CLASS 3 ESTIMATE

STUDENT UNION BUILDING - SUSTAINABILITY ITEMS

UNIVERSITY OF VICTORIA, BC

December 2, 2020
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A  ESTIMATE BREAKDOWN

per: Advicas Group Consultants Inc.

Prepared by Francis Yong, BSc, PQS
  Professional Quantity Surveyor
  Choose an item.

Advicas Project No. 2020139
INTRODUCTION

This report sets out the estimate of capital construction cost at schematic design stage for the proposed Student Union Building - Sustainability Items in University of Victoria, BC.

Project Description

The project comprises sustainability initiatives to improve energy conservation and reduce greenhouse gases and also improve thermal comfort.

Four options of window and door systems are explored:

- **Option 1**: Replace single pane windows and doors with insulated sealed units, and new passive solar shading device
- **Option 2**: As Option 1 plus replacing existing storefront with insulated sealed units, and triple glazing to skylights
- **Option 3**: Replace window, doors, storefronts, and skylights to curtain wall with triple glazed insulated glass units
- **Option 4**: As Option 3 but insulated sealed double glazing

Gross Floor Area

The gross floor area\(^1\) of the existing three storey building is 6,500 m\(^2\).

\(^1\) measured to the outside face of exterior walls

ESTIMATE COSTS

The estimate costs have been developed in current (December 2020) dollars only. The estimated capital construction cost of the options are as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
<th>Cost per m(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Sustainability Upgrade Option 1 - Window</td>
<td>$908,800</td>
<td>$139.82/m(^2)</td>
</tr>
<tr>
<td>and Door Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural Sustainability Upgrade Option 2 - Window</td>
<td>$1,326,600</td>
<td>$204.09/m(^2)</td>
</tr>
<tr>
<td>and Door Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural Sustainability Upgrade Option 3 - Window</td>
<td>$2,076,200</td>
<td>$319.42/m(^2)</td>
</tr>
<tr>
<td>and Door Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural Sustainability Upgrade Option 4 - Window</td>
<td>$1,679,300</td>
<td>$258.35/m(^2)</td>
</tr>
<tr>
<td>and Door Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Sustainability Upgrades</td>
<td>$101,800</td>
<td>$15.66/m(^2)</td>
</tr>
</tbody>
</table>

A breakdown of the estimate for each of the above items is included in Appendix A.

General Requirements and Fee

The General Requirements provide for all General Contractor’s costs associated with the management and supervision of the construction work in accordance with the contract documents and construction schedule. Typical costs include site superintendent/foreman, site set up and demobilization, temporary office and storage, temporary equipment including crane, first aid facilities, bonding, and construction insurance.

The General Contractor’s Fee includes office expenses, profit, and attendance on building sub trades; and profit on own forces work.
**Escalation**

**Escalation during Construction Period** - the estimate, as is typical, includes any cost increases incurred by the contractor/sub-contractor, and suppliers in conforming to contractor/supplier timelines dictated by the construction schedule. These increases are built into the respective detailed unit rate costs.

**Future Escalation** - this has been provided in the above Estimate Costs for cost escalation incurred between March 11, 2020 and the current date. Escalation beyond this point is not included and will be based on values given in Table 1 below.

**COVID-19 Premium** - we are all very much aware of the impact of the COVID-19 virus, and the mandated and recommended regulations introduced by the government to protect the health and safety of all in overcoming this challenge.

We have seen over the past four years a market trend reflecting an annual increase in market price levels in the order of 10% per annum. The advent of COVID-19 has had a major impact on the construction industry. While continuing as a deemed essential service, the new government regulations and guidelines, carried onto the construction site, has translated into the need to adapt the process of construction completion. This will, and has, attracted additional costs. New items introduced into the construction process have included:

- The requirement for limited sub trades/sub-trade personnel on the site at any one time to maintain/ensure social distancing. This has caused suspected inefficiencies in performance of the work, ultimately adding time to work completion. The overall construction completion schedule will lengthen, attracting an increase in the General Contractor’s overall supervision and management costs. The trades themselves, through managing inefficiencies, will incur additional cost.

- The limited sub trade personnel on site will cause all trades to revise their internal schedule to meet their obligations on all projects. We expect this will necessitate the need to build in flexibility on a trade’s attendance timeline on site, again lengthening the construction schedule, attracting additional supervision and management costs.

- The setup of wash station facilities on site to provide workers with the necessary facilities to wash hands, sterilize, etc.; employment of staff dedicated to providing ongoing cleaning and sterilization of site offices, equipment, etc. as necessitated throughout the construction.

- Screening of all personnel coming onto site each day.

We have seen a major reduction in projects out on the street requesting tender. From industry bulletins and media, we have noted projects ready for tender, but placed on hold until the market becomes more certain. Those projects that have been tendered have come in significantly under budget, although with a wide range of bids submitted by upwards of eight bidders. This indicates the uncertainty in the market at this time; a potential second COVID-19 wave; future investment in construction infrastructure.

Our viewpoint on movement in construction market price levels given the COVID-19 protocol, and assumptions on a future trend in projects released for tender, applied to the Construction Cost, is presented in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>COVID-19 PREMIUM</th>
<th>CONSTRUCTION MARKET PRICE INCREASE</th>
<th>TOTAL ESCALATION ON CONSTRUCTION COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 – Mar 11th to Aug</td>
<td>+8%</td>
<td>-10%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>2020 – beyond Aug</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2021</td>
<td>0%</td>
<td>+1.5%</td>
<td>+1.5%</td>
</tr>
<tr>
<td>2022</td>
<td>0%</td>
<td>+1.5%</td>
<td>+1.5%</td>
</tr>
<tr>
<td>2023</td>
<td>0%</td>
<td>+2.0%</td>
<td>+2.0%</td>
</tr>
<tr>
<td>2024</td>
<td>0%</td>
<td>+2.5%</td>
<td>+2.5%</td>
</tr>
</tbody>
</table>

Note: Island average norm 3.5%, equated over the past thirty-five years of construction.
**Sustainability Initiatives**

It is our understanding that this project is intended to have a level of sustainability to coincide with University of Victoria's environmental principles (e.g., energy efficiency, water consumption, site strategies). While the sustainable blueprint of the project is still to be outlined, our estimate includes allowances to cover systems and design elements which are associated with LEED® Gold targeted buildings.

The estimate does not include costs for registering and certifying the project with the Canadian Green Building Council as a LEED Gold Rated project (e.g., LEED registration/certification costs, LEED consultant fees, LEED submission documentation).

**BASIS OF THE ESTIMATE**

We have assumed that the work will be tendered competitively in one contract.

In all cases the estimates are based upon our assessment of fair value for the work to be carried out. We define fair value as the amount a prudent contractor, considering all aspects of the project, would quote for the work. We expect our estimate to be in the middle of the bid range to ensure that funding for the work remains adequate for the duration of the project.

It should be noted that Advicas Group Consultants Inc. does not have control over the cost of labour, materials, or equipment, over the Contractor’s methods of determining bid prices, or over competitive market conditions. We define competitive conditions in the project as attracting a minimum of three general contractors’ bids with a minimum of two sub-trade tenders, and suppliers’ tenders, within each of the sub-trade categories. Accordingly, Advicas Group Consultants Inc. cannot and does not warrant or represent that bids will not vary from the estimate.

The current construction market is extremely active, bringing with it a volatility in tender price levels. We have seen tenders exceeding budget where there has been a single general contractor bid, or suspected single sub-trade, or supplier bid. Whilst we endeavor to gauge the developing market conditions, it is not always possible to predict industry interest in this project, and the potential for a poor, uncompetitive, response.

**Contingency Reserves**

Contingency is an allowance specifically identified within our elemental cost analysis to meet unforeseen circumstances and represents an assessment of the financial risk relating to this project. As detailed design information becomes available, this risk will diminish, and the contingency allowances will accordingly reduce.

Design contingency is introduced into the estimated cost at the earliest estimate stage and is a measurement of the amount and detail of the design information available. As the design develops and systems and material selections are fixed, the amount of the contingency allowance is reduced and is absorbed into the measured elements. On completion of contract documents, at tender stage, the allowance is normally reduced to zero.

Our determination of this risk level and the amount of the contingency allowance is the result of many years of cost planning, on over 4,000 construction projects, and of monitoring the increasing design information that occurs during the design phase. The design contingency is not a discretionary cost element.

A design contingency allowance has been included, calculated at 10% of the construction costs, to provide for unforeseen items arising during the design phase.

No allowance has been made for construction contingency. This typically provides for unforeseen items arising during the construction period – such as field conditions, coordination discrepancies – which will result in change orders and extra costs to the contract, other than changes in scope.

No allowance has been made for project contingency. This is a contingency, held by the Client, to be used at his discretion to fund specific Client driven changes to the project scope, conditions, etc.
Taxes

GST is excluded from the estimate.

PST at 7% is included in the estimate.

Exclusions

The following items are excluded from the capital construction cost:

- Interior work except where noted
- Removal and relocation of loose furniture, fittings, and equipment from the construction zone prior to construction work commencing
- Relocation and reinstallation of loose furniture, fittings, and equipment upon completion of construction work
- Costs associated with temporary relocation, i.e., decanting and relocating staff from the construction zone
- Storage costs
- Site development
- Structural or seismic upgrade
- Separate prices
- Client Administration costs
- Clerk of Works
- Client Project Manager
- Offsite costs
- Material testing
- Premium costs associated with environmental contaminants
- Asbestos abatement
- Traffic study costs
- Survey fees
- Financing costs
- Legal fees
- Client Insurances costs
- Development cost charges
- Development permit fees
- Phasing of the work
- Out of hours working
- Consultants’ fees and expenses
- Construction contingency
- Project contingency
- Escalation
- GST
Documentation

The estimate is based on the following:

- **Zeidler**
  - SUB Sustainability Initiatives Report DRAFT 1 dated November 16, 2020
  - 11x17 drawings A101 to A111 Received November 23, 2020
  - Email on additional Option 4 Received November 25, 2020

- **AME Group**
  - UVic SUB Building Sustainability Initiatives Design Development Report dated November 6, 2020 Received November 17, 2020

- **AES Engineering Ltd.**
  - Electrical Feasibility Study For UVic SUB Sustainability Initiatives dated November 6, 2020 Received November 17, 2020

- Emails and telephone discussions with the design team during the preparation of the estimate
APPENDIX A

ESTIMATE BREAKDOWN
Student Union Building - Sustainability Items
University of Victoria
Design Development

DATE: 2-Dec-20

<table>
<thead>
<tr>
<th>Architectural Sustainability Upgrade Option 1 - Window and Door Systems</th>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 and Phase 2 Building Area</td>
<td>6,500</td>
<td>m²</td>
<td>$139.82</td>
<td>$908,800</td>
</tr>
</tbody>
</table>

Phase 1 and Phase 2 Building Area
Replace single pane, non-thermally broken window, door and skylight assemblies with code compliant Insulated Glazing Units (IGU) systems

Phase 1 Lower Floor windows including openers
- 119 m² $1,010.00 $120,190

Phase 2 First Floor storefront
- 15 m² $855.00 $12,825

Phase 1 - pitched skylight
- 12 m² $2,000.00 $24,000

Phase 1 - transom strip windows
- 28 m² $865.00 $24,220

Replace existing double glazing with dual pane IGU with COG = 0.24 or lower

Phase 1 First Floor storefront glazing
- 7 m² $650.00 $4,550

Phase 2 First Floor storefront glazing
- 32 m² $650.00 $20,800

Existing single glazed door - Phase 1
- 1 lvs. $2,500.00 $2,500

Existing single glazed door - Phase 2
- 2 lvs. $2,500.00 $5,000

Replace all pressed steel door assemblies with code compliant Insulated Glazing Units (IGU with thermally broken steel or aluminum frames)

Phase 1 single door - D3
- 1 lvs. $2,000.00 $2,000

Phase 2 single door - D3
- 1 lvs. $2,000.00 $2,000

Phase 2 double doors - D4
- 4 prs $3,000.00 $12,000

Phase 2 triple doors - D5
- 1 set $5,000.00 $5,000

Install thermal insulation on interior face of solid concrete window jambs to reduce thermal bridging

Phase 1 windows
- 161 m $30.00 $4,830

Phase 2 windows
- 17 m $30.00 $510

Install vestibules at main entrances to reduce loss/gain of heat

New full height single pane glazing aluminum storefront - Phase 2
- 14 m² $650.00 $9,100

Premium over aluminum storefront for glazed single door - Phase 2
- 1 lvs. $1,350.00 $1,350

Premium over aluminum storefront for glazed double doors - Phase 2
- 1 prs. $2,700.00 $2,700

Premium over doors for automatic entry - Phase 2
- 1 no. $4,000.00 $4,000

Phase 3 Building Area
First Floor – storefront glazing systems. Retrofit all single pane glazing in doors with IGU’s. On south and west elevation / in areas with high heat gain selectively retrofit existing storefront system with IGU’s with COG = 0.24 or lower and with low(ier) SHGC to help reduce heat gain from sunlight.

Phase 3 single door glazing
- 4 lvs. $630.00 $2,520

Phase 3 double doors glazing
- 8 prs. $1,260.00 $10,080

Phase 3 south and west storefront glazing
- 388 m² $650.00 $252,200

First Floor – storefront glazing systems. On south and west elevations install exterior passive shading devices. Utilize existing steel structures where available and if in sound condition.

Phase 3
- 250 m² $300.00 $75,000

First Floor – Install vestibules to reduce loss/gain of heat

New full height single pane glazing aluminum storefront - Phase 3
- 61 m² $650.00 $39,650

Premium over aluminum storefront for glazed single door - Phase 3
- 2 lvs. $1,350.00 $2,700

Premium over aluminum storefront for glazed double doors - Phase 3
- 2 prs. $2,700.00 $5,400

Premium over doors for automatic entry - Phase 3
- 2 no. $4,000.00 $8,000

Z11 General Requirements 15.00% $97,969
Z12 Fee 10.00% $75,109
Z21 Design Contingency 10.00% $82,620
Z22 Escalation Excluded
GST Excluded
### Architectural Sustainability Upgrade Option 2 - Window and Door Systems

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,500</td>
<td>m²</td>
<td>$204.09</td>
<td>$1,326,600</td>
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#### Phase 1 and Phase 2 Building Area

As Option 1

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>item</td>
<td>$257,575.00</td>
<td>$257,575</td>
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</table>

#### Phase 3 Building Area

- **First Floor** storefront glazing systems - window, door and skylight frame systems to remain. Replace all glazing with dual pane IGU with COG = 0.24 or lower. On the south elevation the new IGU’s to have a much lower SHGC to help reduce heat transfer from the exterior sunlight.
- **Phase 3 double doors glazing**
  - 8 prs. $1,260.00 $10,080
- **Phase 3 south and west storefront glazing**
  - 388 m² $650.00 $252,200
- **Phase 3 single door glazing**
  - 4 lvs. $630.00 $2,520
- **Phase 3 clerestorey glazing system - frame systems to remain. Replace all glazing with dual pane IGU with COG = 0.24 or lower. On the south elevation the new IGU’s to have a much lower SHGC to help reduce heat transfer from the exterior sunlight.**
  - **Phase 3 windows including openers**
    - 15 m² $1,255.00 $18,825
  - **Phase 3 clerestorey windows**
    - 119 m² $865.00 $102,935
  - **Phase 3 clerestorey gable windows with arched top**
    - 21 m² $1,300.00 $27,300
- **Skylights (if Kawneer 2000 Series) retrofit with adapter allowing 44mm triple glazed infill / install triple pan glazing and Phase 3 - sloped skylight glazing**
  - 72 m² $2,100.00 $151,200
- **First Floor - storefront glazing systems. On south and west elevations install exterior passive shading devices. Utilize existing steel structures where available and if in sound condition.**
  - **Phase 3**
    - 250 m² $300.00 $75,000
- **First Floor – Install vestibules to reduce loss/gain of heat.**
  - **New full height single pane glazing aluminum storefront - Phase 3**
    - 61 m² $650.00 $39,650
  - **Premium over aluminum storefront for glazed single door - Phase 3**
    - 2 lvs. $1,350.00 $2,700
  - **Premium over aluminum storefront for glazed double doors - Phase 3**
    - 2 prs. $2,700.00 $5,400
  - **Premium over doors for automatic entry - Phase 3**
    - 2 no. $4,000.00 $8,000

#### Additional Costs

| Z11 General Requirements | 15.00% | $143,008 |
| Z12 Fee | 10.00% | $109,639 |
| Z21 Design Contingency | 10.00% | $120,603 |
| Z22 Escalation | Excluded |
| GST | Excluded |
Student Union Building - Sustainability Items
University of Victoria

Design Development

DATE: 2-Dec-20

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,500</td>
<td>m²</td>
<td>$319.42</td>
<td>$2,076,200</td>
</tr>
</tbody>
</table>

**Architectural Sustainability Upgrade Option 3 - Window and Door Systems**

**Phase 1, Phase 2 and Phase 3 Building Areas**

Replace all window, door and skylight assemblies with high performance assemblies with $U = 1.8 \text{ W/m²K}$ or lower. Example combinations for Phase 2 area:

- 1620UT 2” curtain wall with standard aluminum pressure plate, warm edge spacer bars ($U = 1.65 \text{ W/m²K}$)
- 1620UT 2” curtain wall with fiberglass pressure plate, warm edge spacer bars

1620UT with triple glazed insulated glass units ($U < 1.65 \text{ W/m²K}$)

| Phase 1 Lower Floor windows including openers | 119 | m² | $1,460.00 | $173,740 |
| Phase 2 First Floor curtain wall | 15 | m² | $1,600.00 | $24,000 |
| Phase 1 - pitched skylight | 12 | m² | $2,400.00 | $28,800 |
| Phase 1 - transom strip windows | 28 | m² | $1,315.00 | $36,820 |
| Phase 1 First Floor curtain wall | 7 | m² | $1,600.00 | $11,200 |
| Phase 2 First Floor curtain wall | 32 | m² | $1,600.00 | $51,200 |
| Premium over curtain wall for single glazed door - Phase 1 | 1 | lvs. | $1,770.00 | $1,770 |
| Premium over curtain wall for single glazed door - Phase 2 | 2 | lvs. | $1,770.00 | $3,540 |
| Phase 3 south and west curtain wall | 388 | m² | $1,600.00 | $620,800 |
| Premium over curtain wall for glazed single door - Phase 3 | 4 | lvs. | $1,770.00 | $7,080 |
| Premium over curtain wall for glazed double doors - Phase 3 | 8 | prs. | $3,600.00 | $28,800 |
| Premium over doors for automatic entry - Phase 3 | 1 | no. | $4,000.00 | $4,000 |
| Phase 3 windows including openers | 15 | m² | $1,705.00 | $25,575 |
| Phase 3 clerestorey windows | 119 | m² | $1,315.00 | $156,485 |
| Phase 3 clerestorey gable windows with arched top | 21 | m² | $1,730.00 | $36,330 |
| Phase 3 - sloped skylight glazing | 72 | m² | $2,100.00 | $151,200 |

First Floor - storefront glazing systems. On south and west elevations install exterior passive shading devices. Utilize existing steel structures where available and if in sound condition.

| Phase 3 | 250 | m² | $300.00 | $75,000 |

First Floor - Install vestibules to reduce loss/gain of heat.

| New full height single pane glazing aluminum storefront - Phase 3 | 61 | m² | $650.00 | $39,650 |
| Premium over aluminum storefront for glazed single door - Phase 3 | 2 | lvs. | $1,350.00 | $2,700 |
| Premium over aluminum storefront for glazed double doors - Phase 3 | 2 | prs. | $2,700.00 | $5,400 |
| Premium over doors for automatic entry - Phase 3 | 2 | no. | $4,000.00 | $8,000 |

**General Requirements**

- Z11 General Requirements 15.00% $223,814
- Z12 Fee 10.00% $171,590
- Z21 Design Contingency 10.00% $188,749
- Z22 Escalation Excluded
- GST Excluded
## Architectural Sustainability Upgrade Option 4 - Window and Door Systems

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,500</td>
<td>m²</td>
<td>$258.35</td>
<td>$1,679,300</td>
</tr>
</tbody>
</table>

### Phase 1, Phase 2 and Phase 3 Building Areas

Replace all window, door and skylight assemblies with new code compliant double glazed thermally broken curtain wall system:

- **Phase 1 Lower Floor windows including openers**
  - 119 m² $1,210.00 $143,990
- **Phase 2 First Floor curtain wall**
  - 15 m² $1,200.00 $18,000
- **Phase 1 - pitched skylight**
  - 12 m² $1,800.00 $21,600
- **Phase 1 - transom strip windows**
  - 28 m² $1,115.00 $31,220
- **Phase 1 First Floor curtain wall**
  - 7 m² $1,200.00 $8,400
- **Phase 2 First Floor curtain wall**
  - 32 m² $1,200.00 $38,400
- **Premium over curtain wall for single glazed door - Phase 1**
  - 1 lvs. $1,650.00 $1,650
- **Premium over curtain wall for single glazed door - Phase 2**
  - 2 lvs. $1,650.00 $3,300
- **Phase 3 south and west curtain wall**
  - 388 m² $1,200.00 $465,600
- **Premium over curtain wall for glazed single door - Phase 3**
  - 4 lvs. $1,650.00 $6,600
- **Premium over curtain wall for glazed double doors - Phase 3**
  - 8 prs. $3,300.00 $26,400
- **Premium over doors for automatic entry - Phase 3**
  - 1 no. $4,000.00 $4,000
- **Phase 3 windows including openers**
  - 15 m² $1,455.00 $21,825
- **Phase 3 clerestorey windows**
  - 121 m² $1,115.00 $132,685
- **Phase 3 clerestorey gable windows with arched top**
  - 21 m² $1,550.00 $32,550
- **Phase 3 - sloped skylight glazing**
  - 72 m² $1,665.00 $119,880

First Floor – storefront glazing systems. On south and west elevations install exterior passive shading devices. Utilize existing steel structures where available and if in sound condition.

- **Phase 3**
  - 250 m² $300.00 $75,000

### First Floor – Install vestibules to reduce loss/gain of heat.

- **New full height single pane glazing aluminum storefront - Phase 3**
  - 61 m² $650.00 $39,650
- **Premium over aluminum storefront for glazed single door - Phase 3**
  - 2 lvs. $1,350.00 $2,700
- **Premium over aluminum storefront for glazed double doors - Phase 3**
  - 2 prs. $2,700.00 $5,400
- **Premium over doors for automatic entry - Phase 3**
  - 2 no. $4,000.00 $8,000

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**Z11 General Requirements** 15.00% $181,028

**Z12 Fee** 10.00% $138,788

**Z21 Design Contingency** 10.00% $152,667

**Z22 Escalation** Excluded

**GST** Excluded
# Student Union Building - Sustainability Items
## University of Victoria
### Design Development

**DATE:** 2-Dec-20

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>UNIT</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,500</td>
<td>m²</td>
<td>$15.66</td>
<td>$101,800</td>
</tr>
</tbody>
</table>

**Mechanical Sustainability Upgrades**

**AHU-1 Conversion to Heat Pump**

Demolition:
- Remove existing cooling only system

New Work:
- Heat pump unit
- Valves and piping between the coil and heat pump unit
- DDC
- Upgrade existing heating coil

**AHU-7 Heat Recovery for DCW Preheat**

Demolition:
- Remove existing 120 gallon hot water tanks

New Work:
- Hybrid electric water heater and tie into existing DCW line
- Circulation pump

**Electrical for mechanical upgrades**

Demolition:
- Minor work in local area panel
- Disconnect and remove power feed for AHU-1, DWH x 2

New Work:
- Minor work in local area panel
- New panel & installation - Conduit & Wire

Mechanical Connections:
- CC & HP, HWT x 3
- Disconnect & fuses

Feeder/Conduit:
- 2#10 inc gnd 27mm EMT
- Allowance for terminations, splicing etc.
- Allowance for corners, couplings etc.

General Conditions:
- Testing and commissioning of above systems
- General conditions for Electrical Contractor - demobilization - permits/working drawings

| Allowance for corners, couplings etc. | 1 | sum | $646.80 | $647 |
| Allowing for terminations, splicing etc. | 1 | sum | $646.80 | $647 |
| CC & HP, HWT x 3 | 4 | no. | $190.00 | $760 |
| Disconnect & fuses | 1 | no. | $2,000.00 | $2,000 |
| 2#10 inc gnd 27mm EMT | 80 | m | $53.90 | $4,312 |

**Z11 General Requirements** 15.00% $10,968

**Z12 Fee** 10.00% $8,409

**Z21 Design Contingency** 10.00% $9,250

**Z22 Escalation** Excluded

**GST** Excluded