



**COST MANAGEMENT REPORT**

*West Coast Multiplex  
Schematic Design Estimate*

REPORT NUMBER 3.0

SEPTEMBER 19, 2017

PREPARED FOR:

*VDA Architecture*

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Knowledge to build with.*



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APPENDIX III	Cost Plan – Sprung Structure	32 pages
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Prepared By	Reviewed By	Date
Willie Yeung	Eldon Lau	9/19/2017



## 1.0 Introduction

### 1.1 Instructions Received

This report has been prepared by BTY Group (“BTY”) at the request of VDA Architecture (the “Client”).

VDA Architecture has appointed BTY to provide a Schematic Design estimate developed for the project at Tofino Airport, Tofino, B.C. (the “Project”). The Project delivery model is yet to be determined, therefore, BTY strongly recommends that estimates are prepared at each of the key design milestones.

Information related to the Project for the purposes of this report was received by BTY on August 10, 2017. Please refer to Section 14.0 for a list of information received in producing this report.

### 1.2 Report Reliance

This report has been prepared in accordance with the scope of our Fee Proposal, dated March 20, 2017 and is subject to the terms of that appointment. This report is for the sole and confidential use and reliance of the Client. BTY Group, Directors, staff or agents do not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the Client or other third-party consultants or agents. BTY Group will not be liable for the result of any information not received which, if produced, could have materially changed the opinions or conclusions stated in this report. This report shall not be reproduced or distributed to any party without the express permission of BTY Group.

Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the report as a whole. The contents do not provide legal, insurance or tax advice or opinion. Opinions in this report do not advocate for any party and if called upon to give oral or written testimony it will be given on the same assumption.

### 1.3 Contacts

Should you have any queries regarding the content of this report, please do not hesitate to contact either of the following:

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## 2.0 *Executive Summary*

### 2.1 **Report Purpose**

The purpose of this report is to provide a realistic estimate of the Project cost based on the information available at the time of writing.

The opinion expressed in this report has been prepared without the benefit of detailed architectural, structural, mechanical and electrical drawings and should, therefore, be considered a Schematic Design (Class C) estimate. Based on the documents reviewed, our estimate should be correct within a range of approximately +/- 15% to 20%.

In order to provide an accurate cost estimate for the Project, BTY Group strongly recommends that a professional Quantity Surveying organization, such as BTY Group, be retained to provide a detailed analysis of any design information produced on behalf of the Client during the remaining stages of design.

### 2.2 **Project Background and Description**

The proposed development is a multiphase project to construct a multifunction recreation complex in Tofino on the west coast of Vancouver Island. The construction will be separated into the following three phases:

- Phase 1 – Ice Hockey Arena
- Phase 2 – Aquatic Centre
- Phase 3 – Recreation Centre

This report is to provide construction cost estimate for Phase 1 only. Cost estimate for the following two options will be provided for consideration:

- Sprung Structure
- Pre-Engineering Structure



### 3.0 Development Cost Summary

The current estimated cost of the project may be summarized as follows:

	Item	Sprung Structure \$	Pre-Engineering Structure \$
A.	Land Cost (Excluded)	0	0
B.	Construction	14,978,700	15,426,100
C.	Allowances	1,497,900	1,542,600
D.	Professional Fees	0	0
E.	Municipal & Connection Fees	0	0
F.	Management & Overhead	0	0
G.	Project Contingency	0	0
H.	Furnishings, Fittings & Equipment	0	0
I.	Financing Costs	0	0
J.	Tax	0	0
	<b>Sub-Total Project Cost</b>	<b>\$ 16,476,600</b>	<b>\$ 16,968,700</b>
K.	Escalation (Excluded)	0	0
	<b>Total Project Cost (August 2017 Dollars)</b>	<b>\$ 16,476,600</b>	<b>\$ 16,968,700</b>

Please note that, where zero dollar values are stated, BTY has excluded these costs and the values should be carried in a separate budget (if applicable).

### 4.0 Basis & Assumptions

The construction estimate is based on the following list of assumptions:

1. Foundation mat 750mm thick will be provided under the building;
2. Unsuitable material average 950mm thick to be removed and backfill with structural fill to other site areas;
3. 16mm plywood sheathing with TJI to mezzanine floor;
4. Concrete block walls to all interior partitions;
5. Refer to Appendix III & IV cost plan for other assumptions.

Please note that BTY is not qualified to act as design consultant. The assumptions in our estimate should be reviewed and corrected by the design team.



## 5.0 Exclusions

The construction estimate includes all direct and indirect construction costs derived from the drawings and other information provided by the Consultants, with the exception of the following:

1. Land costs;
2. Professional fees and disbursements;
3. Planning, administrative and financing costs;
4. Legal fees and agreement costs / conditions;
5. Building permits and development cost charges;
6. Temporary facilities for user groups during construction;
7. Removal of hazardous materials from existing site and building;
8. Loose furnishings and equipment;
9. Unforeseen ground conditions and associated extras;
10. Environmental remediation outside building footprint;
11. Off-site works;
12. Phasing of the works and accelerated schedule;
13. Decanting & moving;
14. Costs associated with "LEED" certification;
15. Project commissioning to be carried out by an independent consultant;
16. Erratic market conditions, such as lack of bidders, proprietary specifications;
17. Cost escalation past August 2017.



## 6.0 Construction Cost Summary

The estimated construction cost of the project may be summarized as follows:

Description	Sprung Structure	Pre-Engineering Structure
	\$	\$
Structural	1,190,000	1,284,600
Architectural	4,140,000	4,429,700
Mechanical	3,804,000	3,842,600
Electrical	1,449,000	1,487,400
General Requirements & Fees	1,587,500	1,656,600
<b>Net Building Cost</b>	<b>\$12,170,500</b>	<b>\$12,700,900</b>
Site Work	2,441,900	2,369,700
Ancillary Work	0	0
General Requirements & Fees	366,300	355,500
<b>Net Construction Cost</b>	<b>\$14,978,700</b>	<b>\$15,426,100</b>
Design Allowance (10%)	1,497,900	1,542,600
Construction Allowance	0	0
<b>Total Construction Cost</b>	<b>\$16,476,600</b>	<b>\$16,968,700</b>
Gross Floor Area (m <sup>2</sup> )	4,794 m <sup>2</sup>	5,095 m <sup>2</sup>
Net Building Cost /m <sup>2</sup>	\$2,539 /m <sup>2</sup>	\$2,493 /m <sup>2</sup>
Net Construction Cost /m <sup>2</sup>	\$3,124 /m <sup>2</sup>	\$3,028 /m <sup>2</sup>
Total Construction Cost /m <sup>2</sup>	\$3,437 /m <sup>2</sup>	\$3,330 /m <sup>2</sup>

## 7.0 Areas

The gross floor area of the project, measured in accordance with the guidelines established by the Canadian Institute of Quantity Surveyors, is:

Location	Sprung Structure	Pre-Engineering Structure
Main Level	3,624 m <sup>2</sup>	3,833 m <sup>2</sup>
Mezzanine Level	1,170 m <sup>2</sup>	1,262 m <sup>2</sup>
<b>Total Gross Floor Area</b>	<b>4,794 m<sup>2</sup></b>	<b>5,095 m<sup>2</sup></b>

## 8.0 Taxes

The estimate includes the Provincial Sales Tax (P.S.T.) where applicable.

The estimate excludes the Goods & Services Tax (G.S.T.).



## 9.0 Project Schedule & Escalation

No cost escalation allowance has been included in this estimate. BTY strongly recommends that the client establish a separate budget to cover the escalation cost from the date of this estimate to the mid-point of construction of the project. Our current projected escalation rates per annum are shown below:

Current BTY Group Forecast	2017	2018	2019
	6% - 7%	5% - 6%	3% - 4%

## 10.0 Pricing

The estimate has been priced at current rates taking into account the size, location and nature of the project. The unit rates utilized are considered competitive for a project of this type, bid under a competitive tender with a minimum of five (5) bids, supported by the requisite number of sub-contractors.

The estimate allows for labour, material, equipment and other input costs at current rates and levels of productivity. It does not take into account extraordinary market conditions, where bidders may be few and may include in their tenders disproportionate contingencies and profit margins.

## 11.0 Risk Mitigation

BTY Group recommends that the Owner, Project Manager and Design Team carefully review this document, including 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.

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

It is recommended that BTY Group design and propose a cost management framework for implementation. This framework would require that a series of further estimates be undertaken at key design stage milestones and a final update estimate be produced which is representative of the completed tender documents, project delivery model and schedule. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. BTY Group is unable to reconcile bid results to any estimate not produced from bid documents including all addenda.





## 12.0 Contingencies

### 12.1 Design Contingency

A design contingency of Ten Percent (10%) has been included in the estimate to cover modifications to the program, drawings and specifications during the design.

### 12.2 Construction Contingency

No construction contingency has been included in this estimate but BTY strongly recommends that the client establish a construction contingency to cover unforeseen costs which may arise during the construction period.

## 13.0 Documents Reviewed

The list below confirms the information that we have reviewed in order to prepare our opinion contained within this report:

	Description	Revised Date
Drawings		
	Architectural Set (18 sheets)	August 10, 2017
	Mechanical Set (6 sheets)	August 8, 2017
	Electrical Set (3 sheets)	August 10, 2017
	Civil Set (1 sheet)	July 21, 2017
A1.1	Sprung Structure - Phase 1 Site Plan	September 6, 2017
A2.1	Pre-Eng - Phase 1 Site Plan	September 6, 2017
Report		
	Geotech Report	August 4, 2015
	Structural Schematic Design Report	July 31, 2017
	Refrigeration Design Schematic	August 1, 2017
	Refrigeration Electrical Loads	July 27, 2017



## COST MANAGEMENT REPORT

# *West Coast Multiplex*

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**APPENDIX I**

*Elemental Summary –  
Sprung Structure*

**2 PAGES**

**BTY GROUP**

<b>PROJECT:</b> West Coast Multiplex Schematic Design Estimate #1	<b>DATE:</b> September 19, 2017
<b>GROSS FLOOR AREA:</b> 4,794 m <sup>2</sup>	

**Sprung Structure**

Element	Ratio G.F.A.	Element		Average Unit Cost	Amount \$	Total Cost \$	Cost/Floor Area \$/ m <sup>2</sup>	%
		Quantity	Unit					
<b>A1 SUBSTRUCTURE</b>						<b>134,000</b>	<b>27.95</b>	<b>1.1%</b>
A11.1 Standard Foundations	1.00	4,794	m <sup>2</sup>	27.95	134,000		27.95	
A11.2 Special Foundations	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A12 Basement Excavation	0.00	0	m <sup>3</sup>	0.00	0		0.00	
<b>A2 STRUCTURE</b>						<b>1,056,000</b>	<b>220.28</b>	<b>8.7%</b>
A21 Lowest Floor Construction	0.76	3,624	m <sup>2</sup>	238.77	865,300		180.50	
A22.1 Upper Floor Construction	0.26	1,241	m <sup>2</sup>	149.88	186,000		38.80	
A22.2 Stair Construction	0.00	11	risr	427.27	4,700		0.98	
A23 Roof Construction	0.00	0	m <sup>2</sup>	0.00	0		0.00	
<b>A3 EXTERIOR ENCLOSURE</b>						<b>2,468,400</b>	<b>514.89</b>	<b>20.3%</b>
A31 Structural Walls Below Grade	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A32.1 Walls Above Grade	0.00	0	m <sup>2</sup>	0.00	2,351,700		490.55	
A32.2 Structural Walls Above Grade	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A32.3 Curtain Walls	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A33.1 Windows & Louvres	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A33.2 Glazed Screens	0.01	29	m <sup>2</sup>	574.48	16,700		3.48	
A33.3 Doors	0.00	1	lvs.	1,700.00	1,700		0.35	
A34.1 Roof Covering	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A34.2 Skylights	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A35 Projections	0.01	57	m <sup>2</sup>	1,724.56	98,300		20.50	
<b>B1 PARTITIONS &amp; DOORS</b>						<b>582,800</b>	<b>121.57</b>	<b>4.8%</b>
B11.1 Fixed Partitions	0.45	2,153	m <sup>2</sup>	230.87	497,000		103.67	
B11.2 Moveable Partitions	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B11.3 Structural Partitions	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B12 Doors	0.01	42	lvs.	2,042.86	85,800		17.90	
<b>B2 FINISHES</b>						<b>475,200</b>	<b>99.12</b>	<b>3.9%</b>
B21 Floor Finishes	0.68	3,256	m <sup>2</sup>	78.07	254,200		53.02	
B22 Ceiling Finishes	0.24	1,170	m <sup>2</sup>	72.31	84,600		17.65	
B23 Wall Finishes	0.00		m <sup>2</sup>	0.00	136,400		28.45	
<b>B3 FITTINGS &amp; EQUIPMENT</b>						<b>613,600</b>	<b>127.99</b>	<b>5.0%</b>
B31.1 Metals	1.00	4,794	m <sup>2</sup>	18.56	89,000		18.56	
B31.2 Millwork	1.00	4,794	m <sup>2</sup>	21.55	103,300		21.55	
B31.3 Specialties	1.00	4,794	m <sup>2</sup>	87.88	421,300		87.88	
B32 Equipment	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B33.1 Elevators	0.00	0	stop	0	0		0.00	
B33.2 Escalators & Moving Walkways	0.00	0	no.	0.00	0		0.00	
<b>C1 MECHANICAL</b>						<b>3,804,000</b>	<b>793.49</b>	<b>31.3%</b>
C11 Plumbing and Drainage	1.00	4,794	m <sup>2</sup>	147.33	706,300		147.33	
C11.6 Rink Refrigeration	1.00	4,794	m <sup>2</sup>	187.73	900,000		187.73	
C12 Fire Protection	1.00	4,794	m <sup>2</sup>	51.75	248,100		51.75	
C13 HVAC	1.00	4,794	m <sup>2</sup>	326.18	1,563,700		326.18	
C14 Controls	1.00	4,794	m <sup>2</sup>	80.50	385,900		80.50	
<b>C2 ELECTRICAL</b>						<b>1,449,000</b>	<b>302.25</b>	<b>11.9%</b>
C21 Service & Distribution	1.00	4,794	m <sup>2</sup>	75.89	363,800		75.89	
C22 Lighting, Devices & Heating	1.00	4,794	m <sup>2</sup>	138.01	661,600		138.01	
C23 Systems & Ancillaries	1.00	4,794	m <sup>2</sup>	88.36	423,600		88.36	
<b>Z1 GENERAL REQUIREMENTS &amp; FEES</b>						<b>1,587,500</b>	<b>331.14</b>	<b>13.0%</b>
Z11 General Requirements	10.0%				1,058,300		220.76	
Z12 Fee	5.0%				529,200		110.39	
<b>NET BUILDING COST</b>						<b>12,170,500</b>	<b>2,538.69</b>	<b>100%</b>

**BTY GROUP**

<b>PROJECT:</b> West Coast Multiplex Schematic Design Estimate #1	<b>DATE:</b> September 19, 2017
	<b>GROSS FLOOR AREA:</b> 4,794 m <sup>2</sup>

**Sprung Structure**

Element	Ratio G.F.A.	Element		Average Unit Cost	Amount \$	Total Cost \$	Cost/Floor Area \$/ m <sup>2</sup>	%
		Quantity	Unit					
<b>NET BUILDING COST</b>						<b>12,170,500</b>	<b>2,538.69</b>	
<b>D1 SITE WORK</b>						<b>2,441,900</b>	<b>509.37</b>	
D11.1 Site Preparation	1.00	4,794	m <sup>2</sup>	296.89	1,423,300		296.89	
D11.2 Hard Surfaces	1.00	4,794	m <sup>2</sup>	81.98	393,000		81.98	
D11.3 Site Improvements	1.00	4,794	m <sup>2</sup>	23.20	111,200		23.20	
D11.4 Landscaping	1.00	4,794	m <sup>2</sup>	6.80	32,600		6.80	
D12 Mechanical Site Services	1.00	4,794	m <sup>2</sup>	35.90	172,100		35.90	
D13 Electrical Site Services	1.00	4,794	m <sup>2</sup>	64.60	309,700		64.60	
<b>D2 ANCILLARY WORK</b>						<b>0</b>	<b>0.00</b>	
D21.1 Demolition	0.00	0	m <sup>2</sup>	0.00	0		0.00	
D21.2 Hazardous Materials	0.00	0	m <sup>2</sup>	0.00	0		0.00	
D22 Alteration	0.00	0	m <sup>2</sup>	0.00	0		0.00	
<b>Z1 GENERAL REQUIREMENTS &amp; FEES</b>						<b>366,300</b>	<b>76.41</b>	
Z11 General Requirements	10.0%				244,200		50.94	
Z12 Fee	5.0%				122,100		25.47	
<b>NET CONSTRUCTION COST</b>						<b>14,978,700</b>	<b>3,124.47</b>	
<b>Z2 ALLOWANCES</b>						<b>1,497,900</b>	<b>312.45</b>	
Z21 Design Allowance	10.0%				1,497,900		312.45	
Z23 Construction Allowance	0.0%				0		0.00	
<b>SUBTOTAL CONSTRUCTION COST</b>						<b>16,476,600</b>	<b>3,436.92</b>	
<b>Goods &amp; Services Tax</b>	<b>0.0%</b>					<b>0</b>	<b>0.00</b>	
<b>TOTAL CONSTRUCTION COST</b>						<b>16,476,600</b>	<b>3,436.92</b>	
Z22 Escalation Allowance	0.0%					<b>0</b>	<b>0.00</b>	
<b>ESCALATED CONSTRUCTION COST</b>						<b>16,476,600</b>	<b>3,436.92</b>	



**APPENDIX II**

*Elemental Summary –  
Pre-Engineering Structure*

**2 PAGES**

**BTY GROUP**

<b>PROJECT:</b> West Coast Multiplex Schematic Design Estimate #1	<b>DATE:</b> September 19, 2017
<b>GROSS FLOOR AREA:</b> 5,095 m <sup>2</sup>	

**Pre-Engineering Structure**

Element	Ratio G.F.A.	Element		Average Unit Cost	Amount \$	Total Cost \$	Cost/Floor Area \$/ m <sup>2</sup>	%
		Quantity	Unit					
<b>A1 SUBSTRUCTURE</b>						<b>183,700</b>	<b>36.05</b>	<b>1.4%</b>
A11.1 Standard Foundations	1.00	5,095	m <sup>2</sup>	36.05	183,700		36.05	
A11.2 Special Foundations	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A12 Basement Excavation	0.00	0	m <sup>3</sup>	0.00	0		0.00	
<b>A2 STRUCTURE</b>						<b>1,100,900</b>	<b>216.07</b>	<b>8.7%</b>
A21 Lowest Floor Construction	0.75	3,833	m <sup>2</sup>	233.89	896,500		175.96	
A22.1 Upper Floor Construction	0.26	1,333	m <sup>2</sup>	149.06	198,700		39.00	
A22.2 Stair Construction	0.00	13	risr	438.46	5,700		1.12	
A23 Roof Construction	0.00	0	m <sup>2</sup>	0.00	0		0.00	
<b>A3 EXTERIOR ENCLOSURE</b>						<b>2,660,400</b>	<b>522.16</b>	<b>20.9%</b>
A31 Structural Walls Below Grade	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A32.1 Walls Above Grade	1.00	5,095	m <sup>2</sup>	462.28	2,355,300		462.28	
A32.2 Structural Walls Above Grade	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A32.3 Curtain Walls	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A33.1 Windows & Louvres	0.01	51	m <sup>2</sup>	633.33	32,300		6.34	
A33.2 Glazed Screens	0.02	81	m <sup>2</sup>	804.94	65,200		12.80	
A33.3 Doors	0.00	4	lvs.	2,725.00	10,900		2.14	
A34.1 Roof Covering	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A34.2 Skylights	0.00	0	m <sup>2</sup>	0.00	0		0.00	
A35 Projections	0.02	114	m <sup>2</sup>	1,725.44	196,700		38.61	
<b>B1 PARTITIONS &amp; DOORS</b>						<b>572,400</b>	<b>112.35</b>	<b>4.5%</b>
B11.1 Fixed Partitions	0.41	2,067	m <sup>2</sup>	233.03	481,700		94.54	
B11.2 Moveable Partitions	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B11.3 Structural Partitions	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B12 Doors	0.01	44	lvs.	2,061.36	90,700		17.80	
<b>B2 FINISHES</b>						<b>583,800</b>	<b>114.58</b>	<b>4.6%</b>
B21 Floor Finishes	0.70	3,557	m <sup>2</sup>	78.69	279,900		54.94	
B22 Ceiling Finishes	1.00	5,095	m <sup>2</sup>	33.48	170,600		33.48	
B23 Wall Finishes	0.80	4,080	m <sup>2</sup>	32.67	133,300		26.16	
<b>B3 FITTINGS &amp; EQUIPMENT</b>						<b>613,100</b>	<b>120.33</b>	<b>4.8%</b>
B31.1 Metals	1.00	5,095	m <sup>2</sup>	18.21	92,800		18.21	
B31.2 Millwork	1.00	5,095	m <sup>2</sup>	20.29	103,400		20.29	
B31.3 Specialties	1.00	5,095	m <sup>2</sup>	81.83	416,900		81.83	
B32 Equipment	0.00	0	m <sup>2</sup>	0.00	0		0.00	
B33.1 Elevators	0.00	0	stop	0	0		0.00	
B33.2 Escalators & Moving Walkways	0.00	0	no.	0.00	0		0.00	
<b>C1 MECHANICAL</b>						<b>3,842,600</b>	<b>754.19</b>	<b>30.3%</b>
C11 Plumbing and Drainage	1.00	5,095	m <sup>2</sup>	140.82	717,500		140.82	
C11.6 Rink Refrigeration	1.00	5,095	m <sup>2</sup>	176.64	900,000		176.64	
C12 Fire Protection	1.00	5,095	m <sup>2</sup>	51.76	263,700		51.76	
C13 HVAC	1.00	5,095	m <sup>2</sup>	310.21	1,580,500		310.21	
C14 Controls	1.00	5,095	m <sup>2</sup>	74.76	380,900		74.76	
<b>C2 ELECTRICAL</b>						<b>1,487,400</b>	<b>291.93</b>	<b>11.7%</b>
C21 Service & Distribution	1.00	5,095	m <sup>2</sup>	70.17	357,500		70.17	
C22 Lighting, Devices & Heating	1.00	5,095	m <sup>2</sup>	138.02	703,200		138.02	
C23 Systems & Ancillaries	1.00	5,095	m <sup>2</sup>	83.75	426,700		83.75	
<b>Z1 GENERAL REQUIREMENTS &amp; FEES</b>						<b>1,656,600</b>	<b>325.14</b>	<b>13.0%</b>
Z11 General Requirements	10.0%				1,104,400		216.76	
Z12 Fee	5.0%				552,200		108.38	
<b>NET BUILDING COST</b>						<b>12,700,900</b>	<b>2,492.82</b>	<b>100%</b>

**BTY GROUP**

<b>PROJECT:</b> West Coast Multiplex Schematic Design Estimate #1	<b>DATE:</b> September 19, 2017
<b>GROSS FLOOR AREA:</b> 5,095 m <sup>2</sup>	

**Pre-Engineering Structure**

Element	Ratio G.F.A.	Element		Average Unit Cost	Amount \$	Total Cost \$	Cost/Floor Area \$/ m <sup>2</sup>	%
		Quantity	Unit					
<b>NET BUILDING COST</b>						<b>12,700,900</b>	<b>2,492.82</b>	
<b>D1 SITE WORK</b>						<b>2,369,700</b>	<b>465.10</b>	
D11.1 Site Preparation	1.00	5,095	m <sup>2</sup>	263.32	1,341,600		263.32	
D11.2 Hard Surfaces	1.00	5,095	m <sup>2</sup>	78.12	398,000		78.12	
D11.3 Site Improvements	1.00	5,095	m <sup>2</sup>	23.42	119,300		23.42	
D11.4 Landscaping	1.00	5,095	m <sup>2</sup>	7.95	40,500		7.95	
D12 Mechanical Site Services	1.00	5,095	m <sup>2</sup>	33.78	172,100		33.78	
D13 Electrical Site Services	1.00	5,095	m <sup>2</sup>	58.53	298,200		58.53	
<b>D2 ANCILLARY WORK</b>						<b>0</b>	<b>0.00</b>	
D21.1 Demolition	0.00	0	m <sup>2</sup>	0.00	0		0.00	
D21.2 Hazardous Materials	0.00	0	m <sup>2</sup>	0.00	0		0.00	
D22 Alteration	0.00	0	m <sup>2</sup>	0.00	0		0.00	
<b>Z1 GENERAL REQUIREMENTS &amp; FEES</b>						<b>355,500</b>	<b>69.77</b>	
Z11 General Requirements	10.0%				237,000		46.52	
Z12 Fee	5.0%				118,500		23.26	
<b>NET CONSTRUCTION COST</b>						<b>15,426,100</b>	<b>3,027.69</b>	
<b>Z2 ALLOWANCES</b>						<b>1,542,600</b>	<b>302.77</b>	
Z21 Design Allowance	10.0%				1,542,600		302.77	
Z23 Construction Allowance	0.0%				0		0.00	
<b>SUBTOTAL CONSTRUCTION COST</b>						<b>16,968,700</b>	<b>3,330.46</b>	
<b>Goods &amp; Services Tax</b>	<b>0.0%</b>					<b>0</b>	<b>0.00</b>	
<b>TOTAL CONSTRUCTION COST</b>						<b>16,968,700</b>	<b>3,330.46</b>	
Z22 Escalation Allowance	0.0%					<b>0</b>	<b>0.00</b>	
<b>ESCALATED CONSTRUCTION COST</b>						<b>16,968,700</b>	<b>3,330.46</b>	





**APPENDIX III**

*Cost Plan –  
Sprung Structure*

32 PAGES

Description	Quantity	Unit	Rate	Amount
<b>A1 SUBSTRUCTURE</b>				
<i>A11.1 Standard Foundations</i>				
Concrete ring beam 750x600mm thick	266	m	379.50	100,900
Allow concrete foundation for future elevator	1	no	6,900.00	6,900
Allow concrete foundation for future stair	3	no	575.00	1,700
Footing drainage	266	m	92.00	24,500

Note: excavation & backfill included in site preparation

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<b>Total Standard Foundations</b>	<b>\$134,000</b>
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Description	Quantity	Unit	Rate	Amount
<b>A2 STRUCTURE</b>				
<i>A21 Lowest Floor Construction</i>				
Concrete slab on grade 150mm thick with poly vapour barrier, 2 layers 50mm rigid insulation & 150mm granular sub-base	2,086	m <sup>2</sup>	149.50	311,900
Concrete slab on grade 125mm thick to brine slab with poly vapour barrier, 2 layers 50mm rigid insulation & 300mm sand base	1,538	m <sup>2</sup>	234.07	360,000
Header trench 500mm wide with cover	39	m	1,610.00	62,800
Header trench 1000mm wide with cover	44	m	2,185.00	96,100
Allowance for equipment bases & sump pit	1	sum	34,500.00	34,500

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<b>Total Lowest Floor Construction</b>				<b>\$865,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>A2 STRUCTURE</b>				
<i>A22.1 Upper Floor Construction</i>				
5/8" plywood sheathing with TJI wood structure to mezzanine floor	1,170	m <sup>2</sup>	138.00	161,500
Allowance for raised floor for spectators at main level	71	m <sup>2</sup>	345.00	24,500

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<b><i>Total Upper Floor Construction</i></b>	<b><i>\$186,000</i></b>
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Description	Quantity	Unit	Rate	Amount
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**A2 STRUCTURE**

*A22.2 Stair Construction*

Concrete step on grade 1.6m wide	3	risr	339.25	1,000
Concrete step on grade 1.8m wide	3	risr	379.50	1,100
Steel pan stair with concrete fill 1.15m wide	5	risr	517.50	2,600

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<b><i>Total Stair Construction</i></b>				<b><i>\$4,700</i></b>
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Description	Quantity	Unit	Rate	Amount
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**A3 EXTERIOR ENCLOSURE**

**A32.1 Walls Above Grade**

Sprung structure (Quotation from Sprung Instant Structures Ltd.)	3,624	m <sup>2</sup>	648.93	2,351,700
Including:				
Roof covering				
Exterior wall finishes				
Form opening for doors, windows & storefront				
Exterior single / double personnel doors				
Supply exterior rolling service door				
Frames for windows / storefront				
Specifically excluded:				
Foundations				
Drywalls & ceilings				
Protective bollards				
Mezzanine & stairs				
Interior partitions, doors & finishes				
Installation of exterior rolling service door				
Glazing for windows / storefront				

<b>Total Walls Above Grade</b>				<b>\$2,351,700</b>
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Description	Quantity	Unit	Rate	Amount
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**A3 EXTERIOR ENCLOSURE**

*A33.2 Glazed Screens*

Glazing for storefront (frame included in Sprung Structure cost)	29	m <sup>2</sup>	575.00	16,700
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<b>Total Glazed Screens</b>				<b>\$16,700</b>
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Description	Quantity	Unit	Rate	Amount
<b>A3 EXTERIOR ENCLOSURE</b>				
<i>A33.3 Exterior Doors</i>				
Install rolling service door (supply included in Sprung Structure cost)	1	no	1,725.00	1,700

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<b>Total Exterior Doors</b>				<b>\$1,700</b>
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Description	Quantity	Unit	Rate	Amount
<b>A3 EXTERIOR ENCLOSURE</b>				
<i>A35 Projections</i>				
Allowance for entrance canopy	57	m <sup>2</sup>	1,725.00	98,300

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<b><i>Total Projections</i></b>	<b><i>\$98,300</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>B1 PARTITIONS &amp; DOORS</b>				
<i>B11.1 Fixed Partitions</i>				
Concrete block wall 200mm thick	2,145	m <sup>2</sup>	230.00	493,300
Allowance for glazed partitions	8	m <sup>2</sup>	460.00	3,700

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<b>Total Fixed Partitions</b>				<b>\$497,000</b>
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Description	Quantity	Unit	Rate	Amount
<b>B1 PARTITIONS &amp; DOORS</b>				
<i>B12 Interior Doors</i>				
Hollow metal single door & frame with hardware	32	no	1,897.50	60,700
Hollow metal double doors & frame with hardware	4	pr	3,105.00	12,400
Steel overhead door 3m x 2.5m high with electric door opener	1	no	5,462.50	5,500
Steel overhead door 3.6m x 2.8m high with electric door opener	1	no	7,176.00	7,200

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<b>Total Interior Doors</b>				<b>\$85,800</b>
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Description	Quantity	Unit	Rate	Amount
<b>B2 FINISHES</b>				
<i>B21 Floor Finishes</i>				
Ceramic tile flooring to washrooms & shower area	168	m <sup>2</sup>	172.50	29,000
Rubber skate flooring to change rooms & change room corridor	480	m <sup>2</sup>	155.25	74,500
Polished concrete to mezzanine level, first aid room & common area	1,902	m <sup>2</sup>	74.75	142,200
Carpet to sound booth & office	27	m <sup>2</sup>	86.25	2,300
Hardener/sealer to service rooms and other areas	679	m <sup>2</sup>	9.20	6,200
No finish to ice surface on brine slab				

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<b>Total Floor Finishes</b>	<b>\$254,200</b>
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Description	Quantity	Unit	Rate	Amount
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**B2 FINISHES**

***B22 Ceiling Finishes***

Painted 16mm type X drywall ceiling below mezzanine floor	554	m <sup>2</sup>	63.25	35,000
Painted 16mm type X drywall ceiling with R20 batt insulation & poly vapour barrier below mezzanine floor	616	m2	80.50	49,600

No ceiling finish required to sprung structure

<b><i>Total Ceiling Finishes</i></b>				<b><i>\$84,600</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>B2 FINISHES</b>				
<i>B23 Wall Finishes</i>				
Epoxy coatings to change rooms, washrooms & shower areas up to 2.1m high	1,103	m <sup>2</sup>	80.50	88,800
Paint to other walls	3,187	m <sup>2</sup>	14.95	47,600
No finish to sprung structure walls				

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<b>Total Wall Finishes</b>				<b>\$136,400</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.1 Metals</i>				
Metal pipe bollards	8	no	575.00	4,600
Painted steel guardrails	74	m	369.73	27,400
Painted steel handrails	13	m	147.20	1,900
Allowance for miscellaneous metals	4,794	m <sup>2</sup>	11.50	55,100

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<b>Total Metals</b>	<b>\$89,000</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.2 Millwork</i>				
Countertop open below to sound booth	8	m	805.00	6,400
Wood bench to change rooms	127	m	460.00	58,400
Washroom vanity	16	m	805.00	12,900
Countertop with base cabinet to first aid room	2	m	1,092.50	2,200
Full height storage shelving to concession & skate room	22	m	920.00	20,200
Countertop on wall	7	m	460.00	3,200

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<b>Total Millwork</b>	<b>\$103,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.3 Specialties</i>				
Allowance for washroom accessories	1	sum	20,700.00	20,700
Phenolic toilet partition	10	no	1,552.50	15,500
Phenolic toilet partition (HC)	6	no	1,955.00	11,700
Phenolic urinal screen	2	no	575.00	1,200
Folding shower seat	4	no	575.00	2,300
Fiberglass & aluminum dasher boards	1	set	276,000.00	276,000
Allowance for interior signage	1	sum	11,500.00	11,500
Metal locker	10	no	460.00	4,600
Allowance for rough carpentry	1	sum	17,250.00	17,300
Allowance for permanent seating	263	no	230.00	60,500

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<b>Total Specialties</b>	<b>\$421,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<b>C11 Plumbing and Drainage</b>				
Plumbing Fixtures Water closet Urinal Lavatory Drinking fountain Laundry sink Janitor sink Shower Head Emergency eye wash station c/w TMV Floor drains Hose bibb	4,794	m <sup>2</sup>	17.25	82,700
Domestic Water	4,794	m <sup>2</sup>	72.45	347,300
Sanitary Waste and Vents Underground sanitary piping Aboveground sanitary and vent	4,794	m <sup>2</sup>	24.15	115,800
Storm Drains Underground storm drain Aboveground storm piping Thermal pipe insulation Roof drain	4,794	m <sup>2</sup>	10.93	52,400
Plumbing equipment Domestic recirculation pump Domestic hot water tanks Reduced Pressure Backflow Preventer Water meter assembly	4,794	m <sup>2</sup>	19.55	93,700
Miscellaneous Testing, balancing and commissioning	1	sum	10,350.00	10,400
Seismic restraint	1	sum	4,025.00	4,000
<b>Total Plumbing and Drainage</b>				<b>\$706,300</b>

Description	Quantity	Unit	Rate	Amount
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**C1 MECHANICAL**

***C11.6 Rink Refrigeration***

Curling rink refrigeration system	1	sum	900,000.00	900,000
Rink slab Refrigeration		included		
Compressors		included		
Cooling tower		included		
Plate and frame Condenser		included		
One surge drum receiver		included		
Plate and frame brine chiller		included		
Brine pump c/w variable speed drive		included		
Underfloor heating system using heat recovery		included		
Snowmelt heating system using heat recovery		included		
Hot water preheat system (desuperheater) using heat recovery		included		
Provision for a 100 percent heat reclaim system		included		
Independent computer control		included		

<b><i>Total Rink Refrigeration</i></b>			<b><i>\$900,000</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<i>C12 Fire Protection</i>				
Allowance for fire protection	4,794	m <sup>2</sup>	51.75	248,100

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<b><i>Total Fire Protection</i></b>	<b><i>\$248,100</i></b>
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Description	Quantity	Unit	Rate	Amount
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**C1 MECHANICAL**

**C13 HVAC**

HVAC equipment	4,794	m <sup>2</sup>	158.70	760,800
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Package htg / clg roof top unit AHU-1  
 - Htg, clg coils, supply and return fan  
 - Heat recovery coil, weatherproof cabinet

Package htg / clg roof top unit AHU-2  
 - Htg, clg coils, supply and return fan  
 - Dehumidifier, weather proof cabinet

Package htg / clg roof top unit AHU-3  
 - Htg, clg coils, supply and return fan  
 - Heat recovery coil

Air-cooled heat pump ACHP-01  
 Water to water heat pump WWHP-1  
 Water to water heat pump WWHP-2  
 Water to water heat pump WWHP-3  
 Hydronic pump P-01  
 Hydronic pump P-02  
 Hydronic pump P-03  
 Hydronic pump P-04  
 Hydronic pump P-05  
 Hydronic pump P-06  
 Hydronic pump P-07  
 Hydronic pump P-08  
 Hydronic pump P-09  
 Hydronic pump P-10  
 Hydronic pump P-11  
 Hydronic pump P-12

Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<b>C13 HVAC</b>				
Allowance for hydronic piping	4,794	m <sup>2</sup>	59.80	286,700
Pump connections 4"				
Pump connections 2-1/2"/2"				
AHU recovery coil connection				
AHU heat coil connection				
AHU cooling coil connections				
Water treatment				
Heating water piping				
Thermal pipe insulation				
Allowance for exhaust fan	1	sum	11,730.00	11,700
EF-01				
EF-02				
EF-03				
EF-04				
Air distribution ductwork	4,794	m <sup>2</sup>	95.45	457,600
Galvanized ductwork				
Thermal insulation				
Wall box and grill - dryer exhaust				
Heat Pump				
Silencer				
Air diffuser				
Air grille				
Return grille				
Exhaust grille				
Louvres				
Fire damper				
Miscellaneous	4,794	m <sup>2</sup>	9.78	46,900
Vibration isolation				
Seismic Restraint				
VFD's				
Balancing & commissioning				
Air and water balancing				
<b>Total HVAC</b>				<b>\$1,563,700</b>

Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<i>C14 Controls</i>				
Allowance for DDC controls	4,794	m <sup>2</sup>	80.50	385,900

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<b><i>Total Controls</i></b>	<b><i>\$385,900</i></b>
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Description	Quantity	Unit	Rate	Amount
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**C2 ELECTRICAL**

*C21 Service & Distribution*

Normal Power	4,794	m <sup>2</sup>	51.75	248,100
Main building disconnect				
Main switchboard 800A 600V				
MCC A 90A, 3P				
MCC A 150A, 3P				
MCC A 175A, 3P				
MCC A 200A, 3P				
MCC A 300A, 3P				
Transformer 45kva				
Panel M 225A 208V				
Transformer 150kva				
DP 600A208V				
Panel A 150A 3P				
Panel B, C 125A 3P				
Panel K 100A 3P				
Transformer 75kva				
DP 200A 600V				
MCC A 40A, 3P				
Panel HEA				
DP 400A 208V				
Panel ' LA'				
Fire alarm panel				
Panel EA				



Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<i>C21 Service &amp; Distribution</i>				
Mechanical equipment connection	4,794	m <sup>2</sup>	20.70	99,200
Domestic water pump				
Domestic hot water heater				
Domestic hot water digital tempering system				
Domestic hot water recirculation pump				
Compressor C-1				
Compressor C-2				
Tower Fan EC-1				
Pump Brine P-1				
Tower Circ Pump P-2				
Heating Pump Brine P-5				
Snow Melt P-6				
Compressor P-7				
Tower Pump P-8				
Tower Heater H-1				
Air-cooled heat pump ACHP-01				
Water to water heat pump WWHP-1				
Water to water heat pump WWHP-2				
Water to water heat pump WWHP-3				
Building heating water pumps				
Exhaust fans				
Package htg / clg roof top unit AHU-1				
Package htg / clg roof top unit AHU-2				
Package htg / clg roof top unit AHU-3				
Control panels				
Misc. dampers, controllers				
Branch wiring				
Miscellaneous	4,794	m <sup>2</sup>	3.45	16,500
Grounding				
Permits				
Emergency Power		refer to sit		
<b>Total Service &amp; Distribution</b>				<b>\$363,800</b>

Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<i>C22 Lighting, Devices &amp; Heating</i>				
Light fixtures	4,794	m <sup>2</sup>	74.75	358,400
Normal lighting				
Emergency lighting				
Exit Lights				
Perimeter outdoor light				
Lighting Control	4,794	m <sup>2</sup>	34.50	165,400
Single Pole switch				
Occupancy sensor				
Dimmer				
Lighting control panel				
Low voltage control				
Lighting branch wiring				
Uninterruptable Power		assume not rec		
Power outlets, devices and connections	4,794	m <sup>2</sup>	28.75	137,800
Duplex receptacle				
Duplex receptacle - GFI				
Duplex receptacle - weatherproof cover				
Wall receptacle 20A				
Floor receptacle 20A				
Hand dryer				
Handicap door opener wiring				
Branch wiring				
<b>Total Lighting, Devices &amp; Heating</b>				<b>\$661,600</b>

Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<b>C23 Systems &amp; Ancillaries</b>				
Fire Alarm System	4,794	m <sup>2</sup>	29.90	143,300
Main control panel				
Speaker and strobe				
CO / smoke detector				
Fire fighter hand set				
Pull station				
Sprinkler flow interlock				
FA conduit and wire				
Verification and testing				
Communication	4,794	m <sup>2</sup>	21.85	104,700
Data rack second floor				
Main computer room rack				
Data outlet				
WAP				
Data conduit and wire				
Access Control	4,794	m <sup>2</sup>	24.15	115,800
Access control system				
CCTV control and monitor				
Door contact				
CCTV - interior				
CCTV - exterior				
Security conduit and wire				
AV				
Allowance for AV conduit and cabling to outlets for owner supplied equipment including allowance for backing and supports	1	sum	59,800.00	59,800
<b>Total Systems &amp; Ancillaries</b>				<b>\$423,600</b>

Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.1 Site Preparation</i>				
Clear & grub site	9,702	m <sup>2</sup>	2.36	22,900
Remove unsuitable material below building area 1.95m thick & disposal offsite	8,951	m <sup>3</sup>	26.25	235,000
Remove unsuitable material below other site area average 950mm thick & disposal offsite	6,515	m <sup>3</sup>	26.25	171,000
Foundation mat consist of 0.75m imported granular fill with 2 layers Mirafi HP270 woven geotextile	3,890	m <sup>2</sup>	111.30	433,000
Imported fill	11,882	m <sup>3</sup>	47.25	561,400

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<b>Total Site Preparation</b>	<b>\$1,423,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.2 Hard Surfaces</i>				
Gravel paving 300mm thick for service roads	1,823	m <sup>2</sup>	73.50	134,000
Gravel paving 250mm thick for parking area	2,663	m <sup>2</sup>	68.25	181,700
Concrete sidewalk	179	m <sup>2</sup>	141.75	25,400
Concrete curb	824	m	63.00	51,900

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<b><i>Total Hard Surfaces</i></b>	<b><i>\$393,000</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.3 Site Improvements</i>				
Allowance for street furniture	1	sum	10,500.00	10,500
Allowance for exterior signage	1	sum	10,500.00	10,500
Allowance for steel pipe bollard	6	no	525.00	3,200
First nations sculptural art (install only)	6	no	840.00	5,000
Allowance for septic field (cost provided by VDA)	1	sum	82,000.00	82,000

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<b>Total Site Improvements</b>	<b>\$111,200</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.4 Landscaping</i>				
Sodding	1,413	m <sup>2</sup>	10.50	14,800
Growing medium	283	m <sup>3</sup>	36.75	10,400
Irrigation system	1,413	m <sup>2</sup>	5.25	7,400

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<b>Total Landscaping</b>	<b>\$32,600</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D12 Mechanical Site Services</i>				
Water main				
Allowance for 150mm water main	114	m	517.50	59,000
Water meter chamber	1	sum	28,750.00	28,800
Cap off for future aquatic	1	sum	1,725.00	1,700
Storm				
Storm sewer	100	m	287.50	28,800
Catch basin	2	no	1,725.00	3,500
Allowance for oil interceptor	1	sum	5,175.00	5,200
Sanitary				
Allowance for sanitary main	55	m	402.50	22,100
Allowance for pump station	1	sum	23,000.00	23,000

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<b>Total Mechanical Site Services</b>				<b>\$172,100</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D13 Electrical Site Services</i>				
Allowance for communication and services ductbank  (pole mounted transformer and incoming power will be provided by BC Hydro)	1	sum	35,190.00	35,200
Allowance for site lighting	1	sum	34,500.00	34,500
Emergency Power - 125KW 3P including protection stanchions, grounding, transfer switch, underground duct and feeder.	1	sum	172,500.00	172,500
Allowance for BC Hydro connection fee	1	sum	57,500.00	57,500
Allowance for connection to septic field	1	sum	10,000.00	10,000

<b>Total Electrical Site Services</b>				<b>\$309,700</b>
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**APPENDIX IV**

*Cost Plan –  
Pre-Engineering Structure*

**33 PAGES**

Description	Quantity	Unit	Rate	Amount
<b>A1 SUBSTRUCTURE</b>				
<i>A11.1 Standard Foundations</i>				
Concrete pad footing 2000 x 2000 x 350mm thick	26	no	954.50	24,800
Concrete strip footing 500x200mm thick	230	m	97.75	22,500
Concrete pedestal 700x700x1050mm high	26	no	770.50	20,000
Concrete foundation walls 200mm thick	242	m <sup>2</sup>	345.00	83,300
Allow concrete foundation for future elevator	1	no	6,900.00	6,900
Allow concrete foundation for future stair	1	no	575.00	600
Footing drainage	278	m	92.00	25,600

Note: excavation & backfill included in site preparation

<b>Total Standard Foundations</b>	<b>\$183,700</b>
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Description	Quantity	Unit	Rate	Amount
<b>A2 STRUCTURE</b>				
<b>A21 Lowest Floor Construction</b>				
Concrete slab on grade 150mm thick with poly vapour barrier, 2 layers 50mm rigid insulation & 150mm granular sub-base	2,295	m <sup>2</sup>	149.50	343,100
Concrete slab on grade 125mm thick to brine slab with poly vapour barrier, 2 layers 50mm rigid insulation & 300mm sand base	1,538	m <sup>2</sup>	234.07	360,000
Header trench 500mm wide with cover	39	m	1,610.00	62,800
Header trench 1000mm wide with cover	44	m	2,185.00	96,100
Allowance for equipment bases & sump pit	1	sum	34,500.00	34,500

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<b>Total Lowest Floor Construction</b>				<b>\$896,500</b>
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Description	Quantity	Unit	Rate	Amount
<b>A2 STRUCTURE</b>				
<i>A22.1 Upper Floor Construction</i>				
5/8" plywood sheathing with TJI wood structure to mezzanine floor	1,262	m <sup>2</sup>	138.00	174,200
Allowance for raised floor for spectators at main level	71	m <sup>2</sup>	345.00	24,500

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<b><i>Total Upper Floor Construction</i></b>	<b><i>\$198,700</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>A2 STRUCTURE</b>				
<i>A22.2 Stair Construction</i>				
Concrete step on grade 1.6m wide	3	risr	339.25	1,000
Concrete step on grade 1.8m wide	3	risr	379.50	1,100
Steel pan stair with concrete fill 1.15m wide	7	risr	517.50	3,600

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<b><i>Total Stair Construction</i></b>	<b><i>\$5,700</i></b>
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Description	Quantity	Unit	Rate	Amount
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**A3 EXTERIOR ENCLOSURE**

**A32.1 Walls Above Grade**

Pre-Engineering steel structure (Quotation from JDG Construction Management Ltd.)	3,833	m <sup>2</sup>	614.48	2,355,300
Including:				
Roof covering				
Exterior wall finishes				
Form opening for doors, windows & storefront				
Exterior hollow metal doors				
Exterior overhead doors				
Specifically excluded:				
Foundations				
Finished painting of steel members				
Drywalls & ceilings				
Protective bollards				
Mezzanine & stairs				
Interior partitions, doors & finishes				
Exterior windows & storefront				
Exterior glazed double doors to main entrance				
Paint to exterior doors				

<b>Total Walls Above Grade</b>				<b>\$2,355,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>A3 EXTERIOR ENCLOSURE</b>				
<i>A33.1 Windows &amp; Louvres</i>				
Aluminum windows	51	m <sup>2</sup>	632.50	32,300

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<b><i>Total Windows &amp; Louvres</i></b>	<b><i>\$32,300</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>A3 EXTERIOR ENCLOSURE</b>				
<i>A33.2 Glazed Screens</i>				
Aluminum storefront	81	m <sup>2</sup>	805.00	65,200

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<b><i>Total Glazed Screens</i></b>	<b><i>\$65,200</i></b>
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Description	Quantity	Unit	Rate	Amount
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**A3 EXTERIOR ENCLOSURE**

***A33.3 Exterior Doors***

Aluminum glazed double doors & frame to main entrance	2	pr	4,600.00	9,200
Paint exterior hollow metal door & frame (supply & install door & frame included in pre-engineering steel structure)	10	no	172.50	1,700
Sectional overhead door (included in pre-engineering steel structure)				

<b><i>Total Exterior Doors</i></b>				<b><i>\$10,900</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>A3 EXTERIOR ENCLOSURE</b>				
<i>A35 Projections</i>				
Allowance for entrance canopy	114	m <sup>2</sup>	1,725.00	196,700

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<b><i>Total Projections</i></b>	<b><i>\$196,700</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>B1 PARTITIONS &amp; DOORS</b>				
<i>B11.1 Fixed Partitions</i>				
Concrete block wall 200mm thick	2,040	m <sup>2</sup>	230.00	469,200
Allowance for glazed partitions	27	m <sup>2</sup>	460.00	12,500

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<b>Total Fixed Partitions</b>				<b>\$481,700</b>
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Description	Quantity	Unit	Rate	Amount
<b>B1 PARTITIONS &amp; DOORS</b>				
<i>B12 Interior Doors</i>				
Hollow metal single door & frame with hardware	30	no	1,897.50	56,900
Hollow metal double doors & frame with hardware	4	pr	3,105.00	12,400
Aluminum glazed double doors & frame	2	pr	4,370.00	8,700
Steel overhead door 3m x 2.5m high with electric door opener	1	no	5,462.50	5,500
Steel overhead door 3.6m x 2.8m high with electric door opener	1	no	7,176.00	7,200

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<b>Total Interior Doors</b>				<b>\$90,700</b>
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Description	Quantity	Unit	Rate	Amount
<b>B2 FINISHES</b>				
<i>B21 Floor Finishes</i>				
Ceramic tile flooring to washrooms & shower area	168	m <sup>2</sup>	172.50	29,000
Rubber skate flooring to change rooms & change room corridor	558	m <sup>2</sup>	155.25	86,600
Polished concrete to mezzanine level, first aid room & common area	2,083	m <sup>2</sup>	74.75	155,700
Carpet to sound booth & office	22	m <sup>2</sup>	86.25	1,900
Hardener/sealer to service rooms and other areas	726	m <sup>2</sup>	9.20	6,700
No finish to ice surface on brine slab				

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<b>Total Floor Finishes</b>				<b>\$279,900</b>
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Description	Quantity	Unit	Rate	Amount
<b>B2 FINISHES</b>				
<i>B22 Ceiling Finishes</i>				
Painted 16mm type X drywall ceiling below mezzanine floor	599	m <sup>2</sup>	63.25	37,900
Painted 16mm type X drywall ceiling with R20 batt insulation & poly vapour barrier below mezzanine floor	663	m <sup>2</sup>	80.50	53,400
Paint to exposed structural steel members	3,833	m <sup>2</sup>	20.70	79,300

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<b>Total Ceiling Finishes</b>				<b>\$170,600</b>
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Description	Quantity	Unit	Rate	Amount
<b>B2 FINISHES</b>				
<i>B23 Wall Finishes</i>				
Epoxy coatings to change rooms, washrooms & shower areas up to 2.1m high	1,103	m <sup>2</sup>	80.50	88,800
Paint to other walls	2,977	m <sup>2</sup>	14.95	44,500
No finish to pre-engineering structure walls				

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<b>Total Wall Finishes</b>				<b>\$133,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.1 Metals</i>				
Metal pipe bollards	8	no	575.00	4,600
Painted steel guardrails	79	m	369.73	29,200
Painted steel handrails	3	m	147.20	400
Allowance for miscellaneous metals	5,095	m <sup>2</sup>	11.50	58,600

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<b>Total Metals</b>	<b>\$92,800</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.2 Millwork</i>				
Wood bench to change rooms	138	m	460.00	63,500
Washroom vanity	16	m	805.00	12,900
Countertop with base cabinet to first aid room	2	m	1,092.50	2,200
Full height storage shelving to concession & skate room	21	m	920.00	19,300
Countertop on wall	12	m	460.00	5,500

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<b>Total Millwork</b>	<b>\$103,400</b>
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Description	Quantity	Unit	Rate	Amount
<b>B3 FITTINGS &amp; EQUIPMENT</b>				
<i>B31.3 Specialties</i>				
Allowance for washroom accessories	1	sum	20,700.00	20,700
Phenolic toilet partition	10	no	1,552.50	15,500
Phenolic toilet partition (HC)	6	no	1,955.00	11,700
Phenolic urinal screen	2	no	575.00	1,200
Folding shower seat	4	no	575.00	2,300
Fiberglass & aluminum dasher boards	1	set	276,000.00	276,000
Allowance for interior signage	1	sum	11,500.00	11,500
Metal locker	10	no	460.00	4,600
Allowance for rough carpentry	1	sum	17,250.00	17,300
Allowance for permanent seating	244	no	230.00	56,100

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<b>Total Specialties</b>	<b>\$416,900</b>
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Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<b>C11 Plumbing and Drainage</b>				
Plumbing Fixtures Water closet Urinal Lavatory Drinking fountain Laundry sink Janitor sink Shower Head Emergency eye wash station c/w TMV Floor drains Hose bibb	5,095	m <sup>2</sup>	16.10	82,000
Domestic Water	5,095	m <sup>2</sup>	69.00	351,600
Sanitary Waste and Vents Underground sanitary piping Aboveground sanitary and vent	5,095	m <sup>2</sup>	23.00	117,200
Storm Drains Underground storm drain Aboveground storm piping Thermal pipe insulation Roof drain	5,095	m <sup>2</sup>	11.50	58,600
Plumbing equipment Domestic recirculation pump Domestic hot water tanks Reduced Pressure Backflow Preventer Water meter assembly	5,095	m <sup>2</sup>	18.40	93,700
Miscellaneous Testing, balancing and commissioning	1	sum	10,350.00	10,400
Seismic restraint	1	sum	4,025.00	4,000
<b>Total Plumbing and Drainage</b>				<b>\$717,500</b>

Description	Quantity	Unit	Rate	Amount
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**C1 MECHANICAL**

***C11.6 Rink Refrigeration***

Curling rink refrigeration system	1	sum	900,000.00	900,000
Rink slab Refrigeration				
Compressors		included		
Cooling tower		included		
Plate and frame Condenser		included		
One surge drum receiver		included		
Plate and frame brine chiller		included		
Brine pump c/w variable speed drive		included		
Underfloor heating system using heat recovery		included		
Snowmelt heating system using heat recovery		included		
Hot water preheat system (desuperheater) using heat recovery		included		
Provision for a 100 percent heat reclaim system		included		
Independent computer control		included		

<b><i>Total Rink Refrigeration</i></b>			<b><i>\$900,000</i></b>
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Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<i>C12 Fire Protection</i>				
Allowance for fire protection	5,095	m <sup>2</sup>	51.75	263,700

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<b><i>Total Fire Protection</i></b>	<b><i>\$263,700</i></b>
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Description	Quantity	Unit	Rate	Amount
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**C1 MECHANICAL**

**C13 HVAC**

HVAC equipment	5,095	m <sup>2</sup>	149.50	761,700
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Package htg / clg roof top unit AHU-1  
 - Htg, clg coils, supply and return fan  
 - Heat recovery coil, weatherproof cabinet

Package htg / clg roof top unit AHU-2  
 - Htg, clg coils, supply and return fan  
 - Dehumidifier, weather proof cabinet

Package htg / clg roof top unit AHU-3  
 - Htg, clg coils, supply and return fan  
 - Heat recovery coil

Air-cooled heat pump ACHP-01  
 Water to water heat pump WWHP-1  
 Water to water heat pump WWHP-2  
 Water to water heat pump WWHP-3  
 Hydronic pump P-01  
 Hydronic pump P-02  
 Hydronic pump P-03  
 Hydronic pump P-04  
 Hydronic pump P-05  
 Hydronic pump P-06  
 Hydronic pump P-07  
 Hydronic pump P-08  
 Hydronic pump P-09  
 Hydronic pump P-10  
 Hydronic pump P-11  
 Hydronic pump P-12

Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<b>C13 HVAC</b>				
Allowance for hydronic piping	5,095	m <sup>2</sup>	57.50	293,000
Pump connections 4"				
Pump connections 2-1/2"/2"				
AHU recovery coil connection				
AHU heat coil connection				
AHU cooling coil connections				
Water treatment				
Heating water piping				
Thermal pipe insulation				
Allowance for exhaust fan	1	sum	10,177.50	10,200
EF-01				
EF-02				
EF-03				
EF-04				
Air distribution ductwork	5,095	m <sup>2</sup>	92.00	468,700
Galvanized ductwork				
Thermal insulation				
Wall box and grill - dryer exhaust				
Heat Pump				
Silencer				
Air diffuser				
Air grille				
Return grille				
Exhaust grille				
Louvres				
Fire damper				
Miscellaneous	5,095	m <sup>2</sup>	9.20	46,900
Vibration isolation				
Seismic Restraint				
VFD's				
Balancing & commissioning				
Air and water balancing				
<b>Total HVAC</b>				<b>\$1,580,500</b>



Description	Quantity	Unit	Rate	Amount
<b>C1 MECHANICAL</b>				
<i>C14 Controls</i>				
Allowance for DDC controls	5,095	m <sup>2</sup>	74.75	380,900

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<b><i>Total Controls</i></b>	<b><i>\$380,900</i></b>
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Description	Quantity	Unit	Rate	Amount
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**C2 ELECTRICAL**

***C21 Service & Distribution***

Normal Power	5,095	m <sup>2</sup>	46.00	234,400
Main building disconnect				
Main switchboard 800A 600V				
MCC A 90A, 3P				
MCC A 150A, 3P				
MCC A 175A, 3P				
MCC A 200A, 3P				
MCC A 300A, 3P				
Transformer 45kva				
Panel M 225A 208V				
Transformer 150kva				
DP 600A208V				
Panel A 150A 3P				
Panel B, C 125A 3P				
Panel K 100A 3P				
Transformer 75kva				
DP 200A 600V				
MCC A 40A, 3P				
Panel HEA				
DP 400A 208V				
Panel ' LA'				
Fire alarm panel				
Panel EA				

Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<b>C21 Service &amp; Distribution</b>				
Mechanical equipment connection	5,095	m <sup>2</sup>	20.70	105,500
Domestic water pump				
Domestic hot water heater				
Domestic hot water digital tempering system				
Domestic hot water recirculation pump				
Compressor C-1				
Compressor C-2				
Tower Fan EC-1				
Pump Brine P-1				
Tower Circ Pump P-2				
Heating Pump Brine P-5				
Snow Melt P-6				
Compressor P-7				
Tower Pump P-8				
Tower Heater H-1				
Air-cooled heat pump ACHP-01				
Water to water heat pump WWHP-1				
Water to water heat pump WWHP-2				
Water to water heat pump WWHP-3				
Building heating water pumps				
Exhaust fans				
Package htg / clg roof top unit AHU-1				
Package htg / clg roof top unit AHU-2				
Package htg / clg roof top unit AHU-3				
Control panels				
Misc. dampers, controllers				
Branch wiring				
Miscellaneous	5,095	m <sup>2</sup>	3.45	17,600
Grounding				
Permits				
Emergency Power		refer to sit		
<b>Total Service &amp; Distribution</b>				<b>\$357,500</b>

Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<i>C22 Lighting, Devices &amp; Heating</i>				
Light fixtures	5,095	m <sup>2</sup>	74.75	380,900
Normal lighting				
Emergency lighting				
Exit Lights				
Perimeter outdoor light				
Lighting Control	5,095	m <sup>2</sup>	34.50	175,800
Single Pole switch				
Occupancy sensor				
Dimmer				
Lighting control panel				
Low voltage control				
Lighting branch wiring				
Uninterruptable Power		assume not rec		
Power outlets, devices and connections	5,095	m <sup>2</sup>	28.75	146,500
Duplex receptacle				
Duplex receptacle - GFI				
Duplex receptacle - weatherproof cover				
Wall receptacle 20A				
Floor receptacle 20A				
Hand dryer				
Handicap door opener wiring				
Branch wiring				
<b>Total Lighting, Devices &amp; Heating</b>				<b>\$703,200</b>

Description	Quantity	Unit	Rate	Amount
<b>C2 ELECTRICAL</b>				
<b>C23 Systems &amp; Ancillaries</b>				
Fire Alarm System	5,095	m <sup>2</sup>	28.75	146,500
Main control panel				
Speaker and strobe				
CO / smoke detector				
Fire fighter hand set				
Pull station				
Sprinkler flow interlock				
FA conduit and wire				
Verification and testing				
Communication	5,095	m <sup>2</sup>	20.70	105,500
Data rack second floor				
Main computer room rack				
Data outlet				
WAP				
Data conduit and wire				
Access Control	5,095	m <sup>2</sup>	23.00	117,200
Access control system				
CCTV control and monitor				
Door contact				
CCTV - interior				
CCTV - exterior				
Security conduit and wire				
AV				
Allowance for AV conduit and cabling to outlets for owner supplied equipment including allowance for backing and supports	1	sum	57,500.00	57,500
<b>Total Systems &amp; Ancillaries</b>				<b>\$426,700</b>

Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.1 Site Preparation</i>				
Clear & grub site	10,083	m <sup>2</sup>	2.36	23,800
Remove unsuitable material below building area 1.95m thick & disposal offsite	9,459	m <sup>3</sup>	26.25	248,300
Remove unsuitable material below other site area average 950mm thick & disposal offsite	6,695	m <sup>3</sup>	26.25	175,700
Foundation mat consist of 0.75m imported granular fill with 2 layers Mirafi HP270 woven geotextile	4,111	m <sup>2</sup>	111.30	457,500
Imported fill	9,234	m <sup>3</sup>	47.25	436,300

<b>Total Site Preparation</b>				<b>\$1,341,600</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.2 Hard Surfaces</i>				
Gravel paving 300mm thick for service roads	1,798	m <sup>2</sup>	73.50	132,200
Gravel paving 250mm thick for parking area	2,654	m <sup>2</sup>	68.25	181,100
Concrete sidewalk	245	m <sup>2</sup>	105.00	25,700
Concrete curb	803	m	73.50	59,000

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<b>Total Hard Surfaces</b>				<b>\$398,000</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.3 Site Improvements</i>				
Allowance for street furniture	1	sum	10,500.00	10,500
Allowance for exterior signage	1	sum	10,500.00	10,500
Allowance for steel pipe bollard	6	no	525.00	3,200
First nations sculptural art (install only)	6	no	840.00	5,000
Allowance for septic field (cost provided by VDA)	1	sum	82,000.00	82,000
Platform to support mechanical equipment	1	sum	8,137.50	8,100

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<b>Total Site Improvements</b>	<b>\$119,300</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D11.4 Landscaping</i>				
Sodding	1,553	m <sup>2</sup>	13.13	20,400
Growing medium	311	m <sup>3</sup>	38.33	11,900
Irrigation system	1,553	m <sup>2</sup>	5.25	8,200

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<b>Total Landscaping</b>				<b>\$40,500</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D12 Mechanical Site Services</i>				
Water main				
Allowance for 150mm water main	114	m	517.50	59,000
Water meter chamber	1	sum	28,750.00	28,800
Cap off for future aquatic	1	sum	1,725.00	1,700
Storm				
Storm sewer	100	m	287.50	28,800
Catch basin	2	no	1,725.00	3,500
Allowance for oil interceptor	1	sum	5,175.00	5,200
Sanitary				
Allowance for sanitary main	55	m	402.50	22,100
Allowance for pump station	1	sum	23,000.00	23,000

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<b>Total Mechanical Site Services</b>	<b>\$172,100</b>
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Description	Quantity	Unit	Rate	Amount
<b>D1 SITE WORK</b>				
<i>D13 Electrical Site Services</i>				
Allowance for communication and services ductbank  (pole mounted transformer and incoming power will be provided by BC Hydro)	1	sum	35,190.00	35,200
Allowance for site lighting	1	sum	23,000.00	23,000
Emergency Power - 125KW 3P including protection stanchions, grounding, transfer switch, underground duct and feeder.	1	sum	172,500.00	172,500
Allowance for BC Hydro connection fee	1	sum	57,500.00	57,500
Allowance for connection to septic field	1	sum	10,000.00	10,000

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<b>Total Electrical Site Services</b>				<b>\$298,200</b>
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**CANADA**

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Edmonton

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Montreal

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**UNITED STATES**

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Knowledge to build with.*