjunction with this report.
3. A public referendum is required for the approval of this project, the design build contractors will be required to hold their bid for up to five months. Any additional costs should be included in the escalation allowance carried with this estimate.

5. CONSTRUCTION COST ESTIMATE SUMMARY

6 Lane 25m Lap Pool

New Construction	4,554 m2	5,171.76	\$23,552,200
Site Development	6,700 m2	215.73	\$1,445,400
Demolition & Alterations			
Sub-total	4,554 m2		\$24,997,600
General Requirements	23.0%		\$5,749,400
Fee	10.0%		\$3,074,700
Sub-total	4,554 m2	7,426.81	\$33,821,700
Design and Pricing Allowance	12.0%		\$4,058,600
Escalation Allowance	10.0%		\$3,788,000
Construction Allowance	5.0%		\$2,083,400
Total Construction Cost	4,554 m2	9,607.31	\$43,751,700
Proponents Design Allowance	13.0%		\$5,687,700
Connecting the district heating supply			\$1,654,100
Total Construction Cost - Including Design	4,554 m2	11,219.48	\$51,093,500

6 Lane 50m Lap Pool

New Construction	5,192 m2	5,426.93	\$28,176,600
Site Development	6,700 m2	215.73	\$1,445,400
Demolition & Alterations			
Sub-total	5,192 m2		\$29,622,000
General Requirements	23.0%		\$6,813,100
Fee	10.0%		\$3,643,500
Sub-total	5,192 m2	7,719.30	\$40,078,600
Design and Pricing Allowance	12.0%		\$4,809,400
Escalation Allowance	10.0%		\$4,488,800
Construction Allowance	5.0%		\$2,468,800
Total Construction Cost	5,192 m2	9,985.67	\$51,845,600
Proponents Design Allowance	13.0%		\$6,739,900
Connecting the district heating supply			\$1,654,100
Total Construction Cost - Including Design	5,192 m2	11,602.39	\$60,239,600

Variance \$9,146,100

NOTES

1. An allowance for connecting the district heating supply to new facility, an additional cost of \$1,654,100.
2. A separate letter regarding COVID-19 Concerns has been issued for this project and should be reviewed in conjunction with this report.
3. A public referendum is required for the approval of this project, the design build contractors will be required to hold their bid for up to five months. Any additional costs should be included in the escalation allowance carried with this estimate.

4. UNDERSTANDING THE ELEMENTAL COST SUMMARY

The cost information prepared and presented by Quantity Surveyors is organized in a form referred to by Quantity Surveyors as an 'Elemental Cost Summary'. In this format, the more 'intuitive' elements (e.g. foundations, exterior cladding, plumbing, etc.) of a building are evaluated rather than materials or trades. Quantity Surveyors track this information consistently from project to project to benchmark not just the overall unit rate of a building type but also rates and ratios for key elements. Below are some of the key features on the Elementary Cost Summary you will find on **page A-1** of this estimate:

- Building components are summarized as elements 'A2 Structure' and then sub-elements 'A23 Roof Construction'. This allows review of Roof Construction costs whether it is steel, concrete or wood - something difficult with a trade summary.
- Ratio to GFA evaluates design efficiency and highlights outliers. It is arrived at by dividing the parametric quantity of a sub-element (i.e. overall exterior wall area) by the building gross floor area (GFA). A ratio greater than 0.600 for 'A32 Walls Above Grade' is considered high and may be due to articulation, courtyard design or high floor to floor heights.
- The 'Unit Rate' is the blended rate of a sub-element's costs divided by its parametric quantity and allows a review of its reasonableness relative to bench-marks. A rate of \$559/m² indicates a good quality exterior wall cladding.
- The last column expresses the cost of each element as a percentage of total construction cost. At 18.7% of total construction costs, mechanical and electrical systems are considered basic.
- The 'Rate per SF' (m²) column converts costs for each element or sub-element to a \$/SF (m²) of GFA for comparison to benchmark rates. A rate of \$217/m² indicates basic electrical design.
- General Requirements & Fee cover General Contractor's overheads (site set up, supervision, etc.) and contractor's expenses. Fee is not for Consultants.
- Allowances are critical for estimates. Design & pricing compensates for a lack of detail early in design; escalation considers changes to labour & material; construction allowance is for unforeseen conditions; and, cash allowances offer flexibility for items difficult to detail at bid.

Project				Report date : 19 Jul 2017		
Location				Page No. : A - 1		
Owner				Bldg Type : 420		
Consultant				C.T. Index : 0.0		
				GFA : 1,582 m ²		
Element	Ratio to GFA	Elemental Cost Quantity Unit Rate	Elemental Amount Sub-Total Total Sub-Total Total %			
A SHELL		1,582 m ²	1,582,900 1,582,900 1,582,900 35.6			
A1 SUBSTRUCTURE	1.000	1,582 m ²	158.03 250,000 158.03 4.9			
A11 Foundations	0.001	1 Nil	0.00 0 0.00			
A12 Basement Excavation	0.001	1 Nil	0.00 0 0.00			
A13 Special Conditions	0.001	1 Sum	0.00 0 0.00			
A2 STRUCTURE	1.000	1,582 m ²	64.92 102,700 64.92 9.1			
A21 Lowest Floor Construction	1.000	1,582 m ²	0.00 0 0.00			
A23 Roof Construction	1.013	1,602 m ²	226.53 366,100 226.53 21.6			
A23 Roof Construction	1.013	1,602 m ²	226.53 366,100 226.53 21.6			
A3 EXTERIOR ENCLOSURE	0.001	1 Nil	0.00 0 0.00			
A31 Walls Below Grade	0.001	1 Nil	0.00 0 0.00			
A32 Walls Above Grade	1.096	1,602 m ²	559.22 612,600 559.22 35.4			
A32 Walls Above Grade	1.096	1,602 m ²	559.22 612,600 559.22 35.4			
A33 Windows & Entrances	0.003	4 Lvs	3,275.00 13,100 8.28			
A34 Roof Coverings	1.013	1,602 m ²	220.22 362,800 220.22 14.0			
A35 Projections	1.000	1,582 m ²	83.63 132,300 83.63 5.3			
B INTERIORS	1.582	1,582 m ²	1,033,400 1,033,400 65.3 20.1			
B1 PARTITIONS & DOORS	1.582	1,582 m ²	382,800 382,800 24.2 7.4			
B11 Partitions	1.582	1,582 m ²	155.29 250,600 155.29 9.8			
B12 Doors	0.038	69 Lvs	2,205.00 132,300 83.63			
B2 FINISHES	1.000	1,582 m ²	75.35 119,200 75.35 4.8			
B21 Floor Finishes	1.000	1,582 m ²	75.35 119,200 75.35 4.8			
B22 Ceiling Finishes	1.000	1,582 m ²	91.28 144,400 91.28 5.8			
B23 Wall Finishes	2.314	3,660 m ²	39.83 134,800 85.21			
B3 FITTINGS & EQUIPMENT	1.000	1,582 m ²	159.36 252,100 159.36 10.1			
B31 Fittings & Fixtures	1.000	1,582 m ²	159.36 252,100 159.36 10.1			
B32 Equipment	1.000	1,582 m ²	0.00 0 0.00			
B33 Elevators	0.001	1 Nil	0.00 0 0.00			
B34 Escalators	0.001	1 Nil	0.00 0 0.00			
C SERVICES	1.582	1,582 m ²	984,400 984,400 62.6 20.1			
C1 MECHANICAL	1.000	1,582 m ²	145.26 228,800 145.26 9.2			
C11 Plumbing & Drainage	1.000	1,582 m ²	145.26 228,800 145.26 9.2			
C12 Fire Protection	1.000	1,582 m ²	31.04 49,100 31.04 1.9			
C13 HVAC	1.000	1,582 m ²	170.35 269,500 170.35 10.7			
C14 Controls	1.000	1,582 m ²	45.95 72,700 45.95 2.9			
C2 ELECTRICAL	1.000	1,582 m ²	42.54 67,300 42.54 2.7			
C21 Service & Distribution	1.000	1,582 m ²	42.54 67,300 42.54 2.7			
C22 Lighting, Devices & Heating	1.000	1,582 m ²	116.81 184,800 116.81 7.3			
C23 Systems & Ancillaries	1.000	1,582 m ²	57.65 91,200 57.65 3.6			
NET BUILDING COST - EXCLUDING SITE			\$ 3,827,700 2,419.53 74.4			
D SITE & ANCILLARY WORK	1.582	1,582 m ²	799,800 799,800 50.5 15.6			
D1 SITE WORK	6.541	10,348 m ²	48.71 504,100 318.65 19.5			
D11 Site Development	6.541	10,348 m ²	48.71 504,100 318.65 19.5			
D12 Mechanical Site Services	0.001	1 Sum	167,400.00 167,400 10.5 3.2			
D13 Electrical Site Services	0.001	1 Sum	126,300.00 126,300 8.0 2.4			
D2 ANCILLARY WORK	0.001	1 Nil	0.00 0 0.00			
D21 Demolitions	0.001	1 Nil	0.00 0 0.00			
D22 Alterations	0.001	1 Nil	0.00 0 0.00			
NET BUILDING COST - INCLUDING SITE			\$ 4,627,500 2,925.09 89.9			
Z1 GENERAL REQUIREMENTS & FEE	8.0%		370,200 370,200 23.4 6.8			
Z11 General Requirements	8.0%		370,200 370,200 23.4 6.8			
Z12 Fee	3.0%		149,900 149,900 9.4 2.7			
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES			\$ 5,147,900 3,253.68 100.0			
Z2 ALLOWANCES	10.0%		514,800 514,800 32.1 9.7			
Z21 Design & Pricing Allowance	10.0%		514,800 514,800 32.1 9.7			
Z22 Escalation Allowance	2.5%		141,600 141,600 8.9 2.7			
Z23 Construction Allowance	3.0%		174,100 174,100 10.9 3.3			
Z24 Cash Allowances	1 Sum	100,000.00	100,000 6.2 1.9			
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES			\$ 5,078,100 3,184.24			
VALUE ADDED TAX (GST/HST)	0.0%		0 0 0.00			
Value Added Tax (GST/HST)	0.0%		0 0 0.00			
TOTAL CONSTRUCTION ESTIMATE			\$ 5,078,100 3,184.24			

J2351-Z1

CLASS C ESTIMATE

The power of the Elemental Cost Summary lies in the ability to compare costs with similar building types as well as alternatives without losing sight of the cost associated with that element of the building. By using this format consistently across all projects, Quantity Surveyors can better understand why the 'roof covering' element may be more on this project, if it's fulfilling the same function as a similar project.

**Appendix
A - Detailed Elemental Estimate - 8 Lane 25m Pool**

Project	: Yellowknife Aquatic Centre	Report date	: 29 Oct 2020
	: 25m Pool, 8 Lane	Page No.	: 1
Location	: Yellowknife, NWT	Bldg Type	: 550
Owner	: City of Yellowknife	C.T. Index	: 0.0
Consultant	: Taylor Architecture Group	GFA	: 4,698 m2

ELEMENTAL COST SUMMARY

Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%
		Quantity	Unit rate	Sub-Total	Total	Sub-Total	Total	
A SHELL		4,698 m2			10,767,600		2,291.95	31.2
A1 SUBSTRUCTURE					1,906,900		405.90	5.5
A11 Foundations	0.770	3,615 m2	264.00	952,800		202.81		
A12 Basement Excavation	0.770	3,615 m2	214.00	773,500		164.64		
A13 Special Conditions	0.000	1 Sum	180,600.00	180,600		38.44		
A2 STRUCTURE					4,789,600		1,019.50	13.9
A21 Lowest Floor Construction	0.770	3,615 m2	430.00	1,552,700		330.50		
A22 Upper Floor Construction	0.230	1,083 m2	710.00	768,800		163.64		
A23 Roof Construction	0.770	3,615 m2	683.00	2,468,100		525.35		
A3 EXTERIOR ENCLOSURE					4,071,100		866.56	11.8
A31 Walls Below Grade				0		0.00		
A32 Walls Above Grade	0.410	1,930 m2	686.00	1,323,100		281.63		
A33 Windows & Entrances	0.110	534 m2	2,474.00	1,321,300		281.25		
A34 Roof Coverings	0.770	3,615 m2	390.00	1,409,900		300.11		
A35 Projections	0.000	1 Sum	16,800.00	16,800		3.58		
B INTERIORS		4,698 m2			4,866,100		1,035.78	14.1
B1 PARTITIONS & DOORS					1,047,700		223.01	3.0
B11 Partitions	0.630	2,948 m2	301.00	886,300		188.65		
B12 Doors	0.010	45 No	3,587.00	161,400		34.36		
B2 FINISHES					1,997,900		425.27	5.8
B21 Floor Finishes	1.000	4,698 m2	166.00	781,300		166.30		
B22 Ceiling Finishes	1.000	4,698 m2	144.00	676,700		144.04		
B23 Wall Finishes	1.710	8,054 m2	67.00	539,900		114.92		
B3 FITTINGS & EQUIPMENT					1,820,500		387.51	5.3
B31 Fittings & Fixtures	1.000	4,698 m2	99.00	464,000		98.77		
B32 Equipment	1.000	4,698 m2	23.00	106,500		22.67		
B33 Pool Equipment	0.000	1 Sum	1,130,000.00	1,130,000		240.53		
B34 Elevator	0.000	1 No	120,000.00	120,000		25.54		
C SERVICES		4,698 m2			8,403,000		1,788.63	24.4
C1 MECHANICAL					6,259,500		1,332.38	18.2
C11 Pool Plumbing & Drainage	1.000	4,698 m2	380.00	1,785,000		379.95		
C12 Plumbing & Drainage	1.000	4,698 m2	183.00	861,400		183.35		
C13 Fire Protection	1.000	4,698 m2	68.00	318,400		67.77		
C14 HVAC	1.000	4,698 m2	603.00	2,834,700		603.38		
C15 Controls	1.000	4,698 m2	98.00	460,000		97.91		
C2 ELECTRICAL					2,143,500		456.26	6.2
C21 Service & Distribution	1.000	4,698 m2	181.00	850,000		180.93		
C22 Lighting, Devices & Heating	1.000	4,698 m2	172.00	810,000		172.41		
C23 Systems & Ancillaries	1.000	4,698 m2	103.00	483,500		102.92		
NET BUILDING COST - EXCLUDING SITE				\$	24,036,700		5,116.37	69.7
D SITE & ANCILLARY WORK		4,698 m2			1,445,400		307.66	4.2
D1 SITE WORK					1,445,400		307.66	4.2
D11 Site Development	1.430	6,700 m2	108.00	725,400		154.41		
D12 Mechanical Site Services	0.000	1 Sum	600,000.00	600,000		127.71		
D13 Electrical Site Services	0.000	1 Sum	120,000.00	120,000		25.54		
D2 ANCILLARY WORK					0		0.00	0.0
D21 Demolitions				0		0.00		
NET BUILDING COST - INCLUDING SITE				\$	25,482,100		5,424.03	73.9
Z1 GENERAL REQUIREMENTS & FEE					8,995,200		1,914.69	26.1
Z11 General Requirements		23.0 %		5,860,900		1,247.53		
Z12 Fee		10.0 %		3,134,300		667.16		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$	34,477,300		7,338.72	100.0
Z2 ALLOWANCES					10,122,600		2,154.66	
Z21 Design & Pricing Allowance		12.0 %		4,137,300		880.65		
Z22 Escalation Allowance		10.0 %		3,861,500		821.95		
Z23 Construction Allowance		5.0 %		2,123,800		452.06		
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES				\$	44,599,900		9,493.38	
VALUE ADDED TAX (GST/HST)					0		0.00	
Value Added Tax (GST/HST)		0.0 %		0		0.00		
TOTAL CONSTRUCTION ESTIMATE				\$	44,599,900	\$	9,493.38	

A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A11 Foundations					
1	Allowance for clearing, grubbing	3,615 m2	8.00	28,900	
2	Reinforced concrete perimeter strip footing, 250 x 800mm	254 m	215.00	54,600	
3	Reinforced concrete interior strip footing, 250 x 800mm, allow	58 m	215.00	12,500	
4	Reinforced concrete perimeter pad footing, 250 x 1000 x 1000mm	33 no.	420.00	13,900	
5	Reinforced concrete interior pad footing, 250 x 1000 x 1000mm	39 no.	420.00	16,400	
6	Reinforced concrete frost walls, 200mm thick	589 m2	610.00	359,300	
7	Reinforced concrete walls, 200mm thick, to interior	131 m2	610.00	79,900	
8	Reinforced concrete pilasters, 500 x 500mm	33 no.	1,400.00	46,200	
9	Reinforced concrete piers, 500 x 500mm	35 no.	1,540.00	53,900	
10	Allowance for 200mm rigid insulation, frost protection to perimeter footings	460 m2	180.00	82,800	
11	Allowance for waterproofing and parging to o/s face of foundation walls	589 m2	85.00	50,100	
12	Allowance for 100mm rigid insulation to i/s face of frost walls	589 m2	100.00	58,900	
13	Reinforced concrete elevator pad c/w pit walls, etc.,	1 no.	10,000.00	10,000	
14	Allowance for drainage system	3,615 m2	23.60	85,400	
	- Allowance for sump pits	4 no.	5,000.00	20,000	
	- Allowance for perimeter drainage	254 m	45.00	11,400	
	- Allowance for interior drainage system	1,200 m	45.00	54,000	
A11 Foundations		TOTAL : \$	3,615 m2	263.57	952,800

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A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A12 Basement Excavation					
1	Allowance for soil excavation to expose bedrock, working spaces, excess material removed from site	5,600 m3	45.00	252,000	
2	Allowance for rock excavation as required for pool depth, services, etc., used on site as fill	1,500 m3	150.00	225,000	
3	Backfill with Engineered fill below main floor	1,900 m3	85.00	161,500	
4	Backfill with excavated material to o/s of foundations	3,000 m3	45.00	135,000	
A12 Basement Excavation					
TOTAL : \$		3,615 m2	213.97	773,500	

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A2 STRUCTURE	Quantity	Unit rate	Amount	Remarks
A21 Lowest Floor Construction				
1 Reinforced concrete slab on grade, allow 150mm thick c/w 10M @ 200mm c/c	2,658 m2	215.00	571,500	
2 Allowance for slab thickening at masonry partitions, trench drains, etc.,		allow	30,000	
3 Lap pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	525 m2	150.00	78,800	
4 Extra over to above for ramp	20 m2	200.00	4,000	
5 Reinforced concrete walls to above, 300mm thick, average	95 m2	730.00	69,400	
6 Leisure pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	369 m2	150.00	55,400	
7 Extra over to above for ramp	64 m2	150.00	9,600	
8 Reinforced concrete walls to above, 300mm thick, average	218 m2	730.00	159,100	
9 Extra over to above for curves, features, etc.,	72 m2	100.00	7,200	
10 Allowance for features		allow	10,000	
11 Therapy pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	63 m2	150.00	9,500	
12 Extra over to above for ramp and stairs	16 m2	400.00	6,400	
13 Reinforced concrete walls to above, 300mm thick, average	66 m2	730.00	48,200	
14 Extra over to above for curves, features, etc.,	60 m2	100.00	6,000	
Carried Forward :			1,065,100	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21	Lowest Floor Construction (Continued)		Brought Forward :	1,065,100	
15	Extra over for waterproofing compound to pool areas	1 sum	18,000.00	18,000	
	- Allowance for compound added to concrete mix	1 sum	12,000.00	12,000	
	- Allowance for filling pool to activate compound, including removal	1 sum	6,000.00	6,000	
16	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation, compacted granular	3,615 m2	115.00	415,700	
17	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation to pool walls	379 m2	100.00	37,900	
18	Steel stair down to service room level	2 flight	8,000.00	16,000	
A21 Lowest Floor Construction TOTAL : \$		3,615 m2	429.52	1,552,700	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A22 Upper Floor Construction					
1	Concrete topping on metal deck c/w welded wire mesh	903 m2	180.00	162,500	
2	Concrete topping on metal deck c/w welded wire mesh, tiered construction to spectator seating	180 m2	240.00	43,200	
3	Structural support to above	1,083 m2	486.70	527,100	
	- OWSJ, beams, columns	59,565 kg	8.00	476,500	
	- Miscellaneous metals, connections, consumables	5,957 kg	8.50	50,600	
4	Concrete filled metal pan stairs c/w painted steel pipe handrails, public access	2 flight	12,000.00	24,000	
5	Concrete filled metal pan stairs c/w painted steel pipe handrails to upper service space	1 flight	12,000.00	12,000	
A22 Upper Floor Construction		TOTAL : \$	1,083 m2	709.88	768,800

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A23 Roof Construction					
1	38mm acoustical metal deck, galvanized to Natatorium	2,048 m2	52.00	106,500	
2	Structural support to above, galvanized	2,048 m2	746.20	1,528,300	
	- OWSJ, beams, columns	153,600 kg	9.00	1,382,400	
	- Miscellaneous metals, connections, consumables	15,360 kg	9.50	145,900	
3	38mm metal deck, other areas	1,567 m2	45.00	70,500	
4	Structural support to above	1,567 m2	486.80	762,800	
	- OWSJ, beams, columns	86,185 kg	8.00	689,500	
	- Miscellaneous metals, connections, consumables	8,619 kg	8.50	73,300	
5	Roof overhang, measured with projections		nil		
A23 Roof Construction		TOTAL : \$ 3,615 m2	682.74	2,468,100	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A32 Walls Above Grade					
1	EW1, 22 gauge corrugated metal on 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	1,351 m2	625.00	844,400	
2	EW2, premium cladding system, 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	579 m2	710.00	411,100	
3	Allowance for sealants, foamed-in-place insulation, exterior painting, etc.,	1,930 m2	35.00	67,600	
A32 Walls Above Grade					
TOTAL : \$		1,930 m2	685.54	1,323,100	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A33 Windows & Entrances					
1	Triple glazed windows and curtain wall in fibreglass framing	508 m2	2,500.00	1,270,000	
2	Insulated hollow metal doors c/w frames, standard hardware	4 no.	3,000.00	12,000	
3	Glazed aluminum doors c/w frames, standard hardware	4 no.	4,200.00	16,800	
4	Overhead door to service room, manually operated	1 no.	11,000.00	11,000	
5	Allowance for hardware upgrades	8 no.	1,000.00	8,000	
6	Push button barrier free door operators	1 no.	3,500.00	3,500	
7	Louvres, by mechanical		nil		
A33 Windows & Entrances					
TOTAL : \$		534 m2	2,474.34	1,321,300	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A34 Roof Coverings					
1	4mm MBM cap, 3mm MBM base, 3mm board mech. fastened, sloped insulation, 250mm rigid insulation, air barrier, 13mm primed deck boards	3,615 m2	390.00	1,409,900	
2	Roof overhang, measured with projections		nil		
A34 Roof Coverings					
TOTAL : \$		3,615 m2	390.01	1,409,900	

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B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B11 Partitions					
1	Typical partition, 16mm type X gypsum board both sides	1,660 m2	210.00	348,600	
2	Typical partition, service areas	958 m2	270.00	258,700	
3	Elevator shaft walls	81 m2	330.00	26,700	
4	Glazed partition to lobby, etc.,	249 m2	800.00	199,200	
5	Allowance for firestopping, solid blocking, acoustical sealants, etc.,	2,948 m2	18.00	53,100	
6	Operable partitons, not indicated		nil		
B11 Partitions		TOTAL : \$	2,948 m2	300.64	886,300

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B12 Doors					
1	Hollow metal doors c/w frames, standard hardware	28 no.	2,400.00	67,200	
2	Glazed aluminum doors c/w frames, standard hardware	6 no.	3,300.00	19,800	
3	Solid core wood doors c/w frames, standard hardware	8 no.	2,300.00	18,400	
4	Hollow metal doors to crawl space c/w frames, standard hardware	3 no.	2,500.00	7,500	
5	Push button barrier free door operators	1 no.	3,500.00	3,500	
6	Allowance for hardware upgrades	45 no.	1,000.00	45,000	
B12 Doors					
TOTAL : \$		45 No	3,586.67	161,400	

B2 FINISHES	Quantity	Unit rate	Amount	Remarks
B21 Floor Finishes				
1 Ceramic tile	991 m2	225.00	223,000	
2 Allowance for special tiles, markings to above		allow	30,000	
3 Pools, ceramic tile c/w membrane	957 m2	431.60	413,000	
- Pool bottom	957 m2	225.00	215,300	
- Pool walls	379 m2	225.00	85,300	
- Edge tile c/w gutter	227 m	460.00	104,400	
- Allowance for stair, lane, etc., special tile, warning strips, etc.		allow	8,000	
4 Sheet flooring	395 m2	110.00	43,500	
5 Rubber tile flooring	130 m2	120.00	15,600	
6 Sealer/hardener to exposed concrete	1,276 m2	40.00	51,000	
7 Epoxy flooring c/w cove base	47 m2	110.00	5,200	
B21 Floor Finishes	TOTAL : \$ 4,698 m2	166.30	781,300	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B22 Ceiling Finishes					
1	Paint to exposed structure	1,326 m2	50.00	66,300	
2	Finish to Natatorium, allow	894 m2	250.00	223,500	
3	Suspended gypsum board c/w paint finish	1,200 m2	135.00	162,000	
4	Suspended acoustic tile system	1,281 m2	60.00	76,900	
5	Extra over to above for painted gypsum board bulkheads	800 m2	160.00	128,000	
6	Allowance for features, clouds, acoustical baffles, etc.,		allow	20,000	
TOTAL : \$		4,698 m2	144.04	676,700	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B23 Wall Finishes					
1	Exposed cedar to steam room	75 m2	135.00	10,100	
2	Allowance for epoxy paint	600 m2	75.00	45,000	
3	Ceramic tile to washrooms, changerooms, etc.,	486 m2	190.00	92,300	
4	Wall covering to Natatorium, c/w 300mm high ceramic base	1,255 m2	85.00	106,700	
5	Paint	5,646 m2	40.00	225,800	
6	Intumescent paint to exposed structure to Natatorium, change rooms, etc.,		allow	40,000	
7	Allowance for other finishes, upgrades, etc.,		allow	20,000	
B23 Wall Finishes		TOTAL : \$	8,054 m2	67.04	539,900

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B31 Fittings & Fixtures					
1	Washroom accessories, allowance	1 sum	30,000.00	30,000	
2	Washroom and change room partitions, solid phenolic	1 sum	58,000.00	58,000	
3	Millwork	1 sum	160,000.00	160,000	
4	Manually operated blinds, exterior	508 m2	100.00	50,800	
5	Lockers	1 sum	53,000.00	53,000	
6	Interior signage and wayfinding	1 sum	40,000.00	40,000	
7	Exterior signage	1 sum	50,000.00	50,000	
8	Janitor accessories	1 sum	2,200.00	2,200	
9	Corner guards, protection, etc.,	1 sum	20,000.00	20,000	
B31 Fittings & Fixtures					
TOTAL : \$		4,698 m2	98.77	464,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B32 Equipment					
1	Wet sauna equipment	1 sum	15,000.00	15,000	
2	Turnstile, security system	1 sum	17,000.00	17,000	
3	Security grille to canteen	1 sum	4,000.00	4,000	
4	Mechanical access doors	1 sum	7,000.00	7,000	
5	Spectator seating	180 m2	352.80	63,500	
	- Guard, including wheel chair areas	41 m	1,200.00	49,200	
	- Bench seating	130 m	110.00	14,300	
6	Other equipment and loose furniture, not included		nil		
7	Gym and fitness equipment, not included		nil		
B32 Equipment		TOTAL : \$	4,698 m2	22.67	106,500

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B33 Pool Equipment					
1	Therapy pool	1 sum	230,000.00	230,000	
2	Lap pool, 25m	1 sum	150,000.00	150,000	
3	Leasure pool	1 sum	600,000.00	600,000	
4	Pool equipment miscellaneous, mobilization, commissioning, shop drawings, testing, etc.,	1 sum	150,000.00	150,000	
B33 Pool Equipment					
TOTAL : \$		1 Sum	1,130,000.00	1,130,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B34 Elevator					
1	Two stop front loading elevator	1 no.	120,000.00	120,000	
TOTAL : \$		1 No	120,000.00	120,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage				
1 25m lane lap pool water supply & filtration system (1200gpm)	1 sum	430,000.00	430,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	400,000.00	400,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
2 Leisure pool water supply & filtration system	1 sum	635,000.00	635,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	600,000.00	600,000	
- Allow for pool water system controls	1 sum	25,000.00	25,000	
3 Therapy pool water supply & filtration system	1 sum	230,000.00	230,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	200,000.00	200,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
4 Pool drainage and backwash system	1 sum	250,000.00	250,000	
- Under ground pool drainage and back wash piping, deck drains, skimmers, pumps etc.(all 3 pools)	1 sum	250,000.00	250,000	
5 Pool chemical treatment - Calcium hyochlorite feed system	1 sum	55,000.00	55,000	
6 Pool chemical treatment - Sodium bisulphate feed system	1 sum	30,000.00	30,000	
7 Pool chemical supply, 1 year	1 sum	75,000.00	75,000	
8 Pool chemical treatment - CO2 injection system, not included		nil		
Carried Forward :			1,705,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage (Continued)		Brought Forward :	1,705,000	
9 Pool plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings , manuals, tagging, identification, testing, verification etc.	1 sum	80,000.00	80,000	
C11 Pool Plumbing & Drainage	TOTAL : \$	4,698 m2	379.95	1,785,000

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C12 Plumbing & Drainage					
1	Plumbing fixtures, ultra low flow & low flush	53 no.	1,724.50	91,400	
	- Water closet	23 no.	2,200.00	50,600	
	- Lavatory c/w faucet	12 no.	1,600.00	19,200	
	- Shower head & balancing valve	18 no.	1,200.00	21,600	
2	Domestic water (hot & cold)	1 sum	200,000.00	200,000	
	- Water entry assembly	1 sum	10,000.00	10,000	
	- DCW, DHWS & DHWR piping, pumps, insulation, fixture connections etc.	1 sum	140,000.00	140,000	
	- DHW pre heating using HX from backwashing or draining pools	1 sum	20,000.00	20,000	
	- DHW water heaters	1 sum	30,000.00	30,000	
3	Sanitary drainage	1 sum	240,000.00	240,000	
	- Above & under ground SAN drainage and vent piping, floor drains, cleanouts, sump pumps etc.	1 sum	240,000.00	240,000	
4	Grey water harvesting from pool change rooms fixtures	1 sum	80,000.00	80,000	
	- Allow for filters, UV treatment, tanks, pumps, piping, valves, connections etc.	1 sum	80,000.00	80,000	
5	Storm drainage	1 sum	100,000.00	100,000	
	- Allow for roof drains, RWLs, insulation, U/G drainage piping, cleanouts etc.	1 sum	100,000.00	100,000	
6	Fuel oil supply for back up heating boilers	1 sum	120,000.00	120,000	
	- Allow for 9600G outdoor oil tank, piping, valves, filters, pumps, day tanks & connections to boilers	1 sum	120,000.00	120,000	
7	Plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	30,000.00	30,000	
C12 Plumbing & Drainage		TOTAL : \$	4,698 m2	183.35	861,400

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C13 Fire Protection				
1 Incoming FW supply c/w backflow preventer fed directly from City water main	1 sum	15,000.00	15,000	
2 FW main header, zone valves, drain connections etc.	1 sum	12,000.00	12,000	
3 Fire department connection c/w dip check valve & piping	1 sum	10,000.00	10,000	
4 Fire water/sprinkler main piping	1 sum	40,000.00	40,000	
5 Sprinkler system c/w piping & heads	4,698 m2	45.00	211,400	
6 Allow for fire extinguishers	1 sum	10,000.00	10,000	
7 Fire protection miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	20,000.00	20,000	
8 Note:- Fire pump not included		nil		
C13 Fire Protection	TOTAL : \$ 4,698 m2	67.77	318,400	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C14 HVAC				
1 Building heating	1 sum	907,700.00	907,700	
- Note:- Primary heating source from existing biomass district heating system, expected load 2079kW		incl.		
- Oil burning boiler back up system c/w two 1250kW boilers	1 sum	250,000.00	250,000	
- Allow for plate & frame heat exchanger, pumps, piping, valves, insulation, terminals & connection	4,698 m2	140.00	657,700	
2 Pool water heating	1 sum	100,000.00	100,000	
- Dedicated heat exchanger for 25m competition pool, 0.3 deg.C./hr, allow	1 no.	30,000.00	30,000	
- Dedicated heat exchanger for leisure pool, 1.1 deg.C./hr, allow	1 no.	15,000.00	15,000	
- Dedicated heat exchanger for therapy pool, 2.8 deg.C./hr, allow	1 no.	25,000.00	25,000	
- Allow for piping and connections to base building heating system	1 sum	30,000.00	30,000	
3 Dedicated cooling for server room	1 sum	12,000.00	12,000	
- Split air conditioner c/w outdoor condenser	1 sum	12,000.00	12,000	
4 Natatorium (pool area & all associated decks) ventilation	1 sum	1,000,000.00	1,000,000	
- Air handling unit AHU-1(OA) 30,500 l/s c/w SF, EF, heat recovery, 318 kW HC, 71kW DX cooling	1 no.	680,000.00	680,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	320,000.00	320,000	
5 Administration, multipurpose rooms and canteen ventilation	1 sum	300,000.00	300,000	
- Air handling unit AHU-2(ERV) c/w heat recovery, HW heting & DX cooling, 3600 l/s	1 no.	140,000.00	140,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	160,000.00	160,000	
6 2nd floor office ventilation	1 sum	100,000.00	100,000	
- Air handling unit AHU-3 c/w HW heting & DX cooling, 1600 l/s	1 no.	40,000.00	40,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	60,000.00	60,000	
Carried Forward :			2,419,700	

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C14 HVAC (Continued)			Brought Forward :	2,419,700	
7	Canteen dedicated exhaust system	1 sum	40,000.00	40,000	
	- Allow for exhaust fan, ductwork, hoods, louvers, fire wrap etc.	1 sum	40,000.00	40,000	
8	Change rooms and washrooms exhaust	1 sum	120,000.00	120,000	
	- Allow for EA ductwork, grilles, tie into main pool area heat recovery systems	1 sum	120,000.00	120,000	
9	Miscellaneous exhaust and ventilation	1 sum	75,000.00	75,000	
	- Allow for chlorine room exhaust and ventilation	1 sum	15,000.00	15,000	
	- Allow for service spaces exhaust and ventilation	1 sum	60,000.00	60,000	
10	HVAC miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification etc.	1 sum	40,000.00	40,000	
11	Testing, adjusting, balancing and commissioning	1 sum	140,000.00	140,000	
C14 HVAC		TOTAL : \$	4,698 m2	603.38	2,834,700

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C15 Controls					
1	Allow for DDC controls	1 sum	460,000.00	460,000	
C15 Controls		TOTAL : \$	4,698 m2	97.91	460,000

C2 ELECTRICAL		Quantity	Unit rate	Amount	Remarks
C21 Service & Distribution					
1	Service & distribution, 800A 347/600V 3Ph 4w	1 sum	400,000.00	400,000	
2	Standby diesel generator, 500kW 347/600V 3Ph inside building c/w 800A ATS, load bank etc	1 sum	400,000.00	400,000	
3	Electrical Misc.	1 sum	50,000.00	50,000	
	- Permits, fees & inspection	1 sum	8,000.00	8,000	
	- Drawings & manuals	1 sum	10,000.00	10,000	
	- Sealing & fire-stopping	1 sum	2,000.00	2,000	
	- Mobilization	1 sum	30,000.00	30,000	
C21 Service & Distribution		TOTAL : \$	4,698 m2	180.93	850,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C22 Lighting, Devices & Heating				
1 Light fixtures	4,698 m2	100.00	469,800	
2 Exit & emergency lighting	1 sum	50,300.00	50,300	
3 Lighting controls	4,698 m2	15.00	70,500	
4 Power outlets, devices & connections	4,698 m2	35.00	164,400	
5 Connections to mechanical equipment	55 no.	1,000.00	55,000	
6 Electric heating, not included		nil.		
7 Under water lighting, not included		nil.		
C22 Lighting, Devices & Heating	TOTAL : \$	4,698 m2	172.41	810,000

C2 ELECTRICAL		Quantity	Unit rate	Amount	Remarks
C23 Systems & Ancillaries					
1	FA system, addressable 2 stage c/w battery charger, standby batteries, connection to DACT & monitored by local ULC approved monitoring company, 4698m2 @ \$25	1 sum	118,500.00	118,500	
2	Combined telephone & PA system	1 sum	45,000.00	45,000	
3	Communication system (voice/data)	1 sum	65,000.00	65,000	
4	Door access controls system	1 sum	36,000.00	36,000	
5	CCTV system	1 sum	70,000.00	70,000	
6	Intrusion alarm system	1 sum	40,000.00	40,000	
7	CableTV system	1 sum	36,000.00	36,000	
8	Clock system, allow	1 sum	5,000.00	5,000	
9	Staff alarm system, allow	1 sum	5,000.00	5,000	
10	Sound system, allow	1 sum	36,000.00	36,000	
11	Misc. systems	1 sum	27,000.00	27,000	
12	Lightning protection system, not included		nil.		
C23 Systems & Ancillaries		TOTAL : \$	4,698 m2	102.92	483,500

D1 SITE WORK		Quantity	Unit rate	Amount	Remarks
D11 Site Development					
1	Allowance for clearing, grubbing, cut and fill, as required	6,700 m2	35.00	234,500	
2	Asphalt paving	4,300 m2	85.00	365,500	
3	Demarkation to above		allow	12,000	
4	Allowance for concrete deck at entrance	60 m2	240.00	14,400	
5	Allowance restoration, soft landscaping	2,300 m2	30.00	69,000	
6	Allowance for restoration at new service connections		allow	30,000	
D11 Site Development					
TOTAL : \$		6,700 m2	108.27	725,400	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D12 Mechanical Site Services				
1 Water supply (fire & domestic) - Allow for water supply from city water main c/w U/G piping, valves, valve chambers, connections etc.	1 sum	250,000.00	250,000	
	1 sum	250,000.00	250,000	
2 Sanitary drainage disposal - Allow for new manholes, underground piping, connection to existing mains etc.	1 sum	150,000.00	150,000	
	1 sum	150,000.00	150,000	
3 Storm drainage disposal - Relocate manhole and culvert at north end of the site - Allow for new manholes, catchbasins, underground piping & connections	1 sum	200,000.00	200,000	
	1 allow	80,000.00	80,000	
	1 sum	120,000.00	120,000	
4 Fuel oil storage for building heating - included in C12 Plumbing & Drainage		incl.		
5 District heating supply to new aquatic centre (heating load 2079kW) - allow for 150mm dia. U/G HWS/HWR pre-insulated piping, valves, connection to existing biomass district heating system etc.- \$800,000 separate budget		nil		
D12 Mechanical Site Services TOTAL : \$	1 Sum	600,000.00	600,000	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D13 Electrical Site Services				
1 Incoming O/H primary power c/w Utility TX, pad, grounding, rock excavation etc	1 sum	55,000.00	55,000	
2 Incoming U/G secondary power	1 sum	25,000.00	25,000	
3 Incoming telecom services (CableTV, Internet, Tel)	1 sum	20,000.00	20,000	
4 Site lighting	1 sum	20,000.00	20,000	
D13 Electrical Site Services	1 Sum	120,000.00	120,000	

**Appendix
B - Detailed Elemental Estimate - 8 Lane 50m Pool**

Project	: Yellowknife Aquatic Centre	Report date	: 29 Oct 2020
	: 50m Pool, 8 Lane	Page No.	: 1
Location	: Yellowknife, NWT	Bldg Type	: 550
Owner	: City of Yellowknife	C.T. Index	: 0.0
Consultant	: Taylor Architecture Group	GFA	: 5,466 m2

ELEMENTAL COST SUMMARY

Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%
		Quantity	Unit rate	Sub-Total	Total	Sub-Total	Total	
A SHELL		5,466 m2			12,468,100		2,281.03	30.1
A1 SUBSTRUCTURE					2,187,900		400.27	5.3
A11 Foundations	0.820	4,470 m2	254.00	1,136,400		207.90		
A12 Basement Excavation	0.820	4,470 m2	193.00	862,000		157.70		
A13 Special Conditions	0.000	1 Sum	189,500.00	189,500		34.67		
A2 STRUCTURE					5,699,600		1,042.74	13.8
A21 Lowest Floor Construction	0.820	4,470 m2	415.00	1,853,200		339.04		
A22 Upper Floor Construction	0.180	996 m2	714.00	710,900		130.06		
A23 Roof Construction	0.820	4,470 m2	701.00	3,135,500		573.64		
A3 EXTERIOR ENCLOSURE					4,580,600		838.02	11.1
A31 Walls Below Grade				0		0.00		
A32 Walls Above Grade	0.380	2,063 m2	686.00	1,414,200		258.73		
A33 Windows & Entrances	0.100	568 m2	2,476.00	1,406,300		257.28		
A34 Roof Coverings	0.820	4,470 m2	390.00	1,743,300		318.94		
A35 Projections	0.000	1 Sum	16,800.00	16,800		3.07		
B INTERIORS		5,466 m2			6,677,800		1,221.70	16.1
B1 PARTITIONS & DOORS					1,672,700		306.02	4.0
B11 Partitions	0.670	3,682 m2	412.00	1,516,100		277.37		
B12 Doors	0.010	42 No	3,729.00	156,600		28.65		
B2 FINISHES					2,977,000		544.64	7.2
B21 Floor Finishes	1.000	5,466 m2	235.00	1,284,600		235.02		
B22 Ceiling Finishes	1.000	5,466 m2	195.00	1,063,800		194.62		
B23 Wall Finishes	1.800	9,817 m2	64.00	628,600		115.00		
B3 FITTINGS & EQUIPMENT					2,028,100		371.04	4.9
B31 Fittings & Fixtures	1.000	5,466 m2	95.00	517,400		94.66		
B32 Equipment	1.000	5,466 m2	20.00	110,700		20.25		
B33 Pool Equipment	0.000	1 Sum	1,280,000.00	1,280,000		234.17		
B34 Elevator	0.000	1 No	120,000.00	120,000		21.95		
C SERVICES		5,466 m2			9,989,600		1,827.59	24.1
C1 MECHANICAL					7,594,600		1,389.43	18.4
C11 Pool Plumbing & Drainage	1.000	5,466 m2	414.00	2,263,000		414.01		
C12 Plumbing & drainage	1.000	5,466 m2	166.00	907,400		166.01		
C13 Fire Protection	1.000	5,466 m2	68.00	372,000		68.06		
C14 HVAC	1.000	5,466 m2	650.00	3,552,200		649.87		
C15 Controls	1.000	5,466 m2	91.00	500,000		91.47		
C2 ELECTRICAL					2,395,000		438.16	5.8
C21 Service & Distribution	1.000	5,466 m2	169.00	925,000		169.23		
C22 Lighting, Devices & Heating	1.000	5,466 m2	171.00	935,000		171.06		
C23 Systems & Ancillaries	1.000	5,466 m2	98.00	535,000		97.88		
NET BUILDING COST - EXCLUDING SITE				\$	29,135,500		5,330.31	70.4
D SITE & ANCILLARY WORK		5,466 m2			1,445,400		264.43	3.5
D1 SITE WORK					1,445,400		264.43	3.5
D11 Site Development	1.230	6,700 m2	108.00	725,400		132.71		
D12 Mechanical Site Services	0.000	1 Sum	600,000.00	600,000		109.77		
D13 Electrical Site Services	0.000	1 Sum	120,000.00	120,000		21.95		
D2 ANCILLARY WORK					0		0.00	0.0
D21 Demolitions				0		0.00		
NET BUILDING COST - INCLUDING SITE				\$	30,580,900		5,594.75	73.9
Z1 GENERAL REQUIREMENTS & FEE					10,795,100		1,974.95	26.1
Z11 General Requirements		23.0 %		7,033,600		1,286.79		
Z12 Fee		10.0 %		3,761,500		688.16		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$	41,376,000		7,569.70	100.0
Z2 ALLOWANCES					12,148,000		2,222.47	
Z21 Design & Pricing Allowance		12.0 %		4,965,100		908.36		
Z22 Escalation Allowance		10.0 %		4,634,100		847.80		
Z23 Construction Allowance		5.0 %		2,548,800		466.30		
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES				\$	53,524,000		9,792.17	
VALUE ADDED TAX (GST/HST)					0		0.00	
Value Added Tax (GST/HST)		0.0 %		0		0.00		
TOTAL CONSTRUCTION ESTIMATE				\$	53,524,000	\$	9,792.17	

A1 SUBSTRUCTURE	Quantity	Unit rate	Amount	Remarks
A11 Foundations				
1 Allowance for clearing, grubbing	4,470 m2	35.00	156,500	
2 Reinforced concrete perimeter strip footing, 250 x 800mm	271 m	215.00	58,300	
3 Reinforced concrete interior strip footing, 250 x 800mm, allow	82 m	215.00	17,600	
4 Reinforced concrete perimeter pad footing, 250 x 1000 x 1000mm	36 no.	420.00	15,100	
5 Reinforced concrete interior pad footing, 250 x 1000 x 1000mm	48 no.	420.00	20,200	
6 Reinforced concrete frost walls, 200mm thick	611 m2	610.00	372,700	
7 Reinforced concrete interior walls, 200mm thick at service room and crawlspace	131 m2	610.00	79,900	
8 Reinforced concrete pilasters, 500 x 500mm	36 no.	1,400.00	50,400	
9 Reinforced concrete piers, 500 x 500mm	42 no.	1,540.00	64,700	
10 Allowance for 200mm rigid insulation, frost protection to perimeter footings	490 m2	180.00	88,200	
11 Allowance for waterproofing and parging to o/s face of foundation walls	611 m2	85.00	51,900	
12 Allowance for 100mm rigid insulation to i/s face of frost walls	611 m2	100.00	61,100	
13 Reinforced concrete elevator pad c/w pit walls, etc.,	1 no.	10,000.00	10,000	
14 Allowance for drainage system	4,470 m2	20.10	89,800	
- Allowance for sump pits	4 no.	5,000.00	20,000	
- Allowance for perimeter drainage	271 m	45.00	12,200	
- Allowance for interior drainage system	1,280 m	45.00	57,600	
A11 Foundations	TOTAL : \$	4,470 m2	254.23	1,136,400

A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A12 Basement Excavation					
1	Allowance for soil excavation to expose bedrock, working spaces, excess material removed from site	5,655 m3	45.00	254,500	
2	Allowance for rock excavation as required for pool depth, services, etc., used as fill	1,900 m3	150.00	285,000	
3	Backfill with Engineered fill below main floor	2,100 m3	85.00	178,500	
4	Backfill with excavated material to o/s of foundations	3,200 m3	45.00	144,000	
TOTAL : \$		4,470 m2	192.84	862,000	

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[illegible]

A2 STRUCTURE	Quantity	Unit rate	Amount	Remarks
A21 Lowest Floor Construction				
1 Reinforced concrete slab on grade, allow 150mm thick c/w 10M @ 200mm c/c	2,949 m2	215.00	634,000	
2 Allowance for slab thickening at masonry partitions, trench drains, etc.,		allow	30,000	
3 Lap pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	1,089 m2	150.00	163,400	
4 Extra over to above for ramp	20 m2	200.00	4,000	
5 Reinforced concrete walls to above, 300mm thick, average	144 m2	730.00	105,100	
6 Leisure pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	369 m2	150.00	55,400	
7 Extra over to above for ramp	64 m2	150.00	9,600	
8 Reinforced concrete walls to above, 300mm thick, average	218 m2	730.00	159,100	
9 Extra over to above for curves, features, etc.,	72 m2	100.00	7,200	
10 Allowance for features		allow	10,000	
11 Therapy pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	63 m2	150.00	9,500	
12 Extra over to above for ramp and stairs	16 m2	400.00	6,400	
13 Reinforced concrete walls to above, 300mm thick, average	66 m2	730.00	48,200	
14 Extra over to above for curves, features, etc.,	60 m2	100.00	6,000	
Carried Forward :			1,247,900	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21	Lowest Floor Construction (Continued)		Brought Forward :	1,247,900	
15	Extra over for waterproofing compound to pool areas	1 sum	26,000.00	26,000	
	- Allowance for compound added to concrete mix	1 sum	17,000.00	17,000	
	- Allowance for filling pool to activate compound, including removal	1 sum	9,000.00	9,000	
16	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation, compacted granular	4,470 m2	115.00	514,100	
17	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation to pool walls	428 m2	115.00	49,200	
18	Steel stair down to service room level	2 flight	8,000.00	16,000	
A21 Lowest Floor Construction		TOTAL : \$	414.59	1,853,200	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A22 Upper Floor Construction					
1	Concrete topping on metal deck c/w welded wire mesh	816 m2	180.00	146,900	
2	Concrete topping on metal deck c/w welded wire mesh, tiered construction to spectator seating	180 m2	240.00	43,200	
3	Structural support to above	996 m2	486.70	484,800	
	- OWSJ, beams, columns	54,780 kg	8.00	438,200	
	- Miscellaneous metals, connections, consumables	5,478 kg	8.50	46,600	
4	Concrete filled metal pan stairs c/w painted steel pipe handrails, public access	2 flight	12,000.00	24,000	
5	Concrete filled metal pan stairs c/w painted steel pipe handrails to upper service space	1 flight	12,000.00	12,000	
A22 Upper Floor Construction		TOTAL : \$	996 m2	713.76	710,900

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A23 Roof Construction					
1	38mm acoustical metal deck, galvanized to Natatorium	2,846 m2	52.00	148,000	
2	Structural support to above, galvanized	2,846 m2	746.30	2,123,900	
	- OWSJ, beams, columns	213,450 kg	9.00	1,921,100	
	- Miscellaneous metals, connections, consumables	21,345 kg	9.50	202,800	
3	38mm metal deck, other areas	1,624 m2	45.00	73,100	
4	Structural support to above	1,624 m2	486.80	790,500	
	- OWSJ, beams, columns	89,320 kg	8.00	714,600	
	- Miscellaneous metals, connections, consumables	8,932 kg	8.50	75,900	
5	Roof overhang, measured with projections		nil		
A23 Roof Construction		TOTAL : \$	4,470 m2	701.45	3,135,500

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A32 Walls Above Grade					
1	EW1, 22 gauge corrugated metal on 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	1,444 m2	625.00	902,500	
2	EW2, premium cladding system, 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	619 m2	710.00	439,500	
3	Allowance for sealants, foamed-in-place insulation, exterior painting, etc.,	2,063 m2	35.00	72,200	
A32 Walls Above Grade					
TOTAL : \$		2,063 m2	685.51	1,414,200	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A33 Windows & Entrances					
1	Triple glazed windows and curtain wall in fibreglass framing	542 m2	2,500.00	1,355,000	
2	Insulated hollow metal doors c/w frames, standard hardware	4 no.	3,000.00	12,000	
3	Glazed aluminum doors c/w frames, standard hardware	4 no.	4,200.00	16,800	
4	Overhead door to service room, manually operated	1 no.	11,000.00	11,000	
5	Allowance for hardware upgrades	8 no.	1,000.00	8,000	
6	Push button barrier free door operators	1 no.	3,500.00	3,500	
7	Louvres, by mechanical		nil		
A33 Windows & Entrances					
TOTAL : \$		568 m2	2,475.88	1,406,300	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A34 Roof Coverings					
1	4mm MBM cap, 3mm MBM base, 3mm board mech. fastened, sloped insulation, 250mm rigid insulation, air barrier, 13mm primed deck boards	4,470 m2	390.00	1,743,300	
2	Roof overhang, measured with projections		nil		
A34 Roof Coverings					
TOTAL : \$		4,470 m2	390.00	1,743,300	

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A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A35 Projections					
1	Allowance for galvanized exit stair c/w guard, handrails, foundations, at service entry	1 flight	10,000.00	10,000	
2	Dock bumpers at service o/h doors	1 set	2,000.00	2,000	
3	Allowance for concrete fill steel bollards	8 no.	600.00	4,800	
TOTAL : \$		1 Sum	16,800.00	16,800	

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B11 Partitions					
1	Typical partition, 16mm type X gypsum board both sides	1,001 m2	210.00	210,200	
2	Typical partition, service areas	1,636 m2	270.00	441,700	
3	Elevator shaft walls	81 m2	330.00	26,700	
4	Glazed partition to lobby, etc.,	964 m2	800.00	771,200	
5	Allowance for firestopping, solid blocking, acoustical sealants, etc.,	3,682 m2	18.00	66,300	
6	Operable partitons, not indicated		nil		
B11 Partitions		TOTAL : \$	3,682 m2	411.76	1,516,100

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B12 Doors					
1	Hollow metal doors c/w frames, standard hardware	19 no.	2,400.00	45,600	
2	Glazed aluminum doors c/w frames, standard hardware	12 no.	3,300.00	39,600	
3	Solid core wood doors c/w frames, standard hardware	8 no.	2,300.00	18,400	
4	Hollow metal doors to crawl space c/w frames, standard hardware	3 no.	2,500.00	7,500	
5	Push button barrier free door operators	1 no.	3,500.00	3,500	
6	Allowance for hardware upgrades	42 no.	1,000.00	42,000	
B12 Doors					
TOTAL : \$		42 No	3,728.57	156,600	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B21 Floor Finishes					
1	Ceramic tile	2,454 m2	225.00	552,200	
2	Allowance for special tiles, markings to above		allow	30,000	
3	Pools, ceramic tile c/w membrane	1,521 m2	377.10	573,500	
	- Pool bottom	1,521 m2	225.00	342,200	
	- Pool walls	428 m2	225.00	96,300	
	- Edge tile c/w gutter	276 m	460.00	127,000	
	- Allowance for stair, lane, etc., special tile, warning strips, etc.		allow	8,000	
4	Sheet flooring	755 m2	110.00	83,100	
5	Rubber tile flooring	140 m2	120.00	16,800	
6	Sealer/hardener to exposed concrete	596 m2	40.00	23,800	
7	Epoxy flooring c/w cove base	47 m2	110.00	5,200	
B21 Floor Finishes		TOTAL : \$ 5,466 m2	235.02	1,284,600	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B22 Ceiling Finishes					
1	Paint to exposed structure	1,180 m2	50.00	59,000	
2	Finish to Natatorium	2,846 m2	250.00	711,500	
3	Suspended gypsum board c/w paint finish	700 m2	135.00	94,500	
4	Suspended acoustic tile system	680 m2	60.00	40,800	
5	Extra over to above for painted gypsum board bulkheads	800 m2	160.00	128,000	
6	Allowance for features, clouds, acoustical baffles, etc.,		allow	30,000	
B22 Ceiling Finishes		TOTAL : \$	5,466 m2	194.62	1,063,800

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B23 Wall Finishes					
1	Exposed cedar to steam room	75 m2	135.00	10,100	
2	Allowance for epoxy paint	600 m2	75.00	45,000	
3	Ceramic tile to washrooms, changerooms, etc.,	500 m2	190.00	95,000	
4	Wall covering to Natatorium, c/w 300mm high ceramic base	1,395 m2	85.00	118,600	
5	Paint	7,247 m2	40.00	289,900	
6	Intumescent paint to exposed structure to Natatorium, change rooms, etc.,		allow	50,000	
7	Allowance for other finishes, upgrades, etc.,		allow	20,000	
B23 Wall Finishes		TOTAL : \$	9,817 m2	64.03	628,600

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B31 Fittings & Fixtures					
1	Washroom accessories, allowance	1 sum	38,000.00	38,000	
2	Washroom and change room partitions, solid phenolic	1 sum	65,000.00	65,000	
3	Millwork	1 sum	185,000.00	185,000	
4	Manually operated blinds, exterior	542 m2	100.00	54,200	
5	Lockers	1 sum	58,000.00	58,000	
6	Interior signage and wayfinding	1 sum	45,000.00	45,000	
7	Exterior signage	1 sum	50,000.00	50,000	
8	Janitor accessories	1 sum	2,200.00	2,200	
9	Corner guards, protection, etc.,	1 sum	20,000.00	20,000	
B31 Fittings & Fixtures					
TOTAL : \$		5,466 m2	94.66	517,400	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B32 Equipment					
1	Wet sauna equipment	1 sum	15,000.00	15,000	
2	Turnstile, security system	1 sum	17,000.00	17,000	
3	Security grille to canteen	1 sum	4,000.00	4,000	
4	Mechanical access doors	1 sum	7,000.00	7,000	
5	Spectator area	180 m2	376.10	67,700	
	- Guard, including wheelchair areas	42 m	1,200.00	50,400	
	- Bench seating	157 m	110.00	17,300	
6	Other equipment and loose furniture, not included		nil		
7	Gym and fitness equipment, not included		nil		
B32 Equipment		TOTAL : \$	5,466 m2	20.25	110,700

**Yellowknife Aquatic Centre
50m Pool, 8 Lane
Yellowknife, NWT**

Report date : October 2020

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B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B33 Pool Equipment					
1	Therapy pool	1 sum	230,000.00	230,000	
2	Lap pool, 50m	1 sum	270,000.00	270,000	
3	Leasure pool	1 sum	600,000.00	600,000	
4	Pool equipment miscellaneous, mobilization, commissioning, shop drawings, testing, etc.,	1 sum	180,000.00	180,000	
B33 Pool Equipment					
TOTAL : \$		1 Sum	1,280,000.00	1,280,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B34 Elevator					
1	Two stop front loading elevator	1 no.	120,000.00	120,000	
TOTAL : \$		1 No	120,000.00	120,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage				
1 50m lane lap pool water supply & filtration system (3600gpm)	1 sum	730,000.00	730,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	700,000.00	700,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
2 Leisure pool water supply & filtration system	1 sum	635,000.00	635,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	600,000.00	600,000	
- Allow for pool water system controls	1 sum	25,000.00	25,000	
3 Therapy pool water supply & filtration system	1 sum	230,000.00	230,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	200,000.00	200,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
4 Pool drainage and backwash system	1 sum	380,000.00	380,000	
- Under ground pool drainage and back wash piping, deck drains, skimmers, pumps etc. (all 3 pools)	1 sum	380,000.00	380,000	
5 Pool chemical treatment - Calcium hyochlorite feed system	1 sum	70,000.00	70,000	
6 Pool chemical treatment - Sodium bisulphate feed system	1 sum	38,000.00	38,000	
7 Pool chemical supply, 1 year	1 sum	100,000.00	100,000	
8 Pool chemical treatment - CO2 injection system, not included		nil		
Carried Forward :			2,183,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage (Continued)		Brought Forward :	2,183,000	
9 Pool plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings , manuals, tagging, identification, testing, verification etc.	1 sum	80,000.00	80,000	
C11 Pool Plumbing & Drainage	TOTAL : \$	5,466 m2	414.01	2,263,000

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C12 Plumbing & drainage					
1	Plumbing fixtures, ultra low flow & low flush	56 no.	1,739.30	97,400	
	- Water closet	25 no.	2,200.00	55,000	
	- Lavatory c/w faucet	13 no.	1,600.00	20,800	
	- Shower head & balancong valve	18 no.	1,200.00	21,600	
2	Domestic water (hot & cold)	1 sum	200,000.00	200,000	
	- Water entry assembly	1 sum	10,000.00	10,000	
	- DCW, DHWS & DHWR piping, pumps, insulation, fixture connections etc.	1 sum	140,000.00	140,000	
	- DHW pre heating using HX from backwashing or draining pools	1 sum	20,000.00	20,000	
	- DHW water heaters	1 sum	30,000.00	30,000	
3	Sanitary drainage	1 sum	240,000.00	240,000	
	- Above & under ground SAN drainage and vent piping, floor drains, cleanouts, sump pumps etc.	1 sum	240,000.00	240,000	
4	Grey water harvesting from pool change rooms fixtures	1 sum	80,000.00	80,000	
	- Allow for filters, UV treatment, tanks, pumps, piping, valves, connections etc.	1 sum	80,000.00	80,000	
5	Storm drainage	1 sum	100,000.00	100,000	
	- Allow for roof drains, RWLs, insulation, U/G drainage piping, cleanouts etc.	1 sum	100,000.00	100,000	
6	Fuel oil supply for back up heating boilers	1 sum	160,000.00	160,000	
	- Allow for 13000G outdoor oil tank, piping, valves, filters, pumps, day tanks & connections to boilers	1 sum	160,000.00	160,000	
7	Plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	30,000.00	30,000	
C12 Plumbing & drainage		TOTAL : \$	5,466 m2	166.01	907,400

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C13 Fire Protection				
1 Incoming FW supply c/w backflow preventer fed directly from City water main	1 sum	15,000.00	15,000	
2 FW main header, zone valves, drain connections etc.	1 sum	12,000.00	12,000	
3 Fire department connection c/w dip check valve & piping	1 sum	10,000.00	10,000	
4 Fire water/sprinkler main piping	1 sum	50,000.00	50,000	
5 Sprinkler system c/w piping & heads	5,466 m2	45.00	246,000	
6 Allow for fire extinguishers	1 sum	14,000.00	14,000	
7 Fire protection miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	25,000.00	25,000	
8 Note:- Fire pump - not included		nil		
C13 Fire Protection	TOTAL : \$ 5,466 m2	68.06	372,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C14 HVAC				
1 Building heating	1 sum	1,145,200.00	1,145,200	
- Note:- Primary heating source from existing biomass district heating system, expected load 3249kW		incl.		
- Oil burning boiler back up system c/w two 1950kW boilers	1 sum	380,000.00	380,000	
- Allow for plate & frame heat exchanger, pumps, piping, valves, insulation, terminals & connection	5,466 m2	140.00	765,200	
2 Pool water heating	1 sum	120,000.00	120,000	
- Dedicated heat exchanger for 50m competition pool, 0.3 deg.C./hr, allow	1 no.	50,000.00	50,000	
- Dedicated heat exchanger for leisure pool, 1.1 deg.C./hr, allow	1 no.	15,000.00	15,000	
- Dedicated heat exchanger for therapy pool, 2.8 deg.C./hr, allow	1 no.	25,000.00	25,000	
- Allow for piping and connections to base building heating system	1 sum	30,000.00	30,000	
3 Dedicated cooling for server room	1 sum	12,000.00	12,000	
- Split air conditioner c/w outdoor condenser	1 sum	12,000.00	12,000	
4 Natatorium (pool area & all associated decks) ventilation	1 sum	1,460,000.00	1,460,000	
- Air handling unit AHU-1(OA) 47,500 l/s c/w heat recovery, SF, EF, 494 kW HC & 87.5kW DX cooling	1 no.	1,060,000.00	1,060,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	400,000.00	400,000	
5 Administration, multipurpose rooms and canteen ventilation	1 sum	300,000.00	300,000	
- Air handling unit AHU-2(ERV) c/w heat recovery, HW heting & DX cooling, 3600 l/s	1 no.	140,000.00	140,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	160,000.00	160,000	
6 2nd floor office ventilation	1 sum	100,000.00	100,000	
- Air handling unit AHU-3 c/w HW heting & DX cooling, 1600 l/s	1 no.	40,000.00	40,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	60,000.00	60,000	
Carried Forward :			3,137,200	

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C14 HVAC (Continued)			Brought Forward :	3,137,200	
7	Canteen dedicated exhaust system	1 sum	40,000.00	40,000	
	- Allow for exhaust fan, ductwork, hoods, louvers, fire wrap etc.	1 sum	40,000.00	40,000	
8	Change rooms and washrooms exhaust	1 sum	120,000.00	120,000	
	- Allow for EA ductwork, grilles, tie into main pool area heat recovery systems	1 sum	120,000.00	120,000	
9	Miscellaneous exhaust and ventilation	1 sum	75,000.00	75,000	
	- Allow for chlorine room exhaust and ventilation	1 sum	15,000.00	15,000	
	- Allow for service spaces exhaust and ventilation	1 sum	60,000.00	60,000	
10	HVAC miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification etc.	1 sum	40,000.00	40,000	
11	Testing, adjusting, balancing and commissioning	1 sum	140,000.00	140,000	
C14 HVAC		TOTAL : \$	5,466 m2	649.87	3,552,200

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C15 Controls					
1	Allow for DDC controls	1 sum	500,000.00	500,000	
C15 Controls		TOTAL : \$	5,466 m2	91.47	500,000

C2 ELECTRICAL		Quantity	Unit rate	Amount	Remarks
C21 Service & Distribution					
1	Service & distribution, 800A 347/600V 3Ph 4w	1 sum	425,000.00	425,000	
2	Standby diesel generator, 550kW 347/600V 3Ph inside building c/w 800A ATS, load bank etc	1 sum	450,000.00	450,000	
3	Electrical Misc.	1 sum	50,000.00	50,000	
	- Permits, fees & inspection	1 sum	8,000.00	8,000	
	- Drawings & manuals	1 sum	10,000.00	10,000	
	- Sealing & fire-stopping	1 sum	2,000.00	2,000	
	- Mobilization	1 sum	30,000.00	30,000	
C21 Service & Distribution		TOTAL : \$	5,466 m2	169.23	925,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C22 Lighting, Devices & Heating				
1 Light fixtures	5,466 m2	100.00	546,600	
2 Exit & emergency lighting	1 sum	55,100.00	55,100	
3 Lighting controls	5,466 m2	15.00	82,000	
4 Power outlets, devices & connections	5,466 m2	35.00	191,300	
5 Connections to mechanical equipment	60 no.	1,000.00	60,000	
6 Electric heating, not included		nil.		
7 Under water lighting, not included		nil.		
C22 Lighting, Devices & Heating	TOTAL : \$	5,466 m2	171.06	935,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C23 Systems & Ancillaries				
1 FA system, addressable 2 stage c/w battery charger, standby batteries, connection to DACT & monitored by local ULC approved monitoring company, 5466m2 @ \$25	1 sum	135,000.00	135,000	
2 Combined telephone & PA system	1 sum	50,000.00	50,000	
3 Communication system (voice/data)	1 sum	70,000.00	70,000	
4 Door access controls system	1 sum	40,000.00	40,000	
5 CCTV system	1 sum	75,000.00	75,000	
6 Intrusion alarm system	1 sum	45,000.00	45,000	
7 CableTV system	1 sum	40,000.00	40,000	
8 Clock system, allow	1 sum	5,000.00	5,000	
9 Staff alarm system, allow	1 sum	5,000.00	5,000	
10 Sound system, allow	1 sum	40,000.00	40,000	
11 Misc. systems	1 sum	30,000.00	30,000	
12 Lightning protection system, not included		nil.		
C23 Systems & Ancillaries	TOTAL : \$ 5,466 m2	97.88	535,000	

D1 SITE WORK		Quantity	Unit rate	Amount	Remarks
D11 Site Development					
1	Allowance for clearing, grubbing, cut and fill, as required	6,700 m2	35.00	234,500	
2	Asphalt paving	4,300 m2	85.00	365,500	
3	Demarkation to above		allow	12,000	
4	Allowance for concrete deck at entrance	60 m2	240.00	14,400	
5	Allowance restoration, soft landscaping	2,300 m2	30.00	69,000	
6	Allowance for restoration at new service connections		allow	30,000	
D11 Site Development					
TOTAL : \$		6,700 m2	108.27	725,400	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D12 Mechanical Site Services				
1 Water supply (fire & domestic) - Allow for water supply from city water main c/w U/G piping, valves, valve chambers, connections etc.	1 sum	250,000.00	250,000	
	1 sum	250,000.00	250,000	
2 Sanitary drainage disposal - Allow for new manholes, underground piping, connection to existing mains etc.	1 sum	150,000.00	150,000	
	1 sum	150,000.00	150,000	
3 Storm drainage disposal - Relocate manhole and culvert at north end of the site - Allow for new manholes, catchbasins, underground piping & connections	1 sum	200,000.00	200,000	
	1 allow	80,000.00	80,000	
	1 sum	120,000.00	120,000	
4 Fuel oil storage for building heating - included in C12 Plumbing & Drainage		incl.		
5 District heating supply to new aquatic centre (heating load 3249kW) - allow for 150mm dia. U/G HWS/HWR pre-insulated piping, valves, connection to existing biomass district heating system etc.- \$800,000 separate budget		nil		
D12 Mechanical Site Services TOTAL : \$	1 Sum	600,000.00	600,000	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D13 Electrical Site Services				
1 Incoming O/H primary power c/w Utility TX, pad, grounding, rock excavation etc	1 sum	55,000.00	55,000	
2 Incoming U/G secondary power	1 sum	25,000.00	25,000	
3 Incoming telecom services (CableTV, Internet, Tel)	1 sum	20,000.00	20,000	
4 Site lighting	1 sum	20,000.00	20,000	
D13 Electrical Site Services				
TOTAL : \$	1 Sum	120,000.00	120,000	

**Appendix
C - Detailed Elemental Estimate - 6 Lane 25m Pool**

Project	: Yellowknife Aquatic Centre	Report date	: 29 Oct 2020
	: 25m Pool, 6 Lane	Page No.	: 1
Location	: Yellowknife, NWT	Bldg Type	: 550
Owner	: City of Yellowknife	C.T. Index	: 0.0
Consultant	: Taylor Architecture Group	GFA	: 4,554 m2

ELEMENTAL COST SUMMARY

Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%
		Quantity	Unit rate	Sub-Total	Total	Sub-Total	Total	
A SHELL		4,554 m2			10,526,600		2,311.51	31.1
A1 SUBSTRUCTURE					1,880,600		412.96	5.6
A11 Foundations	0.760	3,471 m2	274.00	951,700		208.98		
A12 Basement Excavation	0.760	3,471 m2	216.00	748,300		164.32		
A13 Special Conditions	0.000	1 Sum	180,600.00	180,600		39.66		
A2 STRUCTURE					4,631,100		1,016.93	13.7
A21 Lowest Floor Construction	0.760	3,471 m2	435.00	1,509,100		331.38		
A22 Upper Floor Construction	0.240	1,083 m2	710.00	768,800		168.82		
A23 Roof Construction	0.760	3,471 m2	678.00	2,353,200		516.73		
A3 EXTERIOR ENCLOSURE					4,014,900		881.62	11.9
A31 Walls Below Grade				0		0.00		
A32 Walls Above Grade	0.420	1,930 m2	686.00	1,323,100		290.54		
A33 Windows & Entrances	0.120	534 m2	2,474.00	1,321,300		290.14		
A34 Roof Coverings	0.760	3,471 m2	390.00	1,353,700		297.26		
A35 Projections	0.000	1 Sum	16,800.00	16,800		3.69		
B INTERIORS		4,554 m2			4,760,700		1,045.39	14.1
B1 PARTITIONS & DOORS					1,047,700		230.06	3.1
B11 Partitions	0.650	2,948 m2	301.00	886,300		194.62		
B12 Doors	0.010	45 No	3,587.00	161,400		35.44		
B2 FINISHES					1,922,500		422.16	5.7
B21 Floor Finishes	1.000	4,554 m2	163.00	742,000		162.93		
B22 Ceiling Finishes	1.000	4,554 m2	141.00	640,600		140.67		
B23 Wall Finishes	1.770	8,054 m2	67.00	539,900		118.56		
B3 FITTINGS & EQUIPMENT					1,790,500		393.17	5.3
B31 Fittings & Fixtures	1.000	4,554 m2	102.00	464,000		101.89		
B32 Equipment	1.000	4,554 m2	23.00	106,500		23.39		
B33 Pool Equipment	0.000	1 Sum	1,100,000.00	1,100,000		241.55		
B34 Elevator	0.000	1 No	120,000.00	120,000		26.35		
C SERVICES		4,554 m2			8,264,900		1,814.87	24.4
C1 MECHANICAL					6,148,900		1,350.22	18.2
C11 Pool Plumbing & Drainage	1.000	4,554 m2	383.00	1,745,000		383.18		
C12 Plumbing & Drainage	1.000	4,554 m2	189.00	861,400		189.15		
C13 Fire Protection	1.000	4,554 m2	68.00	311,900		68.49		
C14 HVAC	1.000	4,554 m2	608.00	2,770,600		608.39		
C15 Controls	1.000	4,554 m2	101.00	460,000		101.01		
C2 ELECTRICAL					2,116,000		464.65	6.3
C21 Service & Distribution	1.000	4,554 m2	187.00	850,000		186.65		
C22 Lighting, Devices & Heating	1.000	4,554 m2	173.00	788,000		173.03		
C23 Systems & Ancillaries	1.000	4,554 m2	105.00	478,000		104.96		
NET BUILDING COST - EXCLUDING SITE				\$	23,552,200		5,171.76	69.6
D SITE & ANCILLARY WORK		4,554 m2			1,445,400		317.39	4.3
D1 SITE WORK					1,445,400		317.39	4.3
D11 Site Development	1.470	6,700 m2	108.00	725,400		159.29		
D12 Mechanical Site Services	0.000	1 Sum	600,000.00	600,000		131.75		
D13 Electrical Site Services	0.000	1 Sum	120,000.00	120,000		26.35		
D2 ANCILLARY WORK					0		0.00	0.0
D21 Demolitions				0		0.00		
NET BUILDING COST - INCLUDING SITE				\$	24,997,600		5,489.15	73.9
Z1 GENERAL REQUIREMENTS & FEE					8,824,100		1,937.66	26.1
Z11 General Requirements		23.0 %		5,749,400		1,262.49		
Z12 Fee		10.0 %		3,074,700		675.16		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$	33,821,700		7,426.81	100.0
Z2 ALLOWANCES					9,930,000		2,180.50	
Z21 Design & Pricing Allowance		12.0 %		4,058,600		891.22		
Z22 Escalation Allowance		10.0 %		3,788,000		831.80		
Z23 Construction Allowance		5.0 %		2,083,400		457.49		
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES				\$	43,751,700		9,607.31	
VALUE ADDED TAX (GST/HST)					0		0.00	
Value Added Tax (GST/HST)		0.0 %		0		0.00		
TOTAL CONSTRUCTION ESTIMATE				\$	43,751,700	\$	9,607.31	

A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A11 Foundations					
1	Allowance for clearing, grubbing	3,471 m2	8.00	27,800	
2	Reinforced concrete perimeter strip footing, 250 x 800mm	254 m	215.00	54,600	
3	Reinforced concrete interior strip footing, 250 x 800mm, allow	58 m	215.00	12,500	
4	Reinforced concrete perimeter pad footing, 250 x 1000 x 1000mm	33 no.	420.00	13,900	
5	Reinforced concrete interior pad footing, 250 x 1000 x 1000mm	39 no.	420.00	16,400	
6	Reinforced concrete frost walls, 200mm thick, see also walls below grade	589 m2	610.00	359,300	
7	Reinforced concrete interior walls, 200mm thick at service room and crawlspace	131 m2	610.00	79,900	
8	Reinforced concrete pilasters, 500 x 500mm	33 no.	1,400.00	46,200	
9	Reinforced concrete piers, 500 x 500mm	35 no.	1,540.00	53,900	
10	Allowance for 200mm rigid insulation, frost protection to perimeter footings	460 m2	180.00	82,800	
11	Allowance for waterproofing and parging to o/s face of foundation walls	589 m2	85.00	50,100	
12	Allowance for 100mm rigid insulation to i/s face of frost walls	589 m2	100.00	58,900	
13	Reinforced concrete elevator pad c/w pit walls, etc.,	1 no.	10,000.00	10,000	
14	Allowance for drainage system	3,471 m2	24.60	85,400	
	- Allowance for sump pits	4 no.	5,000.00	20,000	
	- Allowance for perimeter drainage	254 m	45.00	11,400	
	- Allowance for interior drainage system	1,200 m	45.00	54,000	
A11 Foundations		TOTAL : \$	3,471 m2	274.19	951,700

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A1 SUBSTRUCTURE	Quantity	Unit rate	Amount	Remarks
A13 Special Conditions				
1 Allowance for removal of loose rock, boulders		allow	8,000	
2 Allowance for dewatering foundations		allow	12,000	
3 Allowance for rock anchors to footings	404 no.	150.00	60,600	
- Strip footings, 1200mm c/c	260 no.	150.00	39,000	
- Pad footings, 2 per pad	144 no.	150.00	21,600	
4 Allowance for selective blasting and rock removal		allow	100,000	
TOTAL : \$		1 Sum	180,600.00	180,600

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21 Lowest Floor Construction					
1	Reinforced concrete slab on grade, allow 150mm thick c/w 10M @ 200mm c/c	2,644 m2	215.00	568,500	
2	Allowance for slab thickening at masonry partitions, trench drains, etc.,		allow	30,000	
3	Lap pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	395 m2	150.00	59,300	
4	Extra over to above for ramp	20 m2	200.00	4,000	
5	Reinforced concrete walls to above, 300mm thick, average	85 m2	730.00	62,100	
6	Leisure pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	369 m2	150.00	55,400	
7	Extra over to above for ramp	64 m2	150.00	9,600	
8	Reinforced concrete walls to above, 300mm thick, average	218 m2	730.00	159,100	
9	Extra over to above for curves, features, etc.,	72 m2	100.00	7,200	
10	Allowance for features		allow	10,000	
11	Therapy pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	63 m2	150.00	9,500	
12	Extra over to above for ramp and stairs	16 m2	400.00	6,400	
13	Reinforced concrete walls to above, 300mm thick, average	66 m2	730.00	48,200	
14	Extra over to above for curves, features, etc.,	60 m2	100.00	6,000	
Carried Forward :				1,035,300	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21	Lowest Floor Construction (Continued)		Brought Forward :	1,035,300	
15	Extra over for waterproofing compound to pool areas	1 sum	18,000.00	18,000	
	- Allowance for compound added to concrete mix	1 sum	12,000.00	12,000	
	- Allowance for filling pool to activate compound, including removal	1 sum	6,000.00	6,000	
16	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation, compacted granular	3,471 m2	115.00	399,200	
17	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation to pool walls	369 m2	110.00	40,600	
18	Steel stair down to service room level	2 flight	8,000.00	16,000	
A21 Lowest Floor Construction		TOTAL : \$	434.77	1,509,100	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A22 Upper Floor Construction					
1	Concrete topping on metal deck c/w welded wire mesh	903 m2	180.00	162,500	
2	Concrete topping on metal deck c/w welded wire mesh, tiered construction to spectator seating	180 m2	240.00	43,200	
3	Structural support to above	1,083 m2	486.70	527,100	
	- OWSJ, beams, columns	59,565 kg	8.00	476,500	
	- Miscellaneous metals, connections, consumables	5,957 kg	8.50	50,600	
4	Concrete filled metal pan stairs c/w painted steel pipe handrails, public access	2 flight	12,000.00	24,000	
5	Concrete filled metal pan stairs c/w painted steel pipe handrails to upper service space	1 flight	12,000.00	12,000	
A22 Upper Floor Construction		TOTAL : \$	1,083 m2 709.88	768,800	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A23 Roof Construction					
1	38mm acoustical metal deck, galvanized to Natatorium	1,904 m2	52.00	99,000	
2	Structural support to above, galvanized	1,904 m2	746.30	1,420,900	
	- OWSJ, beams, columns	142,800 kg	9.00	1,285,200	
	- Miscellaneous metals, connections, consumables	14,280 kg	9.50	135,700	
3	38mm metal deck, other areas	1,567 m2	45.00	70,500	
4	Structural support to above	1,567 m2	486.80	762,800	
	- OWSJ, beams, columns	86,185 kg	8.00	689,500	
	- Miscellaneous metals, connections, consumables	8,619 kg	8.50	73,300	
5	Roof overhang, measured with projections		nil		
A23 Roof Construction		TOTAL : \$ 3,471 m2	677.96	2,353,200	

A3 EXTERIOR ENCLOSURE	Quantity	Unit rate	Amount	Remarks
A32 Walls Above Grade				
1 EW1, 22 gauge corrugated metal on 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	1,351 m2	625.00	844,400	
2 EW2, premium cladding system, 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.	579 m2	710.00	411,100	
3 Allowance for sealants, foamed-in-place insulation, exterior painting, etc.,	1,930 m2	35.00	67,600	
A32 Walls Above Grade	TOTAL : \$ 1,930 m2	685.54	1,323,100	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A33 Windows & Entrances					
1	Triple glazed windows and curtain wall in fibreglass framing	508 m2	2,500.00	1,270,000	
2	Insulated hollow metal doors c/w frames, standard hardware	4 no.	3,000.00	12,000	
3	Glazed aluminum doors c/w frames, standard hardware	4 no.	4,200.00	16,800	
4	Overhead door to service room, manually operated	1 no.	11,000.00	11,000	
5	Allowance for hardware upgrades	8 no.	1,000.00	8,000	
6	Push button barrier free door operators	1 no.	3,500.00	3,500	
7	Louvres, by mechanical		nil		
A33 Windows & Entrances					
TOTAL : \$		534 m2	2,474.34	1,321,300	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A34 Roof Coverings					
1	4mm MBM cap, 3mm MBM base, 3mm board mech. fastened, sloped insulation, 250mm rigid insulation, air barrier, 13mm primed deck boards	3,471 m2	390.00	1,353,700	
2	Roof overhang, measured with projections		nil		
A34 Roof Coverings		TOTAL : \$	3,471 m2	390.00	1,353,700

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A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A35 Projections					
1	Allowance for galvanized exit stair c/w guard, handrails, foundations, at service entry	1 flight	10,000.00	10,000	
2	Dock bumpers at service o/h doors	1 set	2,000.00	2,000	
3	Allowance for concrete fill steel bollards	8 no.	600.00	4,800	
TOTAL : \$		1 Sum	16,800.00	16,800	

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B11 Partitions					
1	Typical partition, 16mm type X gypsum board both sides	1,660 m2	210.00	348,600	
2	Typical partition, service areas	958 m2	270.00	258,700	
3	Elevator shaft walls	81 m2	330.00	26,700	
4	Glazed partition to lobby, etc.,	249 m2	800.00	199,200	
5	Allowance for firestopping, solid blocking, acoustical sealants, etc.,	2,948 m2	18.00	53,100	
6	Operable partitons, not indicated		nil		
B11 Partitions		TOTAL : \$	2,948 m2	300.64	886,300

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B12 Doors					
1	Hollow metal doors c/w frames, standard hardware	28 no.	2,400.00	67,200	
2	Glazed aluminum doors c/w frames, standard hardware	6 no.	3,300.00	19,800	
3	Solid core wood doors c/w frames, standard hardware	8 no.	2,300.00	18,400	
4	Hollow metal doors to crawl space c/w frames, standard hardware	3 no.	2,500.00	7,500	
5	Push button barrier free door operators	1 no.	3,500.00	3,500	
6	Allowance for hardware upgrades	45 no.	1,000.00	45,000	
B12 Doors					
TOTAL : \$		45 No	3,586.67	161,400	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B21 Floor Finishes					
1	Ceramic tile	977 m2	225.00	219,800	
2	Allowance for special tiles, markings to above		allow	30,000	
3	Pools, ceramic tile c/w membrane	827 m2	455.70	376,900	
	- Pool bottom	827 m2	225.00	186,100	
	- Pool walls	369 m2	225.00	83,000	
	- Edge tile c/w gutter	217 m	460.00	99,800	
	- Allowance for stair, lane, etc., special tile, warning strips, etc.		allow	8,000	
4	Sheet flooring	395 m2	110.00	43,500	
5	Rubber tile flooring	130 m2	120.00	15,600	
6	Sealer/hardener to exposed concrete	1,276 m2	40.00	51,000	
7	Epoxy flooring c/w cove base	47 m2	110.00	5,200	
B21 Floor Finishes		TOTAL : \$	4,554 m2	162.93	742,000

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B22 Ceiling Finishes					
1	Paint to exposed structure	1,323 m2	50.00	66,200	
2	Finish to Natatorium	750 m2	250.00	187,500	
3	Suspended gypsum board c/w paint finish	1,200 m2	135.00	162,000	
4	Suspended acoustic tile system	1,281 m2	60.00	76,900	
5	Extra over to above for painted gypsum board bulkheads	800 m2	160.00	128,000	
6	Allowance for features, clouds, acoustical baffles, etc.,		allow	20,000	
B22 Ceiling Finishes		TOTAL : \$	4,554 m2	140.67	640,600

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B23 Wall Finishes					
1	Exposed cedar to steam room	75 m2	135.00	10,100	
2	Allowance for epoxy paint	600 m2	75.00	45,000	
3	Ceramic tile to washrooms, changerooms, etc.,	486 m2	190.00	92,300	
4	Wall covering to Natatorium, c/w 300mm high ceramic base	1,255 m2	85.00	106,700	
5	Paint	5,646 m2	40.00	225,800	
6	Intumescent paint to exposed structure to Natatorium, change rooms, etc.,		allow	40,000	
7	Allowance for other finishes, upgrades, etc.,		allow	20,000	
B23 Wall Finishes		TOTAL : \$	8,054 m2	67.04	539,900

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B31 Fittings & Fixtures					
1	Washroom accessories, allowance	1 sum	30,000.00	30,000	
2	Washroom and change room partitions, solid phenolic	1 sum	58,000.00	58,000	
3	Millwork	1 sum	160,000.00	160,000	
4	Manually operated blinds, exterior	508 m2	100.00	50,800	
5	Lockers	1 sum	53,000.00	53,000	
6	Interior signage and wayfinding	1 sum	40,000.00	40,000	
7	Exterior signage	1 sum	50,000.00	50,000	
8	Janitor accessories	1 sum	2,200.00	2,200	
9	Corner guards, protection, etc.,	1 sum	20,000.00	20,000	
B31 Fittings & Fixtures					
TOTAL : \$		4,554 m2	101.89	464,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B32 Equipment					
1	Wet sauna equipment	1 sum	15,000.00	15,000	
2	Turnstile, security system	1 sum	17,000.00	17,000	
3	Security grille to canteen	1 sum	4,000.00	4,000	
4	Mechanical access doors	1 sum	7,000.00	7,000	
5	Spectator seating	180 m2	352.80	63,500	
	- Guard, including wheel chair areas	41 m	1,200.00	49,200	
	- Bench seating	130 m	110.00	14,300	
6	Other equipment and loose furniture, not included		nil		
7	Gym and fitness equipment, not included		nil		
B32 Equipment		TOTAL : \$	4,554 m2	23.39	106,500

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B33 Pool Equipment					
1	Therapy pool	1 sum	230,000.00	230,000	
2	Lap pool, 25m	1 sum	120,000.00	120,000	
3	Leasure pool	1 sum	600,000.00	600,000	
4	Pool equipment miscellaneous, mobilization, commissioning, shop drawings, testing, etc.,	1 sum	150,000.00	150,000	
B33 Pool Equipment					
TOTAL : \$		1 Sum	1,100,000.00	1,100,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B34 Elevator					
1	Two stop front loading elevator	1 no.	120,000.00	120,000	
B34 Elevator					
TOTAL : \$		1 No	120,000.00	120,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage				
1 25m lane lap pool water supply & filtration system	1 sum	410,000.00	410,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	380,000.00	380,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
2 Leisure pool water supply & filtration system	1 sum	635,000.00	635,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	600,000.00	600,000	
- Allow for pool water system controls	1 sum	25,000.00	25,000	
3 Therapy pool water supply & filtration system	1 sum	230,000.00	230,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	200,000.00	200,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
4 Pool drainage and backwash system	1 sum	230,000.00	230,000	
- Under ground pool drainage and back wash piping, deck drains, skimmers, pumps etc. (all 3 pools)	1 sum	230,000.00	230,000	
5 Pool chemical treatment - Calcium hyochlorite feed system	1 sum	55,000.00	55,000	
6 Pool chemical treatment - Sodium bisulphate feed system	1 sum	30,000.00	30,000	
7 Pool chemical supply, 1 year	1 sum	75,000.00	75,000	
8 Pool chemical treatment - CO2 injection system, not included		nil		
Carried Forward :			1,665,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage (Continued)		Brought Forward :	1,665,000	
9 Pool plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings , manuals, tagging, identification, testing, verification etc.	1 sum	80,000.00	80,000	
C11 Pool Plumbing & Drainage TOTAL : \$	4,554 m2	383.18	1,745,000	

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C12 Plumbing & Drainage					
1	Plumbing fixtures, ultra low flow & low flush	53 no.	1,724.50	91,400	
	- Water closet	23 no.	2,200.00	50,600	
	- Lavatory c/w faucet	12 no.	1,600.00	19,200	
	- Shower head & balancing valve	18 no.	1,200.00	21,600	
2	Domestic water (hot & cold)	1 sum	200,000.00	200,000	
	- Water entry assembly	1 sum	10,000.00	10,000	
	- DCW, DHWS & DHWR piping, pumps, insulation, fixture connections etc.	1 sum	140,000.00	140,000	
	- DHW pre heating using HX from backwashing or draining pools	1 sum	20,000.00	20,000	
	- DHW water heaters	1 sum	30,000.00	30,000	
3	Sanitary drainage	1 sum	240,000.00	240,000	
	- Above & under ground SAN drainage and vent piping, floor drains, cleanouts, sump pumps etc.	1 sum	240,000.00	240,000	
4	Grey water harvesting from pool change rooms fixtures	1 sum	80,000.00	80,000	
	- Allow for filters, UV treatment, tanks, pumps, piping, valves, connections etc.	1 sum	80,000.00	80,000	
5	Storm drainage	1 sum	100,000.00	100,000	
	- Allow for roof drains, RWLs, insulation, U/G drainage piping, cleanouts etc.	1 sum	100,000.00	100,000	
6	Fuel oil supply for back up heating boilers	1 sum	120,000.00	120,000	
	- Allow for 9600G outdoor oil tank, piping, valves, filters, pumps, day tanks & connections to boilers	1 sum	120,000.00	120,000	
7	Plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	30,000.00	30,000	
C12 Plumbing & Drainage		TOTAL : \$	4,554 m2	189.15	861,400

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C13 Fire Protection				
1 Incoming FW supply c/w backflow preventer fed directly from City water main	1 sum	15,000.00	15,000	
2 FW main header, zone valves, drain connections etc.	1 sum	12,000.00	12,000	
3 Fire department connection c/w dip check valve & piping	1 sum	10,000.00	10,000	
4 Fire water/sprinkler main piping	1 sum	40,000.00	40,000	
5 Sprinkler system c/w piping & heads	4,554 m2	45.00	204,900	
6 Allow for fire extinguishers	1 sum	10,000.00	10,000	
7 Fire protection miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	20,000.00	20,000	
8 Note:- Fire pump not included		nil		
C13 Fire Protection	TOTAL : \$ 4,554 m2	68.49	311,900	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C14 HVAC				
1 Building heating	1 sum	867,600.00	867,600	
- Note:- Primary heating source from existing biomass district heating system, expected load 2079kW		incl.		
- Oil burning boiler back up system c/w two 1250kW boilers	1 sum	230,000.00	230,000	
- Allow for plate & frame heat exchanger, pumps, piping, valves, insulation, terminals & connection	4,554 m2	140.00	637,600	
2 Pool water heating	1 sum	96,000.00	96,000	
- Dedicated heat exchanger for 25m competition pool, 0.3 deg.C./hr, allow	1 no.	26,000.00	26,000	
- Dedicated heat exchanger for leisure pool, 1.1 deg.C./hr, allow	1 no.	15,000.00	15,000	
- Dedicated heat exchanger for therapy pool, 2.8 deg.C./hr, allow	1 no.	25,000.00	25,000	
- Allow for piping and connections to base building heating system	1 sum	30,000.00	30,000	
3 Dedicated cooling for server room	1 sum	12,000.00	12,000	
- Split air conditioner c/w outdoor condenser	1 sum	12,000.00	12,000	
4 Natatorium (pool area & all associated decks) ventilation	1 sum	980,000.00	980,000	
- Air handling unit AHU-1(OA) 30,500 l/s c/w heat recovery, SF, EF, 318 kW HC & 71kW DX cooling	1 no.	680,000.00	680,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	300,000.00	300,000	
5 Administration, multipurpose rooms and canteen ventilation	1 sum	300,000.00	300,000	
- Air handling unit AHU-2(ERV) c/w heat recovery, HW heting & DX cooling, 3600 l/s	1 no.	140,000.00	140,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	160,000.00	160,000	
6 2nd floor office ventilation	1 sum	100,000.00	100,000	
- Air handling unit AHU-3 c/w HW heting & DX cooling, 1600 l/s	1 no.	40,000.00	40,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	60,000.00	60,000	
Carried Forward :			2,355,600	

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C14 HVAC (Continued)			Brought Forward :	2,355,600	
7	Canteen dedicated exhaust system	1 sum	40,000.00	40,000	
	- Allow for exhaust fan, ductwork, hoods, louvers, fire wrap etc.	1 sum	40,000.00	40,000	
8	Change rooms and washrooms exhaust	1 sum	120,000.00	120,000	
	- Allow for EA ductwork, grilles, tie into main pool area heat recovery systems	1 sum	120,000.00	120,000	
9	Miscellaneous exhaust and ventilation	1 sum	75,000.00	75,000	
	- Allow for chlorine room exhaust and ventilation	1 sum	15,000.00	15,000	
	- Allow for service spaces exhaust and ventilation	1 sum	60,000.00	60,000	
10	HVAC miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification etc.	1 sum	40,000.00	40,000	
11	Testing, adjusting, balancing and commissioning	1 sum	140,000.00	140,000	
C14 HVAC		TOTAL : \$	4,554 m2	608.39	2,770,600

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C15 Controls					
1	Allow for DDC controls	1 sum	460,000.00	460,000	
C15 Controls					
TOTAL : \$		4,554 m2	101.01	460,000	

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C21 Service & Distribution				
1 Service & distribution, 800A 347/600V 3Ph 4w	1 sum	400,000.00	400,000	
2 Standby diesel generator, 500kW 347/600V 3Ph inside building c/w 800A ATS, load bank etc	1 sum	400,000.00	400,000	
3 Electrical Misc.	1 sum	50,000.00	50,000	
- Permits, fees & inspection	1 sum	8,000.00	8,000	
- Drawings & manuals	1 sum	10,000.00	10,000	
- Sealing & fire-stopping	1 sum	2,000.00	2,000	
- Mobilization	1 sum	30,000.00	30,000	
C21 Service & Distribution	TOTAL : \$	4,554 m2	186.65	850,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C22 Lighting, Devices & Heating				
1 Light fixtures	4,554 m2	100.00	455,400	
2 Exit & emergency lighting	1 sum	49,900.00	49,900	
3 Lighting controls	4,554 m2	15.00	68,300	
4 Power outlets, devices & connections	4,554 m2	35.00	159,400	
5 Connections to mechanical equipment	55 no.	1,000.00	55,000	
6 Electric heating, not included		nil.		
7 Under water lighting, not included		nil.		
C22 Lighting, Devices & Heating	TOTAL : \$	4,554 m2 173.03	788,000	

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C23 Systems & Ancillaries				
1 FA system, addressable 2 stage c/w battery charger, standby batteries, connection to DACT & monitored by local ULC approved monitoring company, 4554m2 @ \$25	1 sum	114,000.00	114,000	
2 Combined telephone & PA system	1 sum	45,000.00	45,000	
3 Communication system (voice/data)	1 sum	65,000.00	65,000	
4 Door access controls system	1 sum	36,000.00	36,000	
5 CCTV system	1 sum	70,000.00	70,000	
6 Intrusion alarm system	1 sum	40,000.00	40,000	
7 CableTV system	1 sum	36,000.00	36,000	
8 Clock system, allow	1 sum	5,000.00	5,000	
9 Staff alarm system, allow	1 sum	5,000.00	5,000	
10 Sound system, allow	1 sum	36,000.00	36,000	
11 Misc. systems	1 sum	26,000.00	26,000	
12 Lightning protection system, not included		nil.		
C23 Systems & Ancillaries TOTAL : \$	4,554 m2	104.96	478,000	

D1 SITE WORK		Quantity	Unit rate	Amount	Remarks
D11 Site Development					
1	Allowance for clearing, grubbing, cut and fill, as required	6,700 m2	35.00	234,500	
2	Asphalt paving	4,300 m2	85.00	365,500	
3	Demarkation to above		allow	12,000	
4	Allowance for concrete deck at entrance	60 m2	240.00	14,400	
5	Allowance restoration, soft landscaping	2,300 m2	30.00	69,000	
6	Allowance for restoration at new service connections		allow	30,000	
D11 Site Development					
TOTAL : \$		6,700 m2	108.27	725,400	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D12 Mechanical Site Services				
1 Water supply (fire & domestic) - Allow for water supply from city water main c/w U/G piping, valves, valve chambers, connections etc.	1 sum	250,000.00	250,000	
	1 sum	250,000.00	250,000	
2 Sanitary drainage disposal - Allow for new manholes, underground piping, connection to existing mains etc.	1 sum	150,000.00	150,000	
	1 sum	150,000.00	150,000	
3 Storm drainage disposal - Relocate manhole and culvert at north end of the site - Allow for new manholes, catchbasins, underground piping & connections	1 sum	200,000.00	200,000	
	1 allow	80,000.00	80,000	
	1 sum	120,000.00	120,000	
4 Fuel oil storage for building heating - included in C12 Plumbing & Drainage		incl.		
5 District heating supply to new aquatic centre (heating load 2079kW) - allow for 150mm dia. U/G pre-insulated HWS/HWR piping, valves, connection to existing biomass district heating system etc.- \$800,000 separate budget		nil		
D12 Mechanical Site Services TOTAL : \$	1 Sum	600,000.00	600,000	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D13 Electrical Site Services				
1 Incoming O/H primary power c/w Utility TX, pad, grounding, rock excavation etc	1 sum	55,000.00	55,000	
2 Incoming U/G secondary power	1 sum	25,000.00	25,000	
3 Incoming telecom services (CableTV, Internet, Tel)	1 sum	20,000.00	20,000	
4 Site lighting	1 sum	20,000.00	20,000	
D13 Electrical Site Services	1 Sum	120,000.00	120,000	

**Appendix
D - Detailed Elemental Estimate - 6 Lane 50m Pool**

Project	: Yellowknife Aquatic Centre	Report date	: 29 Oct 2020
	: 50m Pool, 6 Lane	Page No.	: 1
Location	: Yellowknife, NWT	Bldg Type	: 550
Owner	: City of Yellowknife	C.T. Index	: 0.0
Consultant	: Taylor Architecture Group	GFA	: 5,192 m2

ELEMENTAL COST SUMMARY

Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%
		Quantity	Unit rate	Sub-Total	Total	Sub-Total	Total	
A SHELL		5,192 m2			11,910,700		2,294.05	29.7
A1 SUBSTRUCTURE					2,122,900		408.88	5.3
A11 Foundations	0.810	4,196 m2	265.00	1,111,100		214.00		
A12 Basement Excavation	0.810	4,196 m2	196.00	823,800		158.67		
A13 Special Conditions	0.000	1 Sum	188,000.00	188,000		36.21		
A2 STRUCTURE					5,396,100		1,039.31	13.5
A21 Lowest Floor Construction	0.810	4,196 m2	421.00	1,768,500		340.62		
A22 Upper Floor Construction	0.190	996 m2	714.00	710,900		136.92		
A23 Roof Construction	0.810	4,196 m2	695.00	2,916,700		561.77		
A3 EXTERIOR ENCLOSURE					4,391,700		845.86	11.0
A31 Walls Below Grade				0		0.00		
A32 Walls Above Grade	0.390	2,009 m2	686.00	1,377,200		265.25		
A33 Windows & Entrances	0.110	550 m2	2,475.00	1,361,300		262.19		
A34 Roof Coverings	0.810	4,196 m2	390.00	1,636,400		315.18		
A35 Projections	0.000	1 Sum	16,800.00	16,800		3.24		
B INTERIORS		5,192 m2			6,472,000		1,246.53	16.2
B1 PARTITIONS & DOORS					1,672,700		322.17	4.2
B11 Partitions	0.710	3,682 m2	412.00	1,516,100		292.01		
B12 Doors	0.010	42 No	3,729.00	156,600		30.16		
B2 FINISHES					2,831,200		545.30	7.1
B21 Floor Finishes	1.000	5,192 m2	234.00	1,216,200		234.24		
B22 Ceiling Finishes	1.000	5,192 m2	192.00	995,300		191.70		
B23 Wall Finishes	1.870	9,713 m2	64.00	619,700		119.36		
B3 FITTINGS & EQUIPMENT					1,968,100		379.06	4.9
B31 Fittings & Fixtures	1.000	5,192 m2	100.00	517,400		99.65		
B32 Equipment	1.000	5,192 m2	21.00	110,700		21.32		
B33 Pool Equipment	0.000	1 Sum	1,220,000.00	1,220,000		234.98		
B34 Elevator	0.000	1 No	120,000.00	120,000		23.11		
C SERVICES		5,192 m2			9,793,900		1,886.34	24.4
C1 MECHANICAL					7,448,900		1,434.69	18.6
C11 Pool Plumbing & Drainage	1.000	5,192 m2	428.00	2,223,000		428.16		
C12 Plumbing & drainage	1.000	5,192 m2	175.00	907,400		174.77		
C13 Fire Protection	1.000	5,192 m2	69.00	359,600		69.26		
C14 HVAC	1.000	5,192 m2	666.00	3,458,900		666.20		
C15 Controls	1.000	5,192 m2	96.00	500,000		96.30		
C2 ELECTRICAL					2,345,000		451.66	5.9
C21 Service & Distribution	1.000	5,192 m2	178.00	925,000		178.16		
C22 Lighting, Devices & Heating	1.000	5,192 m2	172.00	893,000		172.00		
C23 Systems & Ancillaries	1.000	5,192 m2	102.00	527,000		101.50		
NET BUILDING COST - EXCLUDING SITE				\$	28,176,600		5,426.93	70.3
D SITE & ANCILLARY WORK		5,192 m2			1,445,400		278.39	3.6
D1 SITE WORK					1,445,400		278.39	3.6
D11 Site Development	1.290	6,700 m2	108.00	725,400		139.71		
D12 Mechanical Site Services	0.000	1 Sum	600,000.00	600,000		115.56		
D13 Electrical Site Services	0.000	1 Sum	120,000.00	120,000		23.11		
D2 ANCILLARY WORK					0		0.00	0.0
D21 Demolitions				0		0.00		
NET BUILDING COST - INCLUDING SITE				\$	29,622,000		5,705.32	73.9
Z1 GENERAL REQUIREMENTS & FEE					10,456,600		2,013.98	26.1
Z11 General Requirements		23.0 %		6,813,100		1,312.23		
Z12 Fee		10.0 %		3,643,500		701.75		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$	40,078,600		7,719.30	100.0
Z2 ALLOWANCES					11,767,000		2,266.37	
Z21 Design & Pricing Allowance		12.0 %		4,809,400		926.31		
Z22 Escalation Allowance		10.0 %		4,488,800		864.56		
Z23 Construction Allowance		5.0 %		2,468,800		475.50		
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES				\$	51,845,600		9,985.67	
VALUE ADDED TAX (GST/HST)					0		0.00	
Value Added Tax (GST/HST)		0.0 %		0		0.00		
TOTAL CONSTRUCTION ESTIMATE				\$	51,845,600	\$	9,985.67	

A1 SUBSTRUCTURE	Quantity	Unit rate	Amount	Remarks
A11 Foundations				
1 Allowance for clearing, grubbing	4,196 m2	35.00	146,900	
2 Reinforced concrete perimeter strip footing, 250 x 800mm	262 m	215.00	56,300	
3 Reinforced concrete interior strip footing, 250 x 800mm, allow	82 m	215.00	17,600	
4 Reinforced concrete perimeter pad footing, 250 x 1000 x 1000mm	36 no.	420.00	15,100	
5 Reinforced concrete interior pad footing, 250 x 1000 x 1000mm	48 no.	420.00	20,200	
6 Reinforced concrete frost walls, 200mm thick, see also walls below grade	601 m2	610.00	366,600	
7 Reinforced concrete interior walls, 200mm thick at service room and crawlspace	131 m2	610.00	79,900	
8 Reinforced concrete pilasters, 500 x 500mm	36 no.	1,400.00	50,400	
9 Reinforced concrete piers, 500 x 500mm	42 no.	1,540.00	64,700	
10 Allowance for 200mm rigid insulation, frost protection to perimeter footings	480 m2	180.00	86,400	
11 Allowance for waterproofing and parging to o/s face of foundation walls	601 m2	85.00	51,100	
12 Allowance for 100mm rigid insulation to i/s face of frost walls	601 m2	100.00	60,100	
13 Reinforced concrete elevator pad c/w pit walls, etc.,	1 no.	10,000.00	10,000	
14 Allowance for drainage system	4,196 m2	20.40	85,800	
- Allowance for sump pits	4 no.	5,000.00	20,000	
- Allowance for perimeter drainage	262 m	45.00	11,800	
- Allowance for interior drainage system	1,200 m	45.00	54,000	
A11 Foundations	TOTAL : \$	4,196 m2	264.80	1,111,100

A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A12 Basement Excavation					
1	Allowance for soil excavation to expose bedrock, working spaces, excess material removed from site	5,640 m3	45.00	253,800	
2	Allowance for rock excavation as required for pool depth, services, etc., used as fill	1,650 m3	150.00	247,500	
3	Backfill with Engineered fill below main floor	2,100 m3	85.00	178,500	
4	Backfill with excavated material to o/s of foundations	3,200 m3	45.00	144,000	
A12 Basement Excavation					
TOTAL : \$		4,196 m2	196.33	823,800	

A1 SUBSTRUCTURE		Quantity	Unit rate	Amount	Remarks
A13 Special Conditions					
1	Allowance for removal of loose rock, boulders		allow	8,000	
2	Allowance for dewatering foundations		allow	12,000	
3	Allowance for rock anchors to footings	453 no.	150.10	68,000	
	- Strip footings, 1200mm c/c	285 no.	150.00	42,800	
	- Pad footings, 2 per pad	168 no.	150.00	25,200	
4	Allowance for selective blasting and rock removal		allow	100,000	
A13 Special Conditions		TOTAL : \$	1 Sum	188,000.00	188,000

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21 Lowest Floor Construction					
1	Reinforced concrete slab on grade, allow 150mm thick c/w 10M @ 200mm c/c	2,925 m2	215.00	628,900	
2	Allowance for slab thickening at masonry partitions, trench drains, etc.,		allow	30,000	
3	Lap pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	839 m2	150.00	125,900	
4	Extra over to above for ramp	20 m2	200.00	4,000	
5	Reinforced concrete walls to above, 300mm thick, average	134 m2	730.00	97,800	
6	Leisure pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	369 m2	150.00	55,400	
7	Extra over to above for ramp	64 m2	150.00	9,600	
8	Reinforced concrete walls to above, 300mm thick, average	218 m2	730.00	159,100	
9	Extra over to above for curves, features, etc.,	72 m2	100.00	7,200	
10	Allowance for features		allow	10,000	
11	Therapy pool bottom reinforced concrete slab on grade, allow 125mm thick c/w 10M @ 300mm c/c	63 m2	150.00	9,500	
12	Extra over to above for ramp and stairs	16 m2	400.00	6,400	
13	Reinforced concrete walls to above, 300mm thick, average	66 m2	730.00	48,200	
14	Extra over to above for curves, features, etc.,	60 m2	100.00	6,000	
Carried Forward :				1,198,000	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A21	Lowest Floor Construction (Continued)		Brought Forward :	1,198,000	
15	Extra over for waterproofing compound to pool areas	1 sum	26,000.00	26,000	
	- Allowance for compound added to concrete mix	1 sum	17,000.00	17,000	
	- Allowance for filling pool to activate compound, including removal	1 sum	9,000.00	9,000	
16	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation, compacted granular	4,196 m2	115.00	482,500	
17	Allowance for 10 mil vapour barrier, 100mm h/d rigid insulation to pool walls	418 m2	110.00	46,000	
18	Steel stair down to service room level	2 flight	8,000.00	16,000	
A21 Lowest Floor Construction		TOTAL : \$	421.47	1,768,500	

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A22 Upper Floor Construction					
1	Concrete topping on metal deck c/w welded wire mesh	816 m2	180.00	146,900	
2	Concrete topping on metal deck c/w welded wire mesh, tiered construction to spectator seating	180 m2	240.00	43,200	
3	Structural support to above	996 m2	486.70	484,800	
	- OWSJ, beams, columns	54,780 kg	8.00	438,200	
	- Miscellaneous metals, connections, consumables	5,478 kg	8.50	46,600	
4	Concrete filled metal pan stairs c/w painted steel pipe handrails, public access	2 flight	12,000.00	24,000	
5	Concrete filled metal pan stairs c/w painted steel pipe handrails to upper service space	1 flight	12,000.00	12,000	
A22 Upper Floor Construction		TOTAL : \$	996 m2	713.76	710,900

A2 STRUCTURE		Quantity	Unit rate	Amount	Remarks
A23 Roof Construction					
1	38mm acoustical metal deck, galvanized to Natatorium	2,572 m2	52.00	133,700	
2	Structural support to above, galvanized	2,572 m2	746.30	1,919,400	
	- OWSJ, beams, columns	192,900 kg	9.00	1,736,100	
	- Miscellaneous metals, connections, consumables	19,290 kg	9.50	183,300	
3	38mm metal deck, other areas	1,624 m2	45.00	73,100	
4	Structural support to above	1,624 m2	486.80	790,500	
	- OWSJ, beams, columns	89,320 kg	8.00	714,600	
	- Miscellaneous metals, connections, consumables	8,932 kg	8.50	75,900	
5	Roof overhang, measured with projections		nil		
A23 Roof Construction		TOTAL : \$	4,196 m2	695.11	2,916,700

A3 EXTERIOR ENCLOSURE	Quantity	Unit rate	Amount	Remarks
<p>A32 Walls Above Grade</p> <p>1 EW1, 22 gauge corrugated metal on 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.</p> <p>2 EW2, premium cladding system, 17mm furring, weather barrier, 50+100mm rigid insulation, Z-girts, selfe adhesive a/v barrier c/w primer, 13mm sheathing, 152mm wind bearings studs, 16mm type X gypsum bd.</p> <p>3 Allowance for sealants, foamed-in-place insulation, exterior painting, etc.,</p>	<p>1,406 m2</p> <p>603 m2</p> <p>2,009 m2</p>	<p>625.00</p> <p>710.00</p> <p>35.00</p>	<p>878,800</p> <p>428,100</p> <p>70,300</p>	
<p>A32 Walls Above Grade</p> <p>TOTAL : \$</p>	<p>2,009 m2</p>	<p>685.52</p>	<p>1,377,200</p>	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A33 Windows & Entrances					
1	Triple glazed windows and curtain wall in fibreglass framing	524 m2	2,500.00	1,310,000	
2	Insulated hollow metal doors c/w frames, standard hardware	4 no.	3,000.00	12,000	
3	Glazed aluminum doors c/w frames, standard hardware	4 no.	4,200.00	16,800	
4	Overhead door to service room, manually operated	1 no.	11,000.00	11,000	
5	Allowance for hardware upgrades	8 no.	1,000.00	8,000	
6	Push button barrier free door operators	1 no.	3,500.00	3,500	
7	Louvres, by mechanical		nil		
A33 Windows & Entrances					
TOTAL : \$		550 m2	2,475.09	1,361,300	

A3 EXTERIOR ENCLOSURE		Quantity	Unit rate	Amount	Remarks
A34 Roof Coverings					
1	4mm MBM cap, 3mm MBM base, 3mm board mech. fastened, sloped insulation, 250mm rigid insulation, air barrier, 13mm primed deck boards	4,196 m2	390.00	1,636,400	
2	Roof overhang, measured with projections		nil		
A34 Roof Coverings					
TOTAL : \$		4,196 m2	389.99	1,636,400	

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B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B11 Partitions					
1	Typical partition, 16mm type X gypsum board both sides	1,001 m2	210.00	210,200	
2	Typical partition, service areas	1,636 m2	270.00	441,700	
3	Elevator shaft walls	81 m2	330.00	26,700	
4	Glazed partition to lobby, etc.,	964 m2	800.00	771,200	
5	Allowance for firestopping, solid blocking, acoustical sealants, etc.,	3,682 m2	18.00	66,300	
6	Operable partitons, not indicated		nil		
B11 Partitions		TOTAL : \$	3,682 m2	411.76	1,516,100

B1 PARTITIONS & DOORS		Quantity	Unit rate	Amount	Remarks
B12 Doors					
1	Hollow metal doors c/w frames, standard hardware	19 no.	2,400.00	45,600	
2	Glazed aluminum doors c/w frames, standard hardware	12 no.	3,300.00	39,600	
3	Solid core wood doors c/w frames, standard hardware	8 no.	2,300.00	18,400	
4	Hollow metal doors to crawl space c/w frames, standard hardware	3 no.	2,500.00	7,500	
5	Push button barrier free door operators	1 no.	3,500.00	3,500	
6	Allowance for hardware upgrades	42 no.	1,000.00	42,000	
B12 Doors					
TOTAL : \$		42 No	3,728.57	156,600	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B21 Floor Finishes					
1	Ceramic tile	2,430 m2	225.00	546,800	
2	Allowance for special tiles, markings to above		allow	30,000	
3	Pools, ceramic tile c/w membrane	1,271 m2	401.70	510,500	
	- Pool bottom	1,271 m2	225.00	286,000	
	- Pool walls	418 m2	225.00	94,100	
	- Edge tile c/w gutter	266 m	460.00	122,400	
	- Allowance for stair, lane, etc., special tile, warning strips, etc.		allow	8,000	
4	Sheet flooring	755 m2	110.00	83,100	
5	Rubber tile flooring	140 m2	120.00	16,800	
6	Sealer/hardener to exposed concrete	596 m2	40.00	23,800	
7	Epoxy flooring c/w cove base	47 m2	110.00	5,200	
B21 Floor Finishes		TOTAL : \$	5,192 m2	234.24	1,216,200

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B22 Ceiling Finishes					
1	Paint to exposed structure	1,180 m2	50.00	59,000	
2	Finish to Natatorium	2,572 m2	250.00	643,000	
3	Suspended gypsum board c/w paint finish	700 m2	135.00	94,500	
4	Suspended acoustic tile system	680 m2	60.00	40,800	
5	Extra over to above for painted gypsum board bulkheads	800 m2	160.00	128,000	
6	Allowance for features, clouds, acoustical baffles, etc.,		allow	30,000	
B22 Ceiling Finishes					
TOTAL : \$		5,192 m2	191.70	995,300	

B2 FINISHES		Quantity	Unit rate	Amount	Remarks
B23 Wall Finishes					
1	Exposed cedar to steam room	75 m2	135.00	10,100	
2	Allowance for epoxy paint	600 m2	75.00	45,000	
3	Ceramic tile to washrooms, changerooms, etc.,	500 m2	190.00	95,000	
4	Wall covering to Natatorium, c/w 300mm high ceramic base	1,291 m2	85.00	109,700	
5	Paint	7,247 m2	40.00	289,900	
6	Intumescent paint to exposed structure to Natatorium, change rooms, etc.,		allow	50,000	
7	Allowance for other finishes, upgrades, etc.,		allow	20,000	
B23 Wall Finishes		TOTAL : \$	9,713 m2	63.80	619,700

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B31 Fittings & Fixtures					
1	Washroom accessories, allowance	1 sum	38,000.00	38,000	
2	Washroom and change room partitions, solid phenolic	1 sum	65,000.00	65,000	
3	Millwork	1 sum	185,000.00	185,000	
4	Manually operated blinds, exterior	542 m2	100.00	54,200	
5	Lockers	1 sum	58,000.00	58,000	
6	Interior signage and wayfinding	1 sum	45,000.00	45,000	
7	Exterior signage	1 sum	50,000.00	50,000	
8	Janitor accessories	1 sum	2,200.00	2,200	
9	Corner guards, protection, etc.,	1 sum	20,000.00	20,000	
B31 Fittings & Fixtures					
TOTAL : \$		5,192 m2	99.65	517,400	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B32 Equipment					
1	Wet sauna equipment	1 sum	15,000.00	15,000	
2	Turnstile, security system	1 sum	17,000.00	17,000	
3	Security grille to canteen	1 sum	4,000.00	4,000	
4	Mechanical access doors	1 sum	7,000.00	7,000	
5	Spectator area	180 m2	376.10	67,700	
	- Guard, including wheelchair areas	42 m	1,200.00	50,400	
	- Bench seating	157 m	110.00	17,300	
6	Other equipment and loose furniture, not included		nil		
7	Gym and fitness equipment, not included		nil		
B32 Equipment		TOTAL : \$	5,192 m2	21.32	110,700

**Yellowknife Aquatic Centre
50m Pool, 6 Lane
Yellowknife, NWT**

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B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B33 Pool Equipment					
1	Therapy pool	1 sum	230,000.00	230,000	
2	Lap pool, 50m	1 sum	210,000.00	210,000	
3	Leasure pool	1 sum	600,000.00	600,000	
4	Pool equipment miscellaneous, mobilization, commissioning, shop drawings, testing, etc.,	1 sum	180,000.00	180,000	
B33 Pool Equipment					
TOTAL : \$		1 Sum	1,220,000.00	1,220,000	

B3 FITTINGS & EQUIPMENT		Quantity	Unit rate	Amount	Remarks
B34 Elevator					
1	Two stop front loading elevator	1 no.	120,000.00	120,000	
TOTAL : \$		1 No	120,000.00	120,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage				
1 50m lane lap pool water supply & filtration system	1 sum	710,000.00	710,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	680,000.00	680,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
2 Leisure pool water supply & filtration system	1 sum	635,000.00	635,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	600,000.00	600,000	
- Allow for pool water system controls	1 sum	25,000.00	25,000	
3 Therapy pool water supply & filtration system	1 sum	230,000.00	230,000	
- 65mm DCW make-up connection c/w BFP & water meter	1 sum	10,000.00	10,000	
- Pool water recirculation pumps, tanks, piping, valves, filters, bubblers, nozzles etc.	1 sum	200,000.00	200,000	
- Allow for pool water system controls	1 sum	20,000.00	20,000	
4 Pool drainage and backwash system	1 sum	360,000.00	360,000	
- Under ground pool drainage and back wash piping, deck drains, skimmers, pumps etc. (all 3 pools)	1 sum	360,000.00	360,000	
5 Pool chemical treatment - Calcium hyochlorite feed system	1 sum	70,000.00	70,000	
6 Pool chemical treatment - Sodium bisulphate feed system	1 sum	38,000.00	38,000	
7 Pool chemical supply, 1 year	1 sum	100,000.00	100,000	
8 Pool chemical treatment - CO2 injection system, not included		nil		
Carried Forward :			2,143,000	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C11 Pool Plumbing & Drainage (Continued)		Brought Forward :	2,143,000	
9 Pool plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings , manuals, tagging, identification, testing, verification etc.	1 sum	80,000.00	80,000	
C11 Pool Plumbing & Drainage	TOTAL : \$	5,192 m2	428.16	2,223,000

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C12 Plumbing & drainage					
1	Plumbing fixtures, ultra low flow & low flush	56 no.	1,739.30	97,400	
	- Water closet	25 no.	2,200.00	55,000	
	- Lavatory c/w faucet	13 no.	1,600.00	20,800	
	- Shower head & balancong valve	18 no.	1,200.00	21,600	
2	Domestic water (hot & cold)	1 sum	200,000.00	200,000	
	- Water entry assembly	1 sum	10,000.00	10,000	
	- DCW, DHWS & DHWR piping, pumps, insulation, fixture connections etc.	1 sum	140,000.00	140,000	
	- DHW pre heating using HX from backwashing or draining pools	1 sum	20,000.00	20,000	
	- DHW water heaters	1 sum	30,000.00	30,000	
3	Sanitary drainage	1 sum	240,000.00	240,000	
	- Above & under ground SAN drainage and vent piping, floor drains, cleanouts, sump pumps etc.	1 sum	240,000.00	240,000	
4	Grey water harvesting from pool change rooms fixtures	1 sum	80,000.00	80,000	
	- Allow for filters, UV treatment, tanks, pumps, piping, valves, connections etc.	1 sum	80,000.00	80,000	
5	Storm drainage	1 sum	100,000.00	100,000	
	- Allow for roof drains, RWLs, insulation, U/G drainage piping, cleanouts etc.	1 sum	100,000.00	100,000	
6	Fuel oil supply for back up heating boilers	1 sum	160,000.00	160,000	
	- Allow for 13000G outdoor oil tank, piping, valves, filters, pumps, day tanks & connections to boilers	1 sum	160,000.00	160,000	
7	Plumbing & drainage miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	30,000.00	30,000	
C12 Plumbing & drainage		TOTAL : \$	5,192 m2	174.77	907,400

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C13 Fire Protection				
1 Incoming FW supply c/w backflow preventer fed directly from City water main	1 sum	15,000.00	15,000	
2 FW main header, zone valves, drain connections etc.	1 sum	12,000.00	12,000	
3 Fire department connection c/w dip check valve & piping	1 sum	10,000.00	10,000	
4 Fire water/sprinkler main piping	1 sum	50,000.00	50,000	
5 Sprinkler system c/w piping & heads	5,192 m2	45.00	233,600	
6 Allow for fire extinguishers	1 sum	14,000.00	14,000	
7 Fire protection miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification, testing, verification etc.	1 sum	25,000.00	25,000	
8 Note:- Fire pump - not included		nil		
C13 Fire Protection	TOTAL : \$ 5,192 m2	69.26	359,600	

C1 MECHANICAL	Quantity	Unit rate	Amount	Remarks
C14 HVAC				
1 Building heating	1 sum	1,076,900.00	1,076,900	
- Note:- Primary heating source from existing biomass district heating system, expected load 3249kW		incl.		
- Oil burning boiler back up system c/w two 1950kW boilers	1 sum	350,000.00	350,000	
- Allow for plate & frame heat exchanger, pumps, piping, valves, insulation, terminals & connection	5,192 m2	140.00	726,900	
2 Pool water heating	1 sum	115,000.00	115,000	
- Dedicated heat exchanger for 50m competition pool, 0.3 deg.C./hr, allow	1 no.	45,000.00	45,000	
- Dedicated heat exchanger for leisure pool, 1.1 deg.C./hr, allow	1 no.	15,000.00	15,000	
- Dedicated heat exchanger for therapy pool, 2.8 deg.C./hr, allow	1 no.	25,000.00	25,000	
- Allow for piping and connections to base building heating system	1 sum	30,000.00	30,000	
3 Dedicated cooling for server room	1 sum	12,000.00	12,000	
- Split air conditioner c/w outdoor condenser	1 sum	12,000.00	12,000	
4 Natatorium (pool area & all associated decks) ventilation	1 sum	1,440,000.00	1,440,000	
- Air handling unit AHU-1(OA) 47,500 l/s c/w heat recovery, SF, EF, 494 kW HC & 87.5kW DX cooling	1 no.	1,060,000.00	1,060,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	380,000.00	380,000	
5 Administration, multipurpose rooms and canteen ventilation	1 sum	300,000.00	300,000	
- Air handling unit AHU-2(ERV) c/w heat recovery, HW heting & DX cooling, 3600 l/s	1 no.	140,000.00	140,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	160,000.00	160,000	
6 2nd floor office ventilation	1 sum	100,000.00	100,000	
- Air handling unit AHU-3 c/w HW heting & DX cooling, 1600 l/s	1 no.	40,000.00	40,000	
- Air distribution ductwork, dampers , grilles, louvers, insulation etc.	1 sum	60,000.00	60,000	
Carried Forward :			3,043,900	

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C14 HVAC (Continued)			Brought Forward :	3,043,900	
7	Canteen dedicated exhaust system	1 sum	40,000.00	40,000	
	- Allow for exhaust fan, ductwork, hoods, louvers, fire wrap etc.	1 sum	40,000.00	40,000	
8	Change rooms and washrooms exhaust	1 sum	120,000.00	120,000	
	- Allow for EA ductwork, grilles, tie into main pool area heat recovery systems	1 sum	120,000.00	120,000	
9	Miscellaneous exhaust and ventilation	1 sum	75,000.00	75,000	
	- Allow for chlorine room exhaust and ventilation	1 sum	15,000.00	15,000	
	- Allow for service spaces exhaust and ventilation	1 sum	60,000.00	60,000	
10	HVAC miscellaneous such as mobilization, start-up, cleaning, drawings, manuals, tagging, identification etc.	1 sum	40,000.00	40,000	
11	Testing, adjusting, balancing and commissioning	1 sum	140,000.00	140,000	
C14 HVAC		TOTAL : \$	5,192 m2	666.20	3,458,900

C1 MECHANICAL		Quantity	Unit rate	Amount	Remarks
C15 Controls					
1	Allow for DDC controls	1 sum	500,000.00	500,000	
C15 Controls					
TOTAL : \$		5,192 m2	96.30	500,000	

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C21 Service & Distribution				
1 Service & distribution, 800A 347/600V 3Ph 4w	1 sum	425,000.00	425,000	
2 Standby diesel generator, 550kW 347/600V 3Ph inside building c/w 800A ATS, load bank etc	1 sum	450,000.00	450,000	
3 Electrical Misc.	1 sum	50,000.00	50,000	
- Permits, fees & inspection	1 sum	8,000.00	8,000	
- Drawings & manuals	1 sum	10,000.00	10,000	
- Sealing & fire-stopping	1 sum	2,000.00	2,000	
- Mobilization	1 sum	30,000.00	30,000	
C21 Service & Distribution	TOTAL : \$	5,192 m2	178.16	925,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C22 Lighting, Devices & Heating				
1 Light fixtures	5,192 m2	100.00	519,200	
2 Exit & emergency lighting	1 sum	54,200.00	54,200	
3 Lighting controls	5,192 m2	15.00	77,900	
4 Power outlets, devices & connections	5,192 m2	35.00	181,700	
5 Connections to mechanical equipment	60 no.	1,000.00	60,000	
6 Electric heating, not included		nil.		
7 Under water lighting, not included		nil.		
C22 Lighting, Devices & Heating	TOTAL : \$	5,192 m2	172.00	893,000

C2 ELECTRICAL	Quantity	Unit rate	Amount	Remarks
C23 Systems & Ancillaries				
1 FA system, addressable 2 stage c/w battery charger, standby batteries, connection to DACT & monitored by local ULC approved monitoring company, 5192m2 @ \$25	1 sum	130,000.00	130,000	
2 Combined telephone & PA system	1 sum	50,000.00	50,000	
3 Communication system (voice/data)	1 sum	68,000.00	68,000	
4 Door access controls system	1 sum	40,000.00	40,000	
5 CCTV system	1 sum	75,000.00	75,000	
6 Intrusion alarm system	1 sum	45,000.00	45,000	
7 CableTV system	1 sum	40,000.00	40,000	
8 Clock system, allow	1 sum	5,000.00	5,000	
9 Staff alarm system, allow	1 sum	5,000.00	5,000	
10 Sound system, allow	1 sum	40,000.00	40,000	
11 Misc. systems	1 sum	29,000.00	29,000	
12 Lightning protection system, not included		nil.		
C23 Systems & Ancillaries TOTAL : \$	5,192 m2	101.50	527,000	

D1 SITE WORK		Quantity	Unit rate	Amount	Remarks
D11 Site Development					
1	Allowance for clearing, grubbing, cut and fill, as required	6,700 m2	35.00	234,500	
2	Asphalt paving	4,300 m2	85.00	365,500	
3	Demarkation to above		allow	12,000	
4	Allowance for concrete deck at entrance	60 m2	240.00	14,400	
5	Allowance restoration, soft landscaping	2,300 m2	30.00	69,000	
6	Allowance for restoration at new service connections		allow	30,000	
D11 Site Development					
TOTAL : \$		6,700 m2	108.27	725,400	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D12 Mechanical Site Services				
1 Water supply (fire & domestic) - Allow for water supply from city water main c/w U/G piping, valves, valve chambers, connections etc.	1 sum	250,000.00	250,000	
	1 sum	250,000.00	250,000	
2 Sanitary drainage disposal - Allow for new manholes, underground piping, connection to existing mains etc.	1 sum	150,000.00	150,000	
	1 sum	150,000.00	150,000	
3 Storm drainage disposal - Relocate manhole and culvert at north end of the site - Allow for new manholes, catchbasins, underground piping & connections	1 sum	200,000.00	200,000	
	1 allow	80,000.00	80,000	
	1 sum	120,000.00	120,000	
4 Fuel oil storage for building heating - included in C12 Plumbing & Drainage		incl.		
5 District heating supply to new aquatic centre (heating load 3249kW) - allow for 150mm dia. U/G pre-insulated HWS/HWR piping, valves, connection to existing biomass district heating system etc.- \$800,000 separate budget		nil		
D12 Mechanical Site Services TOTAL : \$	1 Sum	600,000.00	600,000	

D1 SITE WORK	Quantity	Unit rate	Amount	Remarks
D13 Electrical Site Services				
1 Incoming O/H primary power c/w Utility TX, pad, grounding, rock excavation etc	1 sum	55,000.00	55,000	
2 Incoming U/G secondary power	1 sum	25,000.00	25,000	
3 Incoming telecom services (CableTV, Internet, Tel)	1 sum	20,000.00	20,000	
4 Site lighting	1 sum	20,000.00	20,000	
D13 Electrical Site Services				
TOTAL : \$	1 Sum	120,000.00	120,000	

**Appendix
E - Life Cycle Costs**

Life Cycle Cost Analysis Summary

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		

Discount Rate:	4.0%	Period of Study:	25 years	Base Year:	2020
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	Capital Costs	Operations & Maintenance Costs	Energy Costs	Cyclical Renewal Costs	Salvage Value	Total Cost (Present Value)
1 25m 8 Lane Pool	\$44,599,900	\$76,089,240	\$12,149,970	\$17,662,470	(\$6,532,540)	\$143,969,040
2 50m 8 Lane Pool	\$53,524,000	\$88,527,560	\$14,136,170	\$21,648,760	(\$7,976,460)	\$169,860,030
3 25m 6 Lane Pool	\$43,751,700	\$73,757,140	\$11,777,550	\$17,121,110	(\$6,332,330)	\$140,075,170
4 50m 6 Lane Pool	\$51,845,600	\$84,089,980	\$13,427,550	\$19,519,710	(\$7,219,480)	\$161,663,360
5	-	-	-	-	-	-
6	-	-	-	-	-	-

Study Notes:

This Life Cycle Cost Study considers all significant costs of ownership over the economic life of each option and expresses these costs in equivalent dollars using present value analysis.

Because ownership costs include not only construction costs but also operations, maintenance, energy and cyclic renewal costs, and because each option will present different costs which may in turn be incurred at different times during the life cycle study, the use of present value analysis is necessary to bring all of these diverse and time sensitive expenditures to a common basis for comparison and, in doing so, to account for the time value of money.

Understanding the time value of money begins with the recognition that money invested earns interest. For this reason, a sum of money invested today will earn interest and will therefore be worth more than the same sum at a later date. For example, \$100 invested for a year at 7% interest would be worth \$107 a year from now. Accordingly, \$100 today is worth more than \$100 a year from now. Using this principle, present value analysis 'discounts' future sums of money to present value and presents the results as 'equivalent dollars' for comparison.

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	1 25m 8 Lane Pool	

Discount Rate: 4.0%	Period of Study: 25 years	Base Year: 2020
Enter escalation rates below for each Cost Category		

Capital Costs						PV	Present
Escalation Rate: 6.0%						Factor	Value
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)	
A 25m Lane Pool	4,698 m2	9,493	44,599,900			44,599,900	
B			-			-	
C			-			-	
D			-			-	
E			-			-	
F			-			-	
G			-			-	
H			-			-	
Total Present Value - Capital Costs						44,599,900	

Operations & Maintenance Costs						PV	Present
Escalation Rate: 6.0%						Factor	Value
Description	Quantity	Unit Rate	Estimated Annual Cost	Years	PWAF	Amount (\$)	
A Staff	4,698 m2	415.00	1,949,670	25	32.3275	63,027,960	
B Communications	4,698 m2	4.00	18,790	25	32.3275	607,430	
C Custodial, basic maintenance	4,698 m2	17.00	79,870	25	32.3275	2,582,000	
D Security	4,698 m2	2.00	9,400	25	32.3275	303,880	
E Maintenance & repair	4,698 m2	18.00	84,560	25	32.3275	2,733,610	
F Water & Sewer	4,698 m2	8.00	37,580	25	32.3275	1,214,870	
G Building Envelope	4,698 m2	20.00	93,960	25	32.3275	3,037,490	
H Built in equipment repairs	4,698 m2	17.00	79,870	25	32.3275	2,582,000	
Total Present Value - Operations & Maintenance Costs			2,353,700			76,089,240	

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	1 25m 8 Lane Pool	

Discount Rate: 4.0%	Period of Study: 25 years	Base Year: 2020
Enter escalation rates below for each Cost Category		

Energy Costs							PV	Present
Escalation Rate: 6.0%							Factor	Value
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)		
A Energy Use	4,698 m2	80.00	375,840	25	32.3275	12,149,970		
B			-			-		
C			-			-		
D			-			-		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Energy Costs								12,149,970

Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)							PV	Present
Escalation Rate: 6.0%							Factor	Value
Description	Quantity	Unit Rate	Estimated Cost	Cycle	SPF	Amount (\$)		
A Exterior Renewals	4,698 m2	273	1,283,730	10	2.6735	3,432,090		
B Interior Renewals	4,698 m2	496	2,327,860	8	4.1005	9,545,390		
C Mechanical Renewals	4,698 m2	624	2,931,550	15	1.3307	3,901,080		
D Electrical Renewals	4,698 m2	114	535,570	20	1.4637	783,910		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)								17,662,470

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	1 25m 8 Lane Pool	

Discount Rate: 4.0%	Period of Study: 25 years	Base Year: 2020
Enter escalation rates below for each Cost Category		

Salvage Value (Note: No Replacement in Final Year of Study Period)							PV	PV
Escalation Rate: 6.0%							Factor	of Credit
Description	% Life Remaining	Quantity		Unit Rate	Estimated Credit	At Year	SPF	Amount (\$)
A Exterior Renewals	50.0%	4,698	m2	(273)	(641,860)	25	1.6100	(1,033,360)
B Interior Renewals	87.5%	4,698	m2	(496)	(2,036,880)	25	1.6100	(3,279,280)
C Mechanical Renewals	33.3%	4,698	m2	(624)	(977,180)	25	1.6100	(1,573,210)
D Electrical Renewals	75.0%	4,698	m2	(114)	(401,680)	25	1.6100	(646,690)
E					-			
F					-			
G					-			
H					-			
Total Present Value - Salvage Value (Note: No Replacement in Final Year of Study Period)								(6,532,540)

TOTAL PRESENT VALUE - OPTION 1 - 25m 8 Lane Pool	143,969,040
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Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	2 50m 8 Lane Pool	

Discount Rate: 4.0%	Period of Study: 25 years	Base Year: 2020
Enter escalation rates below for each Cost Category		

Capital Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)	
A 50m Lane Pool	5,466 m2	9,792	53,524,000			53,524,000	
B			-			-	
C			-			-	
D			-			-	
E			-			-	
F			-			-	
G			-			-	
H			-			-	
Total Present Value - Capital Costs						53,524,000	

Operations & Maintenance Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Annual Cost	Years	PWAF	Amount (\$)	
A Staff	5,466 m2	415.00	2,268,390	25	32.3275	73,331,380	
B Communications	5,466 m2	4.00	21,860	25	32.3275	706,680	
C Custodial, basic maintenance	5,466 m2	17.00	92,920	25	32.3275	3,003,870	
D Security	5,466 m2	2.00	10,930	25	32.3275	353,340	
E Maintenance & repair	5,466 m2	18.00	98,390	25	32.3275	3,180,700	
F Water & Sewer	5,466 m2	8.00	43,730	25	32.3275	1,413,680	
G Building Envelope	5,466 m2	20.00	109,320	25	32.3275	3,534,040	
H Built in equipment repairs	5,466 m2	17.00	92,920	25	32.3275	3,003,870	
Total Present Value - Operations & Maintenance Costs			2,738,460				88,527,560

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	2 50m 8 Lane Pool	

Energy Costs							PV	Present
Escalation Rate: 6.0%							Factor	Value
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)		
A Energy Use	5,466 m2	80.00	437,280	25	32.3275	14,136,170		
B			-			-		
C			-			-		
D			-			-		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Energy Costs								14,136,170

Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)							PV	Present
Escalation Rate: 6.0%							Factor	Value
Description	Quantity	Unit Rate	Estimated Cost	Cycle	SPF	Amount (\$)		
A Exterior Renewals	5,466 m2	244	1,332,340	10	2.6735	3,562,050		
B Interior Renewals	5,466 m2	571	3,121,090	8	4.1005	12,798,030		
C Mechanical Renewals	5,466 m2	605	3,306,930	15	1.3307	4,400,610		
D Electrical Renewals	5,466 m2	111	606,730	20	1.4637	888,070		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)								21,648,760

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	2 50m 8 Lane Pool	

Salvage Value (Note: No Replacement in Final Year of Study Period)							PV Factor	PV of Credit
Escalation Rate: 6.0%								
Description	% Life Remaining	Quantity		Unit Rate	Estimated Credit	At Year	SPF	Amount (\$)
A Exterior Renewals	50.0%	5,466	m2	(244)	(666,170)	25	1.6100	(1,072,500)
B Interior Renewals	87.5%	5,466	m2	(571)	(2,730,950)	25	1.6100	(4,396,700)
C Mechanical Renewals	33.3%	5,466	m2	(605)	(1,102,310)	25	1.6100	(1,774,670)
D Electrical Renewals	75.0%	5,466	m2	(111)	(455,040)	25	1.6100	(732,590)
E					-			
F					-			
G					-			
H					-			
Total Present Value - Salvage Value (Note: No Replacement in Final Year of Study Period)								(7,976,460)
TOTAL PRESENT VALUE - OPTION 2 - 50m 8 Lane Pool								169,860,030

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		
Option:	3 25m 6 Lane Pool		

Discount Rate:	4.0%	Period of Study:	25 years	Base Year:	2020
Enter escalation rates below for each Cost Category					

Capital Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)	
A 25m Lane Pool	4,554 m2	9,607	43,751,700			43,751,700	
B			-			-	
C			-			-	
D			-			-	
E			-			-	
F			-			-	
G			-			-	
H			-			-	
Total Present Value - Capital Costs							43,751,700

Operations & Maintenance Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Annual Cost	Years	PWAF	Amount (\$)	
A Staff	4,554 m2	415.00	1,889,910	25	32.3275	61,096,060	
B Communications	4,554 m2	4.00	18,220	25	32.3275	589,010	
C Custodial, basic maintenance	4,554 m2	17.00	77,420	25	32.3275	2,502,800	
D Security	4,554 m2	2.00	9,110	25	32.3275	294,500	
E Maintenance & repair	4,554 m2	18.00	81,970	25	32.3275	2,649,890	
F Water & Sewer	4,554 m2	8.00	36,430	25	32.3275	1,177,690	
G Building Envelope	4,554 m2	20.00	91,080	25	32.3275	2,944,390	
H Built in equipment repairs	4,554 m2	17.00	77,420	25	32.3275	2,502,800	
Total Present Value - Operations & Maintenance Costs			2,281,560				73,757,140

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		
Option:	3 25m 6 Lane Pool		

Energy Costs							PV Factor	Present Value	
Escalation Rate:		6.0%							
Description			Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)	
A	Energy Use		4,554	m2	80.00	364,320	25	32.3275	11,777,550
B						-			-
C						-			-
D						-			-
E						-			-
F						-			-
G						-			-
H						-			-
Total Present Value - Energy Costs									11,777,550

Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)							PV	Present
Escalation Rate:		6.0%					Factor	Value
Description		Quantity		Unit Rate	Estimated Cost	Cycle	SPF	Amount (\$)
A	Exterior Renewals	4,554	m2	273	1,244,380	10	2.6735	3,326,880
B	Interior Renewals	4,554	m2	496	2,256,510	8	4.1005	9,252,820
C	Mechanical Renewals	4,554	m2	624	2,841,700	15	1.3307	3,781,520
D	Electrical Renewals	4,554	m2	114	519,160	20	1.4637	759,890
E					-			
F					-			
G					-			
H					-			
Total Present Value - Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)								17,121,110

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		
Option:	3 25m 6 Lane Pool		

Salvage Value (Note: No Replacement in Final Year of Study Period)							PV Factor	PV of Credit
Escalation Rate: 6.0%								
Description	% Life Remaining	Quantity		Unit Rate	Estimated Credit	At Year	SPF	Amount (\$)
A Exterior Renewals	50.0%	4,554	m2	(273)	(622,190)	25	1.6100	(1,001,700)
B Interior Renewals	87.5%	4,554	m2	(496)	(1,974,440)	25	1.6100	(3,178,760)
C Mechanical Renewals	33.3%	4,554	m2	(624)	(947,230)	25	1.6100	(1,525,000)
D Electrical Renewals	75.0%	4,554	m2	(114)	(389,370)	25	1.6100	(626,870)
E					-			
F					-			
G					-			
H					-			
Total Present Value - Salvage Value (Note: No Replacement in Final Year of Study Period)								(6,332,330)
TOTAL PRESENT VALUE - OPTION 3 - 25m 6 Lane Pool								140,075,170

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		
Option:	4 50m 6 Lane Pool		

Discount Rate:	4.0%	Period of Study:	25 years	Base Year:	2020
Enter escalation rates below for each Cost Category					

Capital Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)	
A 50m Lane Pool	5,192 m2	9,986	51,845,600			51,845,600	
B			-			-	
C			-			-	
D			-			-	
E			-			-	
F			-			-	
G			-			-	
H			-			-	
Total Present Value - Capital Costs						51,845,600	

Operations & Maintenance Costs						PV Factor	Present Value
Escalation Rate:		6.0%					
Description	Quantity	Unit Rate	Estimated Annual Cost	Years	PWAF	Amount (\$)	
A Staff	5,192 m2	415.00	2,154,680	25	32.3275	69,655,420	
B Communications	5,192 m2	4.00	20,770	25	32.3275	671,440	
C Custodial, basic maintenance	5,192 m2	17.00	88,260	25	32.3275	2,853,230	
D Security	5,192 m2	2.00	10,380	25	32.3275	335,560	
E Maintenance & repair	5,192 m2	18.00	93,460	25	32.3275	3,021,330	
F Water & Sewer	5,192 m2	8.00	41,540	25	32.3275	1,342,880	
G Building Envelope	5,192 m2	20.00	103,840	25	32.3275	3,356,890	
H Built in equipment repairs	5,192 m2	17.00	88,260	25	32.3275	2,853,230	
Total Present Value - Operations & Maintenance Costs			2,601,190				84,089,980

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	
Location:	Yellowknife, Northwest Territories	Job No: O-5733
Owner:	City of Yellowknife	Date: 29/10/20
Consultant:	Taylor Architecture Group	
Subject:	New Aquatic Centre	
Option:	4 50m 6 Lane Pool	

Energy Costs							PV Factor	Present Value
Escalation Rate:		6.0%						
Description	Quantity	Unit Rate	Estimated Cost	Years	PWAF	Amount (\$)		
A Energy Use	5,192 m2	80.00	415,360	25	32.3275	13,427,550		
B			-			-		
C			-			-		
D			-			-		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Energy Costs							13,427,550	

Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)							PV Factor	Present Value
Escalation Rate:		6.0%						
Description	Quantity	Unit Rate	Estimated Cost	Cycle	SPF	Amount (\$)		
A Exterior Renewals	5,192 m2	273	1,418,710	10	2.6735	3,792,960		
B Interior Renewals	5,192 m2	496	2,572,640	8	4.1005	10,549,110		
C Mechanical Renewals	5,192 m2	624	3,239,810	15	1.3307	4,311,290		
D Electrical Renewals	5,192 m2	114	591,890	20	1.4637	866,350		
E			-			-		
F			-			-		
G			-			-		
H			-			-		
Total Present Value - Cyclical Renewal Costs (Note: No Replacement in Final Year of Study Period)							19,519,710	

Life Cycle Cost Option Analysis

Hanscomb

Project:	Yellowknife Aquatic Centre	Job No:	O-5733
Location:	Yellowknife, Northwest Territories	Date:	29/10/20
Owner:	City of Yellowknife		
Consultant:	Taylor Architecture Group		
Subject:	New Aquatic Centre		
Option:	4 50m 6 Lane Pool		

Salvage Value (Note: No Replacement in Final Year of Study Period)							PV Factor	PV of Credit
Escalation Rate: 6.0%								
Description	% Life Remaining	Quantity		Unit Rate	Estimated Credit	At Year	SPF	Amount (\$)
A Exterior Renewals	50.0%	5,192	m2	(273)	(709,360)	25	1.6100	(1,142,040)
B Interior Renewals	87.5%	5,192	m2	(496)	(2,251,060)	25	1.6100	(3,624,100)
C Mechanical Renewals	33.3%	5,192	m2	(624)	(1,079,940)	25	1.6100	(1,738,650)
D Electrical Renewals	75.0%	5,192	m2	(114)	(443,920)	25	1.6100	(714,690)
E					-			
F					-			
G					-			
H					-			
Total Present Value - Salvage Value (Note: No Replacement in Final Year of Study Period)								(7,219,480)
TOTAL PRESENT VALUE - OPTION 4 - 50m 6 Lane Pool								161,663,360

**Appendix AA
Documents and Drawings List**

DOCUMENTS AND DRAWING LIST

DOCUMENTS

Number	Title	Dated	Received
N/A	19-022 YKAC_Concept Design Brief_Class D Estimate	Oct 7, 2020	Oct 7, 2020

ARCHITECTURAL DRAWINGS

Number	Title	Dated	Received
N/A	Not Applicable	N/A	N/A

STRUCTURAL DRAWINGS

Number	Title	Dated	Received
N/A	Not Applicable	N/A	N/A

MECHANICAL DRAWINGS

Number	Title	Dated	Received
N/A	Not Applicable	N/A	N/A

ELECTRICAL DRAWINGS

Number	Title	Dated	Received
N/A	Not Applicable	N/A	N/A

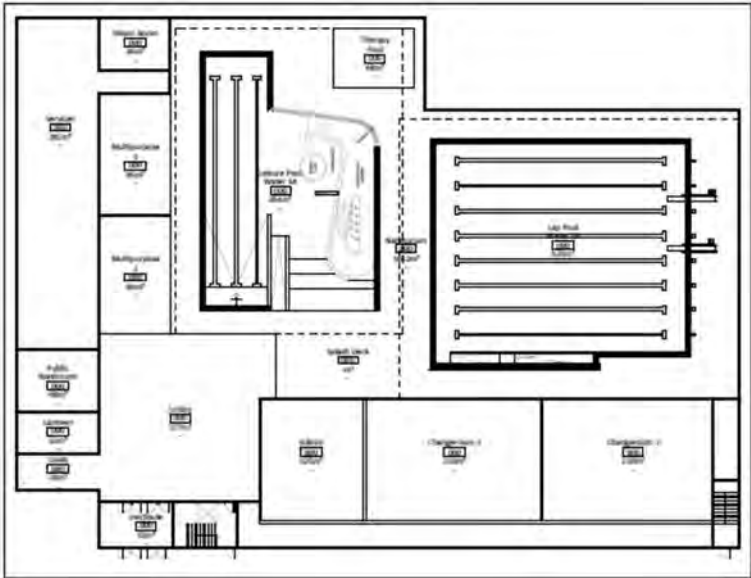
CIVIL DRAWINGS

Number	Title	Dated	Received
N/A	80581-TOPO-SE04	Sept 4, 2020	Oct 13, 2020

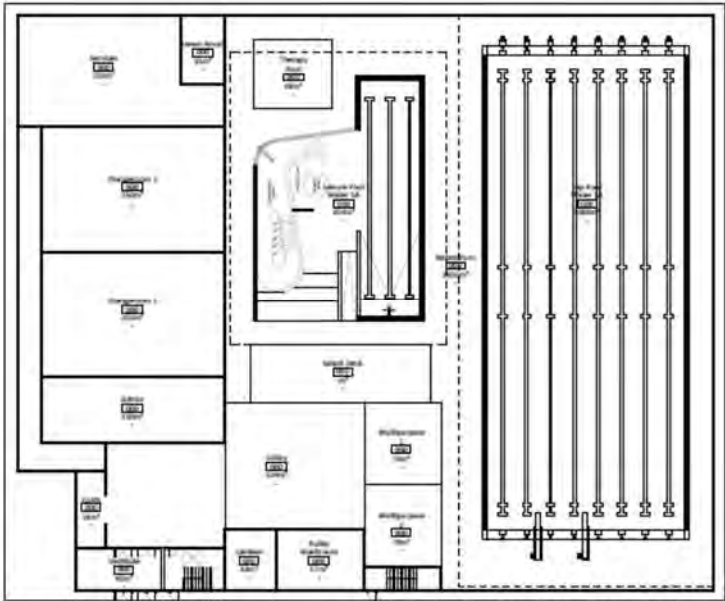
LANDSCAPE DRAWINGS

Number	Title	Dated	Received
N/A	Not Applicable	N/A	N/A

**Appendix AB
Representative Drawings**



Swimming Pool – 25m Option



Swimming Pool – 50m Option

Hanscomb: Celebrating More than 60 Years of Excellence in the Construction Industry

Hanscomb Limited, a leading independent organization of project control specialists, has been privileged to serve both Canadian and international clients on a wide variety of construction projects for over 60 years. By planning, monitoring and controlling cost in an unbiased independent professional manner, Hanscomb has become an internationally recognized leader in the coordinated management of capital projects.

Our growing team of trusted professionals and experts consists of quantity surveyors, cost consultants, project monitors, schedulers and value specialists, skilled in a remarkable variety of project sectors including but not limited to transportation, civil infrastructure, education, healthcare, residential, and commercial. Hanscomb takes pride in the multi-disciplinary character of the company and the ability of its people to bring together, in a team, the professional and practical skills of the very diverse field of quantity surveying.

Our nationwide network of offices and worldwide associates allows for the easy exchange of information, skills and resources ensuring we stay abreast of the latest in design, construction practices and trends. With offices located coast to coast, Hanscomb has the local experience and worldwide presence to keep your projects on track.

Cost Planning & Control

- Master plan costing
- Construction cost estimates
- Replacement cost estimates

Scheduling

Value Management

Financial Analysis

- Life cycle costing
- Operations and maintenance
- Cost / benefit analysis
- Feasibility studies

Applied Research

- Construction price indexing
- Risk and gap analysis
- Cost publications

Project Loan Monitoring

Project Management

Litigation Support

From east to west, our leadership team is here to serve you. We collaborate on many projects nationally and internationally and are available to assist you.

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