VICTORIA HIGH SCHOOL
Seismic Upgrade

Project Definition Report

THE GREATER VICTORIA SCHOOL DISTRICT No. 61

August 7, 2018
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1. Executive Summary

Introduction and Project Rationale

Victoria High School has played a key role in the delivery of education in Victoria for over 140 years. When the building was commissioned in 1914, it was on the cutting edge of school design and building systems. The current facilities have served the community very well for over a century with a number of additions and renovations to adapt to changing needs. It is anticipated that with the appropriate upgrades and maintenance, Vic High can continue to effectively serve the youth of this community for many future generations.

The Province wide 2004 Ministry of Education Seismic Risk Assessment considered Victoria High School as one of the highest risks facilities in SD No. 61. The recommendation of the 2012 SPIR was a full Life Safety retrofit to both Block 1 (1911 Original building) and Block 2 (1955 Addition).

Victoria High School has a current capacity for 800 students and a current enrolment (18/19) of 790 students. Adjacent Secondary Schools are Oak Bay High School and Reynolds Secondary. Oak Bay High School has a capacity of 1200 students and current enrolment (18/19) of 1160 students. Reynolds has a capacity of 950 students and current enrolment (18/19) of 959 students. The combined resultant capacity utilization of these three schools is currently 98%.

Methodology

In the summer of 2016, the Greater Victoria School District No. 61 engaged HDR|CEI Architecture to prepare this Project Definition Report for Victoria High School Seismic Retrofit. HDR | CEI convened a consultant team consisting of Herold Engineering (Structural), Burrmech Consultants Inc. (Mechanical), RB Engineering Ltd. (Electrical) and Evolution Building Science Ltd. (Building Code) and Advicas (Quantity Surveyors) for this report.

The 2004 Feasibility Study had laid out a number of options but concluded that a full replacement of Victoria High School was not feasible due to heritage value. The 2009 Victoria High School / Fairey Technical School Project Definition Report (PDR) resulted in the partial Replacement of Fairey Technical School as an addition to Vic High. Most recently, the 2012 Seismic Project Identification Report (SPIR) recommended that life Safety Seismic retrofits (full seismic upgrade) be implemented at Victoria High School which forms the basis of this Project Definition Report.

Victoria High School has been the subject of several reports in recent years as outlined below:

1. Building Conditions Study (1989)
2. Seismic Upgrading and Terra Cotta Stabilization (1993)
3. Facility Evaluation & Feasibility Study (2005)
4. Victoria High School / Fairey Technical School Project Definition Report (PDR)
5. Seismic Project Identification Report(s) (2012):
6. Victoria High School: School Enhancement Program (SEP) Report (September 2016)
7. Victoria High School: Condition Assessment of Terracotta Cladding (January 2017)

Seismic Options

Option 1 - Seismic Upgrade

The scope of the seismic upgrade impacts most of the building fabric and systems to the extent that, in addition to the strictly seismic work, most of the plumbing, mechanical, electrical, communications systems and interior finishes will need to be replaced. The scope of the renovations may also trigger the need to install a full fire-sprinkler system in the building.

Total Capital Project Budget	$27,328,903
Identified Supplemental Items	$29,615,448
Identified Risk Items	$15,331,047
Maximum Capital Project unding Total	$72,275,398

Option 2 – Seismic Upgrade with Enhancements

In addition to the scope in Option 1, Option 2 includes enhancements to the project:

1) Remediation/rehabilitation of the 1914 building brick
2) Replacement of the original 1914 windows with new windows applied for under SEP program.
3) Upgrade of the interior stair vestibules to reverse 1970s renovations

Total Capital Project Budget	$27,574,754
Identified Supplemental Items	$30,926,905
Identified Risk Items	$15,386,872
Maximum Capital Project unding Total	$73,888,531

Option 3 – Seismic Upgrade with Enhancements and Addition to 1000 Student Capacity

In addition to the scope in Option 1 and Option 2, Option 3 includes an addition to the project to bring it up to a 1000 student capacity:

4) Addition of a new Learning Commons / Multi-Purpose Room and a new Library / Media Tech space and some reorganization of the internal planning of the 1914 building.

Total Capital Project Budget	$34,010,025
Identified Supplemental Items	$33,336,326
Identified Risk Items	$15,679,501
Maximum Capital Project unding Total	$83,025,852

Option 4 – Partial Replacement on VHS Site (retaining the Fairey Technical School Wing)

In the Facility Evaluation & Feasibility Study (2005), full replacement on the site of Victoria High School to provide a new 800 ANC Secondary School (includes demolition of existing) was reviewed and cost estimate was $16,602,000 in 2005 dollars. Current enrollment demands are such that the Greater Victoria School District considers a 1000 ANC Secondary School to be required on the site.

A full 800 student replacement option was not considered viable in 2005 due to the heritage significance of the Victoria High School Building but was included for cost comparison with the other options at the time. The heritage significance of the buildings remains and the decision to erect the Technical Education Addition as a partial replacement in 2011 further reinforces the difficulties of consideration of Full Replacement as a viable option. However, once the estimate is considered for Options 1, 2 and 3, it is deemed appropriate to consider estimates for full replacement for comparison.

5) A full 1000 Student Capacity Replacement of VHS on the current site with an estimated project cost of

Total Capital Project Budget	$50,521,894
Identified Supplemental Items	$25,188,055
Identified Risk Items	$ 6,353,150
Maximum Capital Project unding Total	$82,063,099

Life Cycle Analysis

Life Cycle Analyses was done for all Options.

The Life Cycle Analysis shows that after 40 years:

- Option 1 is the highest option with a Net Present Value of Cumulative cost at Year 40 of$122,865,000. (Option 1 does not meet enrollment demands.)
- Option 2 is the second least expensive option with a Net Present Value of Cumulative cost at Year 40 of $112,316,000. (Option 2 does not meet enrollment demands.)
- Option 3 is the third highest option with a Net Present Value of Cumulative cost at Year 40 of $117,812,000.
- Option 4 is the least expensive option with a Net Present Value of Cumulative cost at Year 40 of $98,686,000.

Project Risks

Several categories of project risks have been identified for the various options and carried as Reserve Items. These total $15,331,047 for Option 1, $15,386,872 for Option 2, $15,679,501 for Option 3 and $6,353,150 for Option 4.

For all Options, a $1 million reserve for additional economic adjustments coming into effect makes up approximately 6.5% of the total Identified Risks amount for Options 1, 2 & 3 and 15.7% for Option 4. Risks are managed, priced and/or transferred.

Project Management

Greater Victoria School District No. 61 is very experienced with major capital projects ranging from the recent new build of Oak Bay High School and several seismic upgrades to existing Elementary and Middle schools. SD No.61 has the knowledge and experience required for successful management of complex major construction projects.

Project Scheduling

SJ Willis Swing Space - If approval is received in April 2019, for design work to commence on the SJ Willis Swing Space, it is anticipated that design work and contract documents will be in place for construction to occur from June 2019 through January 2020.

Victoria High School - With an April 2019 approval of the VHS Option, design work for the school will take place from May 2019 through May 2020. Victoria High School will move to SJ Willis in July and August, 2020 and classes will commence there in September 2020.

For either Option 1, 2 or 3, seismic upgrading at Victoria High School would start in August 2020, and scheduled to complete prior to August 2022, at which time the School will move back to Victoria High School. The 2 year construction period is a result of the size and complexity of this project and the very active construction climate presently observed in the Capital Region.

Should Partial Replacement be the preferred Option, a similar timeline would be expected, with demolition of VHS scheduled to start in August 2020 and the new school ready for occupancy in September 2022. However, the Partial Replacement option would require Municipal approval for the demolition of the existing VHS heritage structure. Obtaining these approvals has the potential to delay the project for a year to coincide with the school calendar.

QUANTITATIVE RISK ANALYSIS SUMMARY

		Option 1 - Seismic Upgrade	Option 2 - Seismic Upgrade with Enhancements	Option 3 - Seismic Upgrade with Enhancements & Expansion	Option 4 – Partial Seismic Replacement
Area + Capacity	Existing	15,066 m^2	15,066 m^2	15,066 m^2	15,066 m^2
Retained Area (M^2)		15,066 m^2	15,066 m^2	15,066 m^2	1,603 m^2
New Area (M^2)		610 m^2	610 m^2	1,111 m^2	9,090 m^2
Total Area (M^2)		**15,676 m^2**	**15,676 m^2**	**16,176 m^2**	**10,693 m^2**
Capacity		800	800	1,000	1,000
Utilization 2023 / 24	%	123%	123%	98%	98%
Life Cycle Cost					
Capital Cost w/o Risk Reserves		$56,944,351	$58,501,659	$67,346,351	$75,709949
Risk Reserves		$15,331,047	$15,386,872	$15,679,501	$ 6,353,150
Capital Cost + Risk Reserves		$72,275,398	$73,888,531	$83,025,852	$82,063,099
Other Life Cycle Costs (40 years)		$ -	$ -	$ -	$ -
Total Life Cycle Costs (40 Years)		$122,865,000	$112,316,000	$117,812,000	$ 98,686,000
Total Life Cycle Costs - Present Value (40 years)		$122,865,000	$112,316,000	$117,812,000	$ 98,686,000
Variance to lowest cost option		$ 24,179,000	$ 13,630,000	$ 19,126,000	$ -
Temporary Location		SJ Willis School	SJ Willis School	SJ Willis School	SJ Willis School
Procurement Method		Construction Mgmt. (CM)	Construction Mgmt.	Construction Mgmt.	Stipulated Sum or CM
497Total Schedule (months)		36 Months	36 Months	36 Months	36 Months
Facility Condition Index (FCI)	0.27	0.20	0.18	0.15	0.08

QUALITATIVE RISK ANALYSIS SUMMARY – ADVANTAGES

Option One

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Retains a theatre space.

Option Two

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Improves life safety conditions.
- Retains a theatre space.
- Upgrades antiquated building systems.
- Restores deteriorating building envelope masonry and terracotta.
- Provides some contemporary education support areas.

Option Three

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Retains a theatre space.
- The expanded capacity to 1000 students meets current and future enrollment demands.
- Upgrades antiquated building systems.
- Restores deteriorating building envelope masonry and terracotta.
- Provides contemporary education support areas.
- Improves building planning layout.
- Planning opportunities support improved adjacencies and flexible learning spaces.

Option Four

- Retains Fairey Technical wing addition.
- The expanded capacity to 1000 students meets current & future enrollment demands.
- New classrooms and education spaces will be in full compliance with all codes, standards and bylaws.
- New construction will provide a high performance building envelope.
- Provides contemporary education support spaces.
- New planning provides the opportunity for a two or three storey structure in lieu of the existing four.

QUALITATIVE RISK ANALYSIS SUMMARY – DISADVANTAGES

Option One

- Maintaining the current capacity of 800 students will not accommodate current or future enrollment demands.
- Retains heritage building which limits operational energy performance.
- Does not meet current life safety standards.
- Does not address antiquated building systems.
- Does not comply with Ministry standards or design principles.
- Retains poor circulation patterns and poor space usage.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Two

- Maintaining the current capacity of 800 students will not accommodate current or future enrollment demands.
- Retains heritage building which limits operational energy performance.
- Does not comply with Ministry standards or design principles.
- Retains poor circulation patterns and poor space usage.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Three

- Retains heritage building which limits operational energy performance.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Four

- Removal of the heritage building carries an extreme risk of being denied by the City of Victoria.
- Risk of legal action related to demolition application denials by City of Victoria.
- This option does not have public support as confirmed through community meetings and polls.
- Does not provide a theatre space.

2. Project Needs Rationale

2.1 Seismic Risk Factor

Seismic Project Identification Report 2012

A Seismic Project Identification Report (SPIR) for Victoria High School was completed in 2012. The SPIR was specific to the 1911 and 1955 blocks referred to as Block 1 "1911 Original Building' and Block 2 "1955 Addition".

The results of the SPIR found that Block 1 was assessed as having a retrofit priority ranking of H1 and Block 2 was assessed as an H2. Risk ratings are defined as:

- H1 – "Most vulnerable Structure; at risk of widespread damage or structural failure; not repairable after event."
- H2 – 'Vulnerable structure; at risk of widespread damage or structural failure; likely not repairable after event."

The recommendations of the 2012 SPIR a full Life Safety retrofit to both Block 1 (1911 Original building) and Block 2 (1955 Addition). The cost estimates were $9,903,400 for Block 1 and $356,600 for block 2 for a total of $10,260,000.

2.2 School capacity, Enrollment and projections and long term role

Victoria High school has a current capacity for 800 students and a current enrollment of 728, not including International Students. Enrollment projections show that demand will increase steadily over the next 15 years to 984 students in 2023 and over 1,100 students in 2026 with increasing enrollment beyond that date. With the proposed upgrading of the school, it is expected that Victoria High School will serve the needs of the Victoria School District for many years.

The current capacities of schools in the Vic High vicinity are:

- Vic High with a capacity of 800 students.
- Oak Bay High with a capacity of 1200 students, plus100 spaces funded by the District to support international students.
- Reynolds with a capacity of 950 students.

In total this provides a capacity of 2950 students.

There are three aspects of local knowledge that the District has taken into account to update the Baragar projections for Victoria High School:

- For the 2018 School Year, the Board of Education implemented its altered priorities for access to schools. This has led to a decrease in the number of cross boundary transfers as a District, and for Vic High, Central and Lansdowne Schools, this will mean higher populations based on the local population data;
- The School District has met with its municipal partners at the City of Victoria and they have confirmed their expected housing growth rate for the City. Their yearly housing starts indicate that consistent increased growth in housing is projected over the coming number of years. To note as well, the City has been increasingly putting a focus on family housing. The School District understands that, while not yet formal, the City is considering a minimum target of 20% of units being family oriented, significantly higher than the current target of 13%, which is the figure

used by Baragar.

- The School District has also met with the municipality of Saanich, and though their projections are not as fulsome as Victoria's, we do understand that the municipality has created a number of targets for infill and urban growth (University Heights, Shelbourne Plaza, etc.). This growth, when achieved, will continue to put pressure on the Reynolds family of schools. As a result, while the District is currently reviewing out Boundaries for changes to be implemented in 2020, we are already anticipating this review and changes will also increase enrolment pressures on the Vic High Family.

3. Project Background

3.1 Background

3.1.1 History of Victoria High School

The original Victoria High School was a log building built on the grounds of what is now Central Middle School in 1876. Designed as a two classroom facility, it was replaced twice before the construction of what we now know as Victoria High School at 1260 Grant Street.

On May 1, 1914, the fourth Victoria High School, designed by C.E. Watkins Architects of Victoria was opened. The four storey plus basement school building made use of state of the art planning and technical knowledge of the day.

Beginning in the 1940's, Fairey Technical School was erected in several phases into the 1970's along the west side of the Victoria High School campus. These one and two storey wood framed buildings housed several workshops and classrooms primarily intended to provide vocational education and training. This complex was demolished in 2011 due to high risk seismic issues and significant reductions in the need and scope of vocational training in high schools.

In 1954, the Greater Victoria School District commissioned Wade, Stockdill & Armour Architects of Victoria to design a major addition to the north of the existing school. This was built in 1956 directly adjacent the north face of the 1914 building. It housed classrooms and gymnasium with a connecting corridor to the 1914 building.

In 1978, John DiCastri Architect of Victoria designed additional exit stairs to provide appropriate exit capacity for the 1914 gymnasium and the 1914 auditorium which had been effectively cut off when the north addition was built in the mid-fifties. These stairs and other major interior renovations were completed in 1979.

In 2010, CEI Neilson Architecture (now HDR | CEI Architecture Associates Inc.) designed a single storey addition to the north of the 1955 addition to house new technical education spaces (workshops, classroom & exterior compound) to replace the required spaces lost in the demolition of the Fairey Technical School buildings. This addition was designed as a separate building as defined under the BC Building Code. However, through creative Alternate Solutions permitted under the BC Building Code, the new building is well integrated and connected to the existing building.

Along with the Tech. Ed. Addition, several spaces within the existing Victoria High School (both 1914 and 1956 components) were renovated to accommodate academic spaces which had been previously located in the Fairey Technical School buildings. Where renovations in the existing buildings were undertaken, minor seismic upgrades were also incorporated to stabilize some of the vertical clay-tile ventilation shaft elements.

These components comprise the current Victoria High School, with a variety of renovation and maintenance work having been carried out over the years.

3.1.2 Studies & Reports

Victoria High School has been the subject of several reports in recent years as outlined below. For more detail regarding these reports, see the Architectural Report in the Appendix.

8. Building Conditions Study (1989)

9. Seismic Upgrading and Terra Cotta Stabilization (1993)

10. Facility Evaluation & Feasibility Study (2005)

In January 2005, John A. Neilson Architects Inc.(now HDR | CEI Architecture) was engaged by the Greater Victoria School District (No. 61) to assemble a consultant team to prepare a Feasibility Study for Victoria High School and the associated Fairey Technical School.

Ultimately, six options were identified, four of which were reviewed in terms of Order of Magnitude Cost Estimates which were:

Option 1 – Full Seismic Upgrade of Victoria High School & Fairey Technical School

Cost Estimate: $16,188,000

Option 2 - Full Seismic Upgrading of Victoria High School and new 800 ANC Industrial Education Facility with additional renovations to Vic High to accommodate academic spaces from Fairey Technical School.

Cost Estimate: $13,432,331

Option 3 – Full Seismic Upgrade of Victoria High School and New Enhanced 800 ANC Industrial Education Facility with additional renovations to Vic High to accommodate academic spaces from Fairey Technical School.

Cost Estimate: $18,147,823

Option 4 – Full replacement of Victoria High School to provide new 800 ANC Secondary School (includes demolition of existing). This was not considered viable due to the historical significance of the Victoria High School Building but was included for cost comparison with the other options.

Cost Estimate: $16,602,000

The Feasibility Study Team recommended that Option 2 be accepted for further development. However, the Team also recommended that the Greater Victoria School District and the Ministry of Education give careful consideration to the enhancement of the new Industrial Education facilities proposed in Option 2.

11. Victoria High School / Fairey Technical School Project Definition Report (PDR)

In 2009, CEI Neilson Architecture (now HDR | CEI Architecture) was engaged by the Greater Victoria School District (No. 61) to assemble a consultant team to prepare a Project Definition Report (PDR) for the Replacement of Fairey Technical School as a 800 ANC Industrial Education Facility as an addition to Victoria High

School with additional renovations to Victoria High School to accommodate academic spaces from the Fairey Technical School.

The School District had decided that the full seismic upgrade to Victoria High School would be deferred as a stand-alone project in the future. However, the decision to pursue a Technical Education addition to the existing Victoria High School provided the opportunity to erect new facilities to current seismic standards.

12. Seismic Project Identification Report(s) (2012):

In 2012, Genivar prepared a Seismic Project Identification Report (SPIR) for each of the main blocks of Victoria High School: Block 1 – original Victoria High School Building 1911-1914 and Block 2 - 1955 gymnasium addition to the north side of the original building.

Block 1:
Life Safety Retrofit - Cost estimate $9,903,400
Phased Retrofit - Cost estimate $7,128,400

Block 2:
Life Safety Retrofit - Cost estimate $356,600
Phased Retrofit - Cost estimate $167,800

Enhanced Retrofits were not considered feasible due to the configuration of each of the blocks.

The recommendations of the SPIRs were as follows:

Block 1: The life safety retrofit concept provides the robust lateral system needed to resist the high seismic forces that this heavy block may be subjected to. The phased approach addresses many of the deficiencies such as out of plane, load path, and diaphragm weakness, but does not provide the full in plane shear capacity of the life safety concept. Additional new shear wall elements including extensive foundation work would be required to achieve full life safety in the future if the phased concept were implemented. Cost estimate $9,903,400

Block 2: The phased retrofit concept is recommended for this block as it addresses the load path and shear deficiencies. Roof diaphragm upgrade can be deferred until scheduled re-roofing.

13. Victoria High School: School Enhancement Program (SEP) Report (September 2016)

At the request of SD 61, Burrmech Consultants Inc. prepared a report for an application to the School Enhancement Program (SEP) to upgrade the existing mechanical system in the school.

14. Victoria High School: Condition Assessment of Terracotta Cladding (January 2017)

At the request of HDR | CEI Architecture, on behalf of SD 61, Goal Engineering prepared a condition assessment report of the terracotta cladding on Victoria High School.

3.2 Facility Condition Index (FCI)

The FCI for Victoria High School is 0.27, which is slightly lower than the District average of 0.33.

3.3 Existing Site

The generally flat site of Victoria High school is bounded on the south by Grant Street, the east by Fernwood Road and to the north by Gladstone Avenue. The site is developed with playing fields of varying sizes on the east, south and north of the building, with a 400 yard running track encompassing a soccer pitch on the west of the school building. There is a parking area accessed from Grant Street at the southwest and another parking area accessed from Gladstone Avenue at the north.

The westernmost portion of the site is not fully utilized at present because this is the former location of Fairey Technical School which was demolished in 2011 following the construction of the new Technical Education addition on the north face of Victoria High School. Currently this area is finished with gravel.

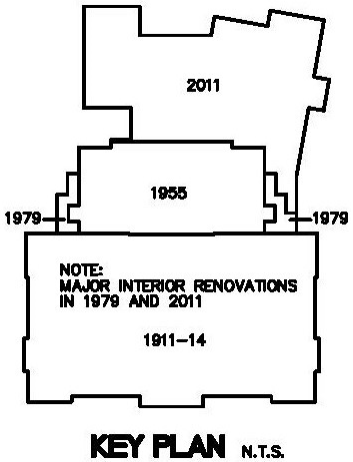
The existing site does allow room for a stand-alone Neighbourhood Learning Centre of approximately 1,285 square meters.

3.4 Existing Building and Systems

3.4.1 Architectural

3.4.1.2 Building

Information



Building Area: 1914, 1956, 1978 & 2011 components

- Basement 3,071 sq.m.
- First Floor 4,303 sq.m.
- Second Floor 3,613 sq.m.
- Third Floor 2,077 sq.m.
- Fourth Floor 2,076 sq.m.
- Total Gross Area 15,140 sq.m.

Building Area: 2011 Technical Education Addition [Not in scope of this project]
Note: This was constructed as a separate 'building' under BC Building Code and has a Total Gross Area of 1,603 sq.m.

Summary Description of Construction:

- 1914 Building
  - Generally non-combustible construction of loadbearing brick masonry and suspended concrete floors above the basement level.
  - The sloped roof structure above the attic is combustible construction.
- 1955 Building
  - Generally non-combustible construction of concrete walls with brick cladding and suspended concrete floors above Level 1
  - Interior original walls are single or double wythe plaster partitions. In more recent years, some non-loadbearing steel stud walls with gypsum wallboard have been incorporated.
  - The central portion of the building has a 100mm tongue and groove wood deck with built-up roofing applied.
  - The flanking portions of the building have a concrete slab and joist roof structure with clay tile infill. A built-up roof has been applied.
- 2011 Addition of new Technical Education wing
  - A 2 hour noncombustible fire-wall was constructed adjacent to the 1955 gymnasium to permit construction of a new technical education wing directly to the north. This wing is not part of this seismic project

3.4.1.1. Physical condition

1. 1989 Building Conditions Study:
   a) This report provided the background assessments needed for the School District to proceed with the 1993 Seismic Upgrading and Terra Cotta Stabilization. Not all of the recommendations put forward in the report were implemented. Now, twenty-eight years later, these unimplemented recommendations are in even more need of attention. This has been confirmed by recent field observation. These items include:
      1. Installation of a fire protection sprinkler system throughout the entire building.
      2. Upgrade stairwell and stair finishes.
      3. Completely renovate all lavatories.
      4. Install new windows throughout.
      5. Upgrade corridor finishes.
      6. Re-plan and upgrade change rooms.
      7. Repair plaster work and general repainting.
      8. Replace flooring.
      9. Upgrade millwork and chalkboards / whiteboards.
      10. Restore historic details including stained and leaded glass windows.

3.4.1.2. Building Envelope

1. Exterior Cladding:
    a. 1993 Seismic Upgrading and Terra Cotta Stabilization:
        1. All existing terra cotta parapets and copings were repaired and repointed.
        2. Work was primarily focused on the roof cornice as well as terra cotta over and around entries and exits. Repair work to the cornice terra cotta in the internal courtyards was deleted from the contract. Areas of wall recognized as in need of repair in 1993 that were subsequently left unattended, have deteriorated further compromising the building envelope. These areas are in need of repair before further degradation takes place.
        3. Little or no work was done to wall surfaces below the cornice line, other than at entry points.
        4. Stabilization work included anchoring the parapet assembly back to the roof structure and anchoring parapet terra cotta back to the lad bearing wall structure. Additional structural work was done to the roof to enhance seismic performance.

    b. Remedial work started with the 1993 Seismic Upgrading and Terra Cotta Stabilization should be competed. The original contract for this work was modified and the scope reduced during the construction period. The need for the remedial work recommended by the initial study and abandoned from the contract has increased over the past twenty-four years.

2. Windows:
    Existing wood windows are single pane glazing in poor to fair condition. Few are able to be opened and those that do open are drafty. The heat gain is also very high for the south and west facing windows.

3. Walls:
    The building has no thermal insulation in most of the walls. However, the high thermal mass of the thick masonry walls somewhat mitigates this deficiency.

3.4.1.3 Building Code Compliance

Occupancy Classification:
A-2 Assembly

Occupant Load:

- Based on area calculations (not including gymnasiums, Auditorium, stage or cafeteria) and theoretical densities from the BC Building Code: 1,892 persons
- Based on school enrollment and nominal operating capacity: 900 persons

Buildings as defined by B.C. Building Code:
Under the current BC Building Code standards, Vic High with four storeys plus a basement and an attic, as well as its 13,271 sq.m., falls under Article 3.2.2.24 Group A, Division 2, Up to 6 Storeys, Any Area, Sprinklered. This article requires that:

- The building must be sprinklered.
- The building must not be more than 6 storeys in height.
- The building must be of noncombustible construction.
- Floor assemblies shall be fire separations with a fire resistance rating not less than 1 hour.
- Mezzanines shall have a fire resistance rating not less than 1 hour.
- Loadbearing walls, columns and arches shall have a fire resistance rating not less than that required for the supported assembly.

Assessment:
Construction:
Non-combustible – walls and floors (conforming)
Combustible – Roof (non-conforming)
Storeys:
Five storeys plus an attic. (non-conforming)
Building area:
13,271 sq.m. (conforming)
Streets faced:
three (conforming)
Fire-sprinklered:
no (non-conforming)
Allowable building area:
Unlimited
Floor to floor fire rating:
1 hour (conforming)
Structure fire rating:
1 hour (conforming)
Roof rating:
N/A
Allowable travel distance:
30m (conforming)

Code Assessment Summary

Construction:
The 1914 building is of noncombustible construction and is six storeys in height. Because the building is not sprinklered, it does not comply with current BC Building Code requirements. For code compliance, the building would have to maintain its non-combustible construction designation and its fire separations and ratings must remain compliant with Article 3.2.2.24. Under the current code, six storey, non-sprinklered, noncombustible construction, A-2 classification buildings are not allowed. In this instance, the intent of the code cannot be satisfied through equivalency ratings applied to the existing construction so a fire suppression sprinkler system is required for compliance.

All mezzanine spaces are noncompliant in their structure. Fire protection is required on steel support beams for the Auditorium floor and the Auditorium balcony. The 1914 Gym balcony and the 1955 Gym balcony steel tension rods and support beams also require fire protection.

The entire building does not comply with current BC Building Code Part 5 standards. Windows are single pane, wall insulation is inadequate and roof insulation is inadequate. The use of vapour barriers and air barriers to current standards is inadequate or non-existent. The amount of thermal insulation in the roof assemblies is inadequate.

The use of combustible rafters, collar ties and plywood seismic reinforcement for the 1914 roof is non-compliant.

Fire protection for the theatre and stage is non-compliant. The Code requires that a sprinkler deluge system be installed to separate the stage from the theatre at the proscenium opening. In addition, automatic smoke vents are required in the roof of the stage. A minimum of two vents are required with a combined area of 21 sq.m.

Stairs and Exits:
In 1979 renovation work was completed to rectify exiting noncompliance issues inherent in the design of both the 1914 and 1955 components of the building. Rated enclosures were provided at noncompliant stairs and exits, however, the existing planning of the school left inappropriate and noncompliant situations where some service rooms open directly into protected exits and stair enclosures. In addition, while internal stairs were enclosed within rated assemblies, protected rated access to the exterior was not always possible.

Handrails and guardrails at all stairs are non-compliant in their lack of continuity, lack of extensions, non-compliant height, poor climbability and size of openings.

Handicapped Accessibility:
Accessibility standards in the building are poor. An elevator provides access to all floors of the building but typical recessed door configurations make it difficult for passage by handicapped users.

3.4.1.4 Educational suitability

A striking deficiency in Vic High is the undersized area of the General Classroom stock where 12 of 15 designated classrooms (80%) are undersized. This shortfall in area averages 13% below the Ministry minimum classroom size of 75 sq.m. and 37% below the recommended standard classroom size of 80 sq.m.

3.4.1.5 Heritage considerations

Victoria High School has served as a central educational facility for over a century, well established as a significant historical landmark building in Fernwood, one of the oldest neighbourhoods of Victoria.

The west, south and east facades are remarkably true to their original appearance and character after over 100 years. On the interior, the auditorium is well preserved and the stained glass windows are still intact in the feature stairs and auditorium.

Upon closer observation it is clear that the building envelope needs maintenance and repair to prevent further deterioration of the historic terracotta and brick cladding which contributes a great deal to the heritage value of the building. The large expanses of double-hung wood sash windows in the exterior walls are also a significant aspect of this heritage character. These single-glazed windows require ongoing maintenance, are very drafty and inefficient, providing very little resistance to transmission of heat energy, and are difficult to operate safely. When they are to be upgraded or replaced, the character of the original glazing should be maintained.

On the interior, there remain only a few areas which retain the characteristic features of the original building which should be preserved and enhanced.

- Main entrance and lobby retain original marble and painted wood panels, coffered ceilings and art glass.
- Auditorium and balcony retain original painted wood panels, coffered ceilings and art glass.
- Stairs at the SW and SE retain original art glass
- Stairs at the W and E of the auditorium retain original art glass

While Victoria High School is not designated, it is on the City of Victoria's Heritage Registry. This is in recognition of its historical significance. This gives the City of Victoria significant levers to impact the project. The School District has received advice on this issue and we see it to be a significant hurdle, making any option involving demolition of the existing heritage structure subject to significant risk. In addition, through extensive public consultation, it was made clear that the heritage nature of the facility is a net benefit to the student success, apart from the importance to the larger community.

3.4.2 Structural (for more information, refer to the Structural Report in the Appendix)

As noted earlier in this report, in 2012, a Seismic Project Identification Report (SPIR) was completed for each of the main blocks of Victoria High School: Block 1 – original Victoria High School Building 1911-1914 and Block 2 - 1955 gymnasium addition to the north side of the original building.

The structural upgrade concept put forth in the SPIR remains largely the same for this Project Definition Report. However, some additional upgrade elements have been added as a result of a more detailed assessment. These items include removal or bracing of all identified clay tile partition walls and duct shafts and the reinforcing of concrete partition walls identified at the lower floor.

Existing structure Block 1 – 1911 Original Building

Classroom Wings: The classroom wings are four storey plus basement concrete and brick masonry structures surrounding the Block 1 gymnasium and auditorium. The structural system is described as follows:

- Attic framing – plywood sheathing on wood trusses supported on 38x140mm stud walls, post and beam framing, and brick parapet walls. The attic was seismically upgraded in 1993 including parapet bracing, new wood shearwalls, and plywood diaphragm addition at the underside of the trusses.
- Roof framing (at attic floor) – One-way concrete and clay tile joist system supported on concrete beams and load bearing brick masonry walls. Concrete system includes 50mm or 76mm thick concrete topping with 125mm, 200mm, or 225mm deep clay tile between 115mm wide concrete joists.
- 4^{th}, 3^{rd}, 2^{nd}, 1^{st} floor framing – as roof framing.
- Load bearing walls – concrete at basement to 1^{st} floor, brick masonry 1^{st} floor to attic.
- Partition walls – Hollow Clay Tile (HCT) and steel stud (where previously renovated).
- Lateral deformation resisting system (LDRS) – 33mm, 433mm, and 533mm thick brick masonry shearwalls.

Auditorium/Gymnasium: The Auditorium/Gymnasium is a two and three storey wood frame, concrete, steel, and brick masonry structure in the center of Block 1. The structural system is described as follows:

- Roof framing – plywood sheathing on wood trusses with ceiling rafters supported on brick masonry walls. Roof framing at the three story south end of the auditorium consists of a one-way concrete and clay tile joist system supported on concrete beams and load bearing brick masonry walls. Concrete system includes 50mm thick concrete topping with 125mm deep clay tile between 115mm wide concrete joists.

- 3rd floor framing - One-way concrete and clay tile joist system supported on steel beams and load bearing brick masonry walls. Concrete system includes 50mm thick concrete topping with 125mm deep clay tile between 115mm wide concrete joists.

- Mezzanine framing at auditorium – Cantilevered Steel I-beams on 1200 deep steel plate girder and brick masonry walls.

- 2nd floor framing – One-way concrete and clay tile joist system supported on steel plate girders on brick masonry walls. Concrete system includes 50mm thick concrete topping with 125mm deep clay tile between 115mm wide concrete joists.

- Partition walls – HCT

- Lateral deformation resisting system (LDRS) – Brick masonry piers and shearwalls.

Existing structure Block 2 – 1955

The two storey block consists of a classroom wings and a gymnasium. The structural system is described as follows:

- Roof framing – 89x140 T&G decking on 280x1240 glulam beams spanning between concrete columns at high roof. One-way concrete and clay tile joist system at low classroom roof, slab thickness is 75mm reinforced with 6x6x10 welded wire mesh.

- 2nd floor framing – 150mm concrete slab supported on 1600mm deep steel girders spanning to concrete columns.
- Load bearing walls – 200mm and 250mm thick reinforced concrete walls.
- Partition walls – double plaster walls.
- Lateral deformation resisting system (LDRS) – Concrete shearwalls.

3.4.3 Mechanical (for more information refer to Mechanical Report in the Appendix)

Existing Mechanical Systems

1. HVAC Systems
    1. Heat Source
        a. The heating medium for the entire school is steam. The steam is generated by two 5,000 MBH output, gas-fired Cleaver Brooks fire-tube boilers. The boilers were installed in 1993, replacing the original boilers.
        b. Steam is distributed to air-handling unit heating coils and radiators by means of steel piping. The condensate is returned to the boilers through a steel piping system to condensate pumps, a feed-water tank and feed-water pumps.

    2. Original Building

        a. Heating and ventilation for the original building is provided by three multi-zone air-handling units located in the Basement. The units are original (1911). The units consist of mixing section, supply fan, a steam heating coil, and zone dampers to mix heated and unheated air steams to suit the temperature requirements in each classroom. Each classroom has a separate duct leading from the air-handling unit to the classroom.

        b. There are matching units for the classrooms on the West and East sides of the building, and a third unit for the Gym and Auditorium. Ductwork is distributed in the Basement to eight duct shafts serving the classrooms above.

        c. There are two return-air fans in the attic which pull air from the classroom duct shafts and push the air back to the Basement air handling systems through two plenum-type duct shafts. Relief- air is exhausted through two roof vents in the Attic.

        d. There are cast-iron steam radiators and perimeter wall-fin heating cabinets throughout the Office area and in miscellaneous rooms such as hallways, stairwells, and storage rooms.

        e. There are several localized exhaust systems for Washrooms, Science Labs, etc.

        f. The control systems are pneumatic, mostly dating back to 1979.

3. 1955 Addition

    a. The 1955 Addition includes a full-sized Gymnasium, change rooms and five classrooms.

    b. Heat is provided from the central steam plant. Steam is piped to steam heating coils in air- handling units, unit ventilators, and wall fin cabinets.

    c. Two air-handling units are located in a penthouse fan room. One unit serves the Gymnasium, and the other serves the Art, Band, Dance and Drama rooms.

    d. There are individual exhaust fans for the Change rooms and miscellaneous washrooms.

    e. The control systems are pneumatic, dating back to 1955.

4. Shop Addition (2011)

    a. Heating for the Shop Addition is provided from the central steam plant by means of a steam to hot-water converter.

    b. Ventilation for the shops is provided by a 100% outside air, variable air volume (VAV) air handling system. There is a glycol heat recovery system which extracts heat from the exhaust air to preheat the outside air.

    c. Zone temperature control is provided by VAV boxes with hot-water coils. The VAV boxes are provided to maintain proper air balance when the shop equipment exhaust systems are activated.

    d. The control systems are direct digital control (DDC).

2. Plumbing Systems

    1. There is a 4” galvanized steel water service into the Boiler Room, where there is a PRV station to regulate the water pressure. After the main branch to the DHW tank in the Boiler Room, the piping is mostly copper. It appears that much of the plumbing systems for the main washrooms and other fixtures were replaced in 1979. Drainage and vent piping is generally cast-iron.

    2. Domestic hot water (DHW) is generated by a steam immersion heater in a 500 gal, cement-lined storage tank. The tank is about 40 years old. As there is not a dedicated DHW boiler, the main steam boilers must operate in order to provide DHW in the shoulder season.

    3. The plumbing fixtures in the original building are a mixture of vintages. Many are old and in need of updating.

    4. Shop Addition:
        a. Domestic hot water is provided by an electric DHW tank.

3. Fire Protection

    1. 1914 Original building: Not sprinklered.
    2. 1955 Addition: Not sprinklered.
    3. 2011 Shop Addition: Fully sprinklered.
    4. There is a standpipe system serving fire hose cabinets throughout the original school.
    5. Fire extinguishers are located throughout the school.

3.4.4 Electrical (for more information refer to Electrical Report in the Appendix)

1. VHS - Existing Power Service Assessment

    1. The building electrical power service consists of a 600 amp, 347/600 volt, 3 phase BC Hydro service fed from a pad-mount transformer via overhead power lines on Fernwood Road. This service was installed in 2010 and is located in Block #3. It appears that the original power service for Block #1 was removed and replaced with a larger service when Block #2 was constructed. Currently the 2010 BC Hydro service feeds the 1955 service via a 300kVA transformer located in the main electrical room of Block #1.

    2. Block #1 and #2 main electrical distribution board and majority of the sub-panels appear to be original to the 1955 installation which puts the age of equipment and feeders at 60 years. Given the age of this electrical equipment, replacement parts are not available and BOMA states that the expected lifespan of this equipment is 30 years. Since

the distribution and feeder cables in these blocks are past the rated life expectancy, it is recommended these items to be replaced.

2. VHS - Existing Data and Communication Systems Assessment

    1. The existing telephone system is a Meridian system installed in 1998, this product is no longer manufactured or supported. Replacement parts for this system are hard to find and will not be available in the future. It is recommended that the existing telephone head-end, handsets and wiring to be replaced.

    2. The data system consists of floor and wall mounted racks in multiple locations throughout the building. The data equipment is serviceable however, since most of this equipment and wiring will be impacted by the seismic work, it is recommended that the data system be replaced as part of this project. The wiring consists of CAT5 and CAT5E cabling and the installation of these cables does not meet the American Nations Standards Institute (ANSI) standard for pathway wiring methods. The data system including racks, switches and cabling and as it will be impacted, its replacement will ensure a working system is compliant with current technologies.

    3. Similar to the data system, the PA system will be impacted by the seismic work. The PA system is an unknown manufacture and vintage. The system consists of an amplifier and switches. The field wiring and speakers in the field are anticipated to be beyond their lifespan as recommended by BOMA. It is recommended the existing PA system head-end, speakers, call buttons and wiring be replaced.

    4. The clock system consists of individual standalone battery operated clocks. No synchronized clock system is present in Block #1 or #2. It is recommended that a new synchronized clock system is installed throughout all classrooms, corridors and common spaces.

3. VHS - Existing Lighting Assessment

    1. The interior lighting throughout the school consists predominantly of fluorescent fixtures with the exception of incandescent in the auditorium. Based on visual inspection, the majority of light fixtures appear to have been upgraded with new ballast and lamps, some fixtures have missing lenses and non- functioning lamps. The general lighting levels as recommended per IES standards for schools is average to poor. It is recommended that the light fixtures be replaced within 10 years. Since most of the lighting fixtures will be impacted by the seismic work, it is recommended that the lighting system be replaced as part of this project.

    2. The exterior lighting around the building is predominantly high density discharge (HID) type fixtures. The lighting levels as per IES around the perimeter is average but the light fixtures at the exits provide poor light levels. It is recommended to provide new lighting at all exits and replace HID light fixtures within 10 years.

It is recommended that the exterior HID lighting system be replaced as part of this project.

3. The lighting controls for the exterior are comprised of time-clocks, stand-alone photocells and on/off switches. The lighting controls for the interior consist of on/off switches, no automatic controls are present. It is recommended that the exterior lighting to be provided with a new control system and the interior lighting for all classrooms and smaller rooms to be provided with motion sensors.

6. VHS - Existing Life Safety Assessment

1. The fire alarm system consists of an Edwards QuickStart control panel, remote annunciator, bells, fire detectors and manual pull stations. The Edwards control panel is still supported by the manufacturer and replacement parts are available. This control panel is located in a janitor closet with a mop sink which is an unsuitable location for the panel. The initiating devices, audible devices and wiring vintage is unknown but are anticipated to exceed the BOMA life expectancy of 25 years for fire protection systems and pose a safety risk on failure. The locations of pull stations, smoke detectors and bells does not provide a complete system as required by BCBC. It is recommended to replace all initiating devices, audible devices and wiring, since the control panel is located in an unsuitable location this control panel is to be replaced.

2. Emergency lighting throughout the school does not provide adequate lighting levels (due to incandescent type fixtures) in the event of a power failure as required by BCBC. It is recommended to provide additional emergency lighting fixtures and replace existing fixtures.

3. Exit signs throughout the school appear to be operational but are anticipated to be beyond their life span as recommended by BOMA. It is recommended to provide all new exit signs.

4. Seismic Options

4.1 Option 1 - Seismic Upgrade

Victoria High School is a significant building that has served the School District and the City of Victoria well for the past 103 years. With its exterior and interior historical significance, Vic High requires that the utmost care be taken in any remedial / renovation work undertaken. Remedial work is required to rectify a number of issues that exist with the physical condition of the building, building code issues, seismic issues, mechanical issues, electrical issues as well as issues related to educational suitability.

While the major renovation work is centered on seismic upgrade, because of the extent of this work, the renovations required encompass more than simple reinforcement and provide an opportunity to resolve other issues within the scope of the seismic upgrade. The following description outlines the scope of the work involved.

4.1.1 Seismic Upgrade Scope of Work: (refer to Seismic Project Identification Report for detail)

1. Construct new deep concrete footings and concrete enclosed exit stairs from level 1 to 4 at the exterior NW and NE corners of the 1914 building. These will form major new shear elements in the N/S direction.
2. Within the 1914 building, excavate and construct new deep footings and concrete E/W shear walls bonded to existing masonry bearing walls from Level 0 to u/s of attic at the SW and SE.
3. Within the 1914 building, excavate and construct new deep footings and concrete N/S shear walls bonded to existing masonry bearing walls from Level 0 to u/s of attic at the NW and NE of the original gymnasium, through the stage in the auditorium to the roof.
4. Within the roof of the 1914 auditorium, construct a new steel horizontal truss to underside of roof and connect to new N/S concrete shear walls.
5. Within the roof of the 1914 auditorium, construct a new plywood diaphragm on the top of the bottom cord of the roof trusses and connect to new N/S concrete shear walls.
6. Within each of the 2 light wells between the auditorium and the adjacent wings of the 1914 building, excavate and construct 2 new deep footings and concrete E/W buttress shear walls from Level 0 to u/s of attic.
7. Within the 1914 building, construct new concrete N/S shear walls bonded to existing masonry bearing walls from Level 4 to u/s of attic at the W and E walls of the building directly above of the auditorium balcony.
8. Upgrade all connections between suspended floors and existing bearing walls and new shear walls.
9. Construct drag struts to transfer horizontal loads from floors and roof to existing bearing walls and new shear walls.
10. Remove (except as noted below) existing hollow clay tile partitions and replace with 152mm steel studs and 16mm GWB.
11. Reinforce hollow clay tile partitions to preserve historically significant finishes and decorative work.
12. Demolish clay tile duct shafts and infill holes in the floors

13. At the centre of the interface between the 1914 building the 1955 addition, excavate and construct new deep concrete E/W shear wall dowelled to existing footing and bonded to existing bearing walls from Level 0 to roof.
14. Structurally interconnect the 1914 and 1955 buildings with drag struts to act as a unified structure.
15. Sheathe the wood plank roof deck of the 1955 building with plywood.
16. Reinforce roof deck to wall connections in the 1955 building.

4.1.2 Architectural work required due to scope of seismic upgrade of structure:

1. The majority of asbestos containing materials will be disturbed by the Seismic Upgrade procedures, therefore necessitating their removal. Remove all material with asbestos content in areas affected by the renovations.
2. Prior to demolition of existing clay tile partitions, remove and retain historically significant elements for reuse as required.
3. Finish new concrete shear walls with steel stud and 16mm GWB. This will allow for replacement of electrical distribution lost with the wall demolition and provide new interior finish.
4. Adjust door openings and swing to suit code and replace doors and hardware lost to demolition.
5. Restore and reinstate historically significant elements as required.
6. Replace demolished hollow clay tile partitions with acoustically insulated 152mm steel stud partitions with painted 16mm GWB finish. Where practical, adjust location of new partitions to suit optimization of spaces.
7. Repair / replace floor and ceiling finishes in all rooms where demolition of clay tile partitions and clay tile duct shafts take place. This involves replacement of the majority of the flooring and ceilings in the 1914 building due to the scope and impact of the seismic work.
8. Replace ceiling finishes as required to cover seismic upgrade work required to the underside of slabs in the 1955 portion of the building.
9. Paint all interior walls in spaces affected by seismic work.
10. Remove existing roof and insulation from the 1955 building and install plywood sheathing as required by seismic upgrade. Install new roofing membrane over maximum amount of insulation allowed by existing roof drain and parapet configurations. New roof to be Tremco Therm100 modified bitumen system.
11. Remove and reinstall all lockers in affected areas.
12. Remove and reinstall or replace, depending upon condition, all millwork in affected areas.

4.1.3 Mechanical and Electrical work required due to scope of seismic upgrade of structure (refer to Mechanical, Electrical and costing Reports for detail):

1. Provide new electrical distribution and plumbing / mechanical infrastructure lost in the demolition of the clay tile partitions.
2. Provide new lighting and mechanical fixtures and fittings as required with all ceiling replacements.
3. The scope of the seismic work requires the existing steam heating system to be replaced with high-efficiency, condensing, gas-fired boilers and steam heating coils with low- temperature hot-water coils.

4.1.4 Building Code Renovation Requirements triggered by Seismic Upgrade and as required by local authority:

1. Install a complete fire suppression sprinkler system to all floors plus attic of the 1914 and 1956 buildings. The 2011 addition is already equipped with its own fire-suppression sprinkler system.
2. Provide fire protection (rated GWB cladding) to u/s of Auditorium floor and Auditorium balcony supporting structure to achieve a one-hour fire resistance rating.
3. Provide fire protection to the 1914 and 1955 Gym balcony supporting structures to achieve a one-hour fire resistance rating.
4. Possible modification or replacement all existing stair guardrails and handrails in existing exit stairs is dependent upon the Local Authorities. These costs will be carried as a risk.
5. Possible replacement of Gymnasium balcony guardrails to be code compliant is dependent upon the Local Authorities. These costs will be carried as a risk.
6. Fire-stop all inter-floor mechanical penetrations.
7. Install automatic smoke vents over stage.
8. Provide new millwork with seismic restraints for hazardous materials storage.
9. Most of the washrooms are to be reconfigured due to replacement of the adjacent clay tile plumbing chase walls. Each multiple stall washroom will be made accessible and one or more accessible non-gendered toilet rooms will be incorporated on Level 1 through 4 with no cost premium.
10. Possible renovation of the abandoned and derelict stair connection between the old Gym and the First Floor, with new treads, stair nosing and guards to conform to current code requirements is dependent upon the Local Authorities. These costs will be carried as a risk.
11. See Mechanical Report regarding fire-sprinklers etc.
12. See Electrical Report regarding fire alarm, smoke detectors, exit signage etc.

4.1.5 Exterior Terracotta Stabilization:

There is a potential for injury from falling terracotta tiles during a seismic event so the stabilization of the terracotta tiles has been included in the scope of the seismic upgrade.

Remedial work started with the 1993 Seismic Upgrading and Terra Cotta Stabilization should be competed. The original contract for this work was modified and the scope reduced during the construction period. The need for the remedial work recommended by the initial study and abandoned from the contract has increased over the past twenty-four years.

1. Damaged architectural terra cotta has compromised the building envelope and unless repaired will continue to deteriorate. The extent of repairs required range from replication and replacement of severely deteriorated pieces to sealing surface cracking in the glazed finish.

   The most recent report ‘Condition Assessment of Terracotta Cladding’, dated January 2017 by Goal Engineering reinforces the need to address the deterioration of the terracotta and makes several recommendations.
   a. Removal and replacement of identified terracotta units rather than spot repairs of units suffering from cracking, spalling or failing repair materials
   b. Raking and repointing eroded joints in terracotta cladding

c. Removal of embedded hooks to prevent additional distress to the terracotta elements
d. Removal of vegetation from the topsides of exposed units
e. Sealing all terracotta with a penetrating sealer.

4.1.6 Renovations to S.J. Willis School for decanting of students during seismic project

A significant challenge to undertake the seismic upgrade of Victoria High School, and other facilities, is maintaining continuity student education during the seismic project.

While it may be possible to phase the project and decant some classes into portable classrooms moved onto the site, this would prolong the project over multiple years and be disruptive to the classes remaining in the building during construction.

The School District's approach is to utilize an existing school building of sufficient capacity to decant the school population for the duration of the seismic project. This permits the demolition, seismic retrofit and refurbishment of Victoria High School to proceed in the most direct, cost-effective, timely manner. S.J. Willis School appears to be an excellent choice of facility to accommodate VHS as well as other schools waiting for mitigation work.

S.J. Willis School was originally constructed in 1950 with several additions and multiple renovations in following years. It served as a junior and senior high school until Spectrum High School was constructed. S.J. Willis was sized to suit a capacity of approximately 800 high school students at the time.

When Spectrum School was opened, S.J. Willis School became an Alternate Education school for students who were facing challenges within the regular public school system. It currently also serves as a Continuing Education Centre and a resource centre for Home Learners.

1. Existing Building and Systems

1.1. Architectural

(a) Building Information

Gross Building Area:

• Basement	1,520 sq.m.
• First Floor	6,098 sq.m.
• Second Floor	2,315 sq.m.
• Mechanical penthouse	74 sq.m.
• Total Gross Area	10,007 sq.m.

The original building was constructed in 1950 of cast in place concrete walls, concrete slab on grade and concrete suspended floors, typical. The roofs with

relatively short spans are also suspended concrete slabs while the spaces with larger spans are constructed with wood framing over wood or steel trusses. Interior partitions are typically hollow clay tile with plaster finish. In 1958, additional classrooms were constructed using similar materials along the north side of the west wing.

A single storey infill addition was constructed in 1969 along the south side of the NW wing. This is comprised of CMU walls with concrete slab on grade floors and steel roof deck on open web steel joists. In 1979, a covered, enclosed exterior compound was added adjacent to the end of the 1969 addition.

Various interior renovations have been completed in recent years to adapt to the changes in programs being supported in this facility.

(b) Building Code Conformance

Occupancy Classification:
A-2 Assembly

Occupant Load (Buildings Combined):

- Based on area calculations: 1,608 (not including gymnasium & multipurpose)
- Based on intended school enrollment: 900

B.C.Building Code category:
Under the current BC Building Code standards, SJ Willis at three storeys, and 6,098 sq.m., falls under Article 3.2.2.24 Group A, Division 2, Up to 6 Storeys, Any Area, Sprinklered.

This article requires that:

- The building must be sprinklered.
- The building must not be more than 6 storeys in height.
- The building must be of noncombustible construction.
- Floor assemblies shall be fire separations with a fire resistance rating not less than 1 hour.
- Mezzanines shall have a fire resistance rating not less than 1 hour.
- Loadbearing walls, columns and arches shall have a fire resistance rating not less than that required for the supported assembly.
- Travel distance not more than 45m to nearest exit

Assessment:
Construction:
Non-combustible – walls and floors
Storeys:
Three storeys

Building area:
6,098 sq.m.
Streets faced:
three
Fire Sprinklered:
not fire-sprinklered (non-conforming)
Allowable building area:
Unlimited
Floor to floor fire rating:
1 hour
Structure fire rating:
1 hour
Roof rating:
N/A
Allowable travel distance:
45m if fire-sprinklered (Building is not fire-sprinklered so maximum travel distance is 30m so building is non-conforming).

The significant areas of non-compliance with the current building code are the lack of fire-sprinklers and the maximum travel distance exceeds 30m. Other matters of non-compliance are the lack of fire ratings for the doors and hardware into exit stairs, outdated fire-alarm systems etc.

The authority having jurisdiction has been consulted and has confirmed that an installation of a fire-sprinkler system will not be required as a result of the renovations to prepare SJ Willis to serve as a temporary facility for VHS and other secondary schools during major seismic projects. However, this is predicated on measures being taken during the renovations to address the excessive travel distance and the fire rating of doors into exit stairs, outdated fire alarm systems etc.

(c) Physical condition

Because the facility has remained in continual use and various spaces have been renovated as noted above, the building has been maintained and generally is in fair to good condition. There are a few exceptions such as the former technical Education shops which have not been in use except as storage. These spaces are in poor to fair condition.

(d) Hazardous Materials

A variety of hazardous materials have been surveyed and identified in various parts of the facility. These range from asbestos containing flooring, drywall and finishing compounds, spray ceiling texture, pipe insulation, and vermiculite insulation in CMUs.

Where impacted by the currently proposed renovations, these materials will either be removed in whole or in part depending upon the scope of the renovations. Areas not impacted by the renovations will remain under current School District 61 protocols.

2. Proposed Renovations

2.1. Architectural

1. Level 0 (First storey):
    1. Roughly 60% of the north side of the east wing will be stripped out and rebuilt to create 3 computer labs.
    2. The currently open south side of the east wing will be enclosed to create larger spaces for Special Education.
    3. The easterly classroom will be renovated to create a cosmetology lab complete with hair washing sinks etc.
    4. Storage spaces at east to be converted to offices for Special Education.

2. Level 1 (Second storey)

    1. East wing:
        a. The existing auditorium and stage will be used to create space for Media Tech/Library at the east and a Multi-Purpose space at the west. A storage area connecting to the MP space will be renovated to create a food servery.
        b. General Office to be renovated to suit current requirements including a teacher workroom
        c. Easterly classroom renovated to become Staff Room
    2. West wing:
        a. Complete renovation of existing Foods Room
        b. Most of the existing classrooms require only the substitution of whiteboards/tack boards in place of the existing green chalkboards.
    3. Centre wing:
        a. Install new shallower accessible ramp in place of current on-compliant ramp.
        b. Break through existing storage room and create a short corridor at the top of the ramp to provide a new exit route to reduce the travel distance to exits in this area.
        c. Room 1074: Strip out existing AC flooring, millwork and steel stud walls to expand room to original size. Renovate room to suit Textiles lab.
        d. Room 1066 & 1070: Strip out existing millwork and steel stud walls to expand rooms to original size. Renovate rooms to suit Art labs.
        e. Room 1067: strip out bathroom fixtures and internal walls and flooring. Renovate to accommodate a photographic Dark Room.

    4. Northwest wing:
        a. Room 164: Install new rubber flooring over existing flooring. Renovate to suit Fitness Studio.
        b. Room 1063: Install new flooring over existing. Remove overhead steel door and replace with a single 36’ wide swing door and aluminum framed glazing for remainder of opening. Renovate room to suit use as a Games Room.
        c. Room 1058: Add fixed and folding partition walls to create conference rooms and storage room.
        d. Room 1052: renovate to suit office/storage room.

e. Room 1051: demolish steel small rooms at west end. Refinish wood parquet flooring. Install mirrors and ballet barres to walls to suit use as Dance Studio.
f. Room 1048: Erect wall along south to extend corridor to west end of wing for exiting. Remove existing millwork. Refinish wood flooring, install new millwork and lighting to suit Music Room.
g. Rooms 1046 & 1047: demolish exiting walls and build new walls, ceilings and lighting to create 3 practice rooms and an office.
h. Room 1046: Replace flooring and lighting. Replace existing chalkboards with whiteboards and tack boards. Install new millwork and window shades.

3. Level 2 (Third storey)

1. East wing:
   a. Infill portions of wall adjacent to offices to re-establish means of egress to east exit stair.
   b. Room 2004: Erect partition wall to subdivide office

2. West wing:
   a. Room 2021: New lighting, substitute whiteboards and tack boards in place of the existing chalkboards.
   b. Room 2022: repaint existing millwork, install new whiteboards and tack boards.
   c. Room 2023: Replace flooring
   d. Room 2024: Replace flooring, substitute whiteboards/tack boards in place of the existing chalkboards. Additional ventilation is required.
   e. Room 2025: Replace flooring.
   f. Room 2026: Replace flooring, substitute whiteboards/tack boards in place of the existing chalkboards.
   g. Room 2027: Substitute whiteboards/tack boards in place of the existing chalkboards.
   h. Room 2028: Repaint existing millwork, add new millwork, substitute whiteboards/tack boards in place of the existing chalkboards.
   i. Room 2032: Repaint existing millwork, substitute whiteboards/tack boards in place of the existing chalkboards.
   j. Room 2032: Install new lighting, substitute whiteboards/tack boards in place of the existing chalkboards.
   k. Room 2039: Repaint existing millwork, substitute whiteboards/tack boards in place of the existing chalkboards.

3. Centre wing: Room 2015:
   a. Install restraining ledge to millwork shelves.
   b. Room 2016 & 2017: Repaint existing millwork, substitute whiteboards/tack boards in place of the existing chalkboards, install new millwork and exchange existing faucets for goose-neck type.

2.2. Structural

1. There is no structural scope associated with this work.

2.3. Mechanical (Refer to Mechanical Report for more information)

1. The school is a fully functioning facility, and the existing mechanical systems are operational. The mechanical systems will be modified to suit the revised usage requirements.
2. The heat source for the school is steam, provided by three oil fired steam boilers.
3. Ventilation is provided by centralized air handling units.
4. Control systems are pneumatic.
5. The mechanical systems will be fully re-balanced and re-commissioned.
6. The school does not have a fire protection sprinkler system.

2.4. Electrical (Refer to Electrical Report for more information)

1. Level 0 consists of creating new space for computer labs, cosmetology and common area. The electrical requirements for this area are as follows:
   a. Replace two 100 amp power distribution panels with new 60 circuit panels to feed all branch circuits on this level
   b. Provide new data closet for the floor area
   c. Provide new exit signs and emergency lighting throughout the floor area.
   d. Provide new intrusion system devices for all ground level rooms with windows and all exteriors doors throughout the floor area
   e. New space development as noted above, remove all electrical devices and provide new electrical devices as follows:
      - Lighting
      - Electrical outlets
      - Data outlets
      - AV outlets in each instructional room
      - PA speakers
      - Telephone handset in each instructional room
      - Fire alarm devices

2. Level 1 consists of creating new space for library, multipurpose, art, drama, music, fitness, office, and games area. The electrical requirements for this area are as follows:
   a. Replace two 100 amp power distribution panels with new 60 circuit panels to feed all branch circuits in the drama, music and dance area
   b. Provide new exit signs and emergency lighting throughout the floor area

c. Provide new intrusion system devices for all ground level rooms with windows and all exteriors doors throughout the floor area
d. New space development as noted above, remove all electrical devices and provide new electrical devices as follows:
    - Lighting
    - Electrical outlets
    - Data outlets
    - AV outlets in each instructional room
    - PA speakers
    - Telephone handset in each instructional room
    - Fire alarm devices
e. Retrofit all remaining existing lighting fixtures with new ballast sockets and lamps

3. Level 2 consists of creating new Counselling space. The electrical requirements for this level are as follows:
    a. Provide new exit signs and emergency lighting throughout the floor area
    b. Provide a fire alarm smoke detector for each stairwell, connect device to separate fire alarm zone
    c. New space development as noted above, remove all electrical devices and provide new electrical devices as follows:
        - Lighting
        - Electrical outlets
        - Data outlets
        - PA speakers
        - Fire alarm devices
    d. Retrofit all remaining existing lighting fixtures with new ballast sockets and lamps

4.1.7 Renovations to Burnside Elementary School for District educational facility

Burnside Elementary School was closed in 2003 due to declining enrollments, and since that time has been used for a number of purposes, and most recently leased by the Burnside Gorge Community Centre. It is currently unoccupied.

To enable use of the SJ Willis Education Centre as swing space for the Victoria High School Seismic Upgrade, and possibly other Middle School and Secondary School seismic upgrades, the SD has undertaken to re-open the Burnside School as a District educational facility. That work included a full seismic upgrade, reconfiguration and renovation of the school to bring it up to an acceptable standard to house relocated primary users of SJ Willis in the new Burnside Education Centre. Users are the Alternate Education and Continuing Education Programs and it is anticipated that those Programs will remain in the Burnside Education Centre for the foreseeable future. The Home Learners Link was relocated to surplus space at Lambrick Park Secondary School, and other Users, such as the Cooper Smith Music Library, were relocated to available space in other School District schools.

Renovations to Burnside Elementary are underway and are to be completed no later than December 2018, at which time the Programs in SJ Willis will be moved to the Burnside Education Centre to allow that facility to be renovated to accept students from Vic High during their Seismic Upgrade.

The Burnside Schools lands are some of those held in trust by the City for the Victoria School District, and some of the Land Title was suspect. As the existing playfield was in poor condition and not required as part of the new School Program, we negotiated a land sale/exchange of the playfield area with the COV to clarify that part of the property (for the School site and parking) will remain on Title to COV as Education Property, and we confirmed their clear title to the balance of the property.

The COV then negotiated with Pacifica Housing to build soon an 88 unit affordable housing and daycare complex that will be operated by Pacifica Housing, and which will include about 400 square metres of ground floor building space that will form part of a JUA between Pacifica Housing and the School District, and which will be used as additional classroom space by the Burnside Education Centre. That land sale/exchange included a $1,000,000 payment to SD61 upon completion of all Agreements, and that amount is including in the Project Funding amount following.

Unfortunately, due to rapidly climbing construction costs, and a number of unexpected site conditions typical of our older schools, the SD has exhausted the available Project Funding, and was required to cut back on a number of desirable upgrades, such as replacement of the existing wood windows, exterior masonry repointing and repairs, etc. That funding shortfall is what has initiated the SD's request for the Ministry to contribute $2,000,000 towards the Burnside Project, as part of their allowance for Temporary Accommodation for the Vic High Seismic Upgrade project.

BURNSIDE PROJECT FUNDING

Restricted Capital	$4,100,000
From Vic High Project Capital Project Agreement	$ TBD
From Proceeds of land sale to City of Victoria	$1,000,000
AFG (for roofing)	$ 400,000
TOTAL	$ TBD

BURNSIDE CONSTRUCTION AND RENOVATIONS BUDGET

Selective Demolition, Hazmat Removal, Portable Removals / Demolition, Site Preparation and Preliminary Seismic Upgrading Fees	$ 800,000
Completion of Seismic Upgrading	$ 300,000
Re-Roofing	$ 400,000
Renovations and Reconfiguration	$4,330,000
Fees	$ 570,000
Equipment / Fittings / Fixtures	$ 50,000
Technology	$ 50,000
Unexpected Escalation and site costs	up to $ 400,000
Reduced scope to preserve budget	up to $ 300,000
TOTAL	$6,500,000 To $7,200,000

4.1.8 Cost Estimate

Cost estimate for the scope of Option 1 Seismic Upgrade including the NLC as a Risk Item.

Total CapitalProject Budget	$27,328,903
Identified Supplemental Items	$29,615,448
Identified Risk Items	$15,331,047
Maximum Capital Project Funding Total	**$72,275,398**

4.2 Option 2 - Seismic Upgrade with Enhancements

This option includes the full scope of Option 1 plus the following enhancements.

4.2.1 Stair Vestibule Upgrades

An important feature of the original building are the internal stairs from Levels 0 through 4 flanking the central block of the original gymnasium and auditorium. These stairs were intended to provide a strong connection between floors with the corridor at each floor level acting as a landing of the stair. Part of the draw of these stairs are the beautiful ascending stained glass windows into the east and west courtyards beyond.

In the nineteen-seventies, changes in the building code required the construction of fire- rated partition walls to separate the interior stairs on each side of the auditorium from the remainder of the floor area on each floor level. This resulted in a physical and visual disconnect between the east-west corridor and these stairs so that it is no longer possible to enjoy the stained glass windows except when directly within the new stair enclosures.

The scope of work in the seismic upgrade provides opportunities to re-integrate these stairs into each floor level more closely in line with the original design. The current Building Code still requires fire separations at these stairs but it is proposed to capture the full width of the corridor adjacent to each these stairs as part of the stairs to expose the unique heritage stained glass features of these stairs to all persons passing through these corridors on each floor level as during the first 5 decades of the building.

1. At each floor level, demolish existing fire-separation walls adjacent to the internal stairs in the south wing and provide 2 new fire separations across the corridors in the south wing to separate the stair landings from the remainder of the floor areas.
2. Install pairs of fire-rated doors on magnetic hold-open hardware into the new fire separations.

4.2.2 Exterior Masonry Rehabilitation:

Remedial work started with the 1993 Seismic Upgrading and Terra Cotta Stabilization should be competed. The original contract for this work was modified and the scope reduced during the construction period. The need for the remedial work recommended by the initial study has increased over the past twenty-four years.

Stone and masonry work requires repointing in many areas to combat mortar loss and degradation. A 1989 assessment recommended total mortar replacement for the granite stonework. This work was not carried out so the recommendation is that raking and repointing of the existing stonework and clay masonry followed with application of a clear masonry sealer be undertaken in conjunction with the exterior terracotta stabilization included under Option 1.

4.2.3 Window Replacement and Rehabilitation (under SEP program):

Existing wood windows are single pane glazing in poor to fair condition. Few are able to be opened and those that do open are drafty and unsafe to operate. The heat gain is very high through the south and west facing windows.

1. Replace the 1914 wood framed clear glazed windows with double glazed sealed heritage units set in new aluminum clad wood frames in similar configurations and character to existing. According to our mechanical consultant, energy savings would likely be in the order of 25% ($10,000 per year) of the current annual heating costs. The increased window performance would permit smaller boilers to be specified resulting in a savings of about $20,000 in capital costs for the new boiler.

2. Restoration work should be carried out on stained glass units to ensure their preservation and clear glazed storm panes should be added on the exterior to improve the thermal performance of these feature windows without affecting the appearance.

3. **Funding for this work will be applied for under the SEP program and is not included in the PDR budget request.**

4.2.4 Mechanical Enhancements:

The scope of the seismic work requires the existing steam heating system to be replaced with high-efficiency, condensing, gas-fired boilers and steam heating coils with low-temperature hot-water coils. No further enhancements are required.

4.2.5 Cost Estimate

Cost estimate for the scope of Option 2 Seismic Upgrade with Enhancements including the NLC as a Reserve Item:

Total Capital Project Budget	$27,574,754
Identified Supplemental Items	$30,926,905
Identified Risk Items	$15,386,872
Maximum Potential Project Cost	**$73,888,531**

4.3 Option 3 - Seismic Upgrade with Enhancements to 1000 Student Capacity

This option includes the full scope of Options 1 and 2 plus the following:

4.1.1 Basement Level
The new stair towers in the NW and NE corners of the 1914 building will be extended to the basement level to facilitate exiting and allow for the demolition of the infrequently used 1914 exit stair.

4.1.2 Level One
Reconfiguration of the existing Multi-Purpose Room facilitates the relocation of the Counselling / Careers Suite and new classroom. A new Multi-Purpose Room / Learning Commons will be built adjacent the Northeast corner of the 1914 building, linking the 1914, 1955 and 2011 buildings. Educational space will be captured with the demolition of the 1914 exit stair from the gymnasium.

4.1.3 Level Two
A new Library / Media Tech Room will be built over the new Multi-Purpose Room / Learning Commons and the Library re-located from the 3rd Level to make way for the required additional classroom spaces. The Staff Room will be reconfigured to facilitate an Indigenous Peoples Room.

4.1.4 Level Three
The existing Library location provides space for four of the five classrooms required by the 1000 student enrollment.

4.1.5 Level Four
Planning on this floor will be modified to accommodate Special Education and STEM program requirements to suit the 1000 student capacity.

4.1.6 Cost Estimate

Cost estimate for the scope of Option 3 Seismic Upgrade with Enhancements and expansion to 1000 students, including the NLC as a Reserve Item:

Total Capital Project Budget	$34,010,025
Identified Supplemental Items	$33,336,326
Identified Risk Items	$15,679,501
Maximum Capital Project Funding Total	**$83,025,852**

4.4 Option 4 – Partial Replacement to 1000 Student Capacity on VHS Site

In the Facility Evaluation & Feasibility Study (2005), full replacement on the site of Victoria High School to provide a new 800 ANC Secondary School (includes demolition of existing) was reviewed and cost estimate was $16,602,000 in 2005 dollars. Current enrollment demands are such that the Greater Victoria School District considers a 1000 ANC Secondary School to be required on the site.

A full replacement option was not considered viable in 2005 due to the heritage significance of the Victoria High School Building but was included for cost comparison with the other options at the time.

The heritage significance of the buildings remains and the decision to erect the Technical Education Addition as a partial replacement in 2011 further reinforces the difficulties of consideration of Full Replacement as a viable option.

However, once the estimate is considered for Options 1, 2 and 3, it is deemed appropriate to consider estimates for partial replacement for comparison.

4.4.1 Cost Estimate:

1000 Student Capacity Partial Replacement of VHS on the current site with the NLC included as a Reserve Item:

Total Capital Project Budget	$50,521,894
Identified Supplemental Items	$25,188,055
Identified Risk Items	$ 6,353,150
Maximum Capital Project Funding Total	**$82,063,099**

4.5 All Options - Neighbourhood Learning Centre (NLC) Addition

Fernwood, one of Victoria's oldest communities, is defined by its mix of Victorian-era homes, co-op housing, unique cultural and retail opportunities, and British Columbia's oldest public high school, Vic High. Originally called Springridge, Fernwood was once home to Icelandic settlers and Victoria's first water supply.

In each of the four options being considered for Vic High, a Neighbourhood Learning Centre is proposed for consideration. Discussions between the School District and the City of Victoria have indicated that there is a profound need for such a facility in the Fernwood neighbourhood. It is anticipated that, in partnership with the City of Victoria, this NLC facility will include a significant Daycare component, similar to what was recently built at the new Oak Bay High School. It has been determined that an NLC can be incorporated into the project as either a stand-alone structure on the site or integrated into the school building itself. In the case of Options 1, 2 and 3, a stand-alone structure would be the most straight forward option. For Option 4, it would be a straight forward exercise to plan the NLC into the fabric of the replacement school. The area of the NLC is based on the allowable 15% of the area of a new 800 student high school, or 1,285 square meters.

The Cost Estimate for a 1,285 square meter Neighbourhood Learning Centre is as follows:

Maximum Capital Project Funding Total	**$ 5,985,683**

The following provides economic information for each Options with the NLC excluded.

Cost estimate for the scope of **Option 1** Seismic Upgrade plus NLC:

Total Capital Project Budget	$27,328,903
Identified Supplemental Items	$29,615,448
Identified Risk Items	$15,331,047
Maximum Capital Project Funding Total	**$72,275,398**
Deduct NLC Project Budget	$ 5,985,683
Maximum Capital Project Funding w/o NLC	**$66,289,715**

Cost estimate for the scope of **Option 2** Seismic Upgrade with Enhancements plus NLC:

Total Capital Project Budget	$27,574,754
Identified Supplemental Items	$30,926,905
Identified Risk Items	$15,386,872
Maximum Capital Project Funding Total	**$73,888,531**
Deduct NLC Project Budget	$ 5,985,683
Maximum Capital Project Funding w/o NLC	**$67,902,848**

Cost estimate for the scope of **Option 3** Seismic Upgrade with Enhancements and expansion to 1000 students plus NLC:

Total Capital Project Budget	$34,010,025
Identified Supplemental Items	$33,336,326
Identified Risk Items	$15,679,501
Maximum Capital Project Funding Total	**$83,025,852**
Deduct NLC Project Budget	$ 5,985,683
Maximum Capital Project Funding w/o NLC	**$77,040,169**

Option 4 - Full 1000 Student Capacity Replacement of VHS on the current site plus NLC:

Total Capital Project Budget	$50,521,894
Identified Supplemental Items	$25,188,055
Identified Risk Items	$ 6,353,150
Maximum Capital Project Funding Total	**$82,063,099**
Deduct NLC Project Budget	$ 5,985,683
Maximum Capital Project Funding w/o NLC	**$76,077,416**

5. Comparison of Options

5.1 Schedules B

Refer to Schedules B for the identified options on following pages.

Option 1:

- Design Aid Sheet
- Schedule B

DESIGN AID SHEET

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 1

School Name: **VICTORIA HIGH SCHOOL (Options 1 & 2)**
District: **61 GREATER VICTORIA**

Facility Code: 61018

Last Updated: 19-Oct-18
Printed Date: 19-Oct-18

School Capacity: Nominal - 800 (As Above)
Operating - As Above

Total Elective Modules: 15
Extend Day: NO

Agreed Nominal / Operating Capacity:

Ministry of Education | Date

This sheet is for use with the procedures in the Ministry o f Education - Area Standards

PART 1 - ACADEMIC / VOCATIONAL

Space Function		1A - EXISTING Description	Area	Mods	1B - MODULES Core	Deficit	Surplus	1C - NEW CORE Description	Area	Mods	1D - NEW ELECTIVE Description	Area	Mods
Business Education		Computers (3)	320.00	3.18	1.00		2.18						
Fine Arts		Dance	124.00	0.94	1.00		4.62						
		Music	122.00	0.92									
		Drama	672.00	0.95									
		Art (2)	271.00	1.81									
		Auditorium	0.00	1.00									
Home Economics		Clothing	125.00	1.04	1.00		1.02						
		Foods	141.00	0.98									
Industrial Education		Cosmetology	124.00	1.07	1.00		5.07						
		Construction/wood	277.00	1.00									
		Automotive	238.00	1.00									
		Autobody	226.00	1.00									
		Technology	154.00	1.00									
		International Classroom	81.00	1.00									
Science		Science (5)	725.00	5.04	3.00		2.04						
General Instruction		Rooms 75-95 = 2	168.00	4.88	10.00		3.98	Area = No. of modules x 80 m2			Area = No. of modules x 80 m2		
		Other rooms = 11	767.00	9.10									
Sub-totals		Ai	4534.00		17.00	0.00	17.91	Bi	Ci	0.00	Di	0.00	0.00 Dii

*Note - May not be used except for spaces agreed in writing by the Ministy

Surplus - Deficit= 17.91

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 2

(See Sheet #1 for base information)

School Name: VICTORIA HIGH SCHOOL (Options 1 & 2)

PART 2 - SERVICE / ACTIVITY

Space Function		E- Existing	F - Allowable	G - Deficit	H - New
Admin. / Health	R	347.0	240.0	-107.0	
Counselling		101.0	70.0	-31.0	
Gen. Storage	R	389.0	110.0	-279.0	
Gym Activity		1695.0	900.0	-795.0	
Gym Ancillary		480.0	160.0	-320.0	
Media/Tech. Centre		435.0	380.0	-55.0	
Multi-Purpose		272.0	320.0	48.0	
Special Education	R	247.0	280.0	33.0	
Mechanical		616.0	195.0	-421.0	
Design Space	R	5950.0	1830.0	-4120.0	610.0
*Other				0.0	
				0.0	
Sub-Total		Ei 10532.0	Fi 4485.0	Gi -6047.0	Hi 610.0

PART 4 - TOTAL AREAS

	J - Existing		K - New	
Existing Acad. / Voc.	Ai	4534.0		
Core A/V Additions			Ci	0.0
Elective A/V Additions			Di	0.0
Service Activity	Ei	10532.0	Hi	610.0
Sub-Total		15066.0		610.0
			Ni	15066.0
				16676.0

Total Gross Allowable Area 8565 (from MOE Area Standards)

Enrolment: As of: Grade Structure:

Kgn:	Gr. 1-7:	Gr. 8-12:	Type-1:	Type-2:	Port. CR's:

*Other

Site Allowance:	(ha)
Allow:	4.5
Actual:	5.3
Diff.	0.8

Comments: Extended Day Allowance of 0 m2 is included in design space.

Note: The additional module is attributed to the International Classroom and was paid for by the School District in 2011. It is not Considered to be one of the MOE required module.

PDR SCHEDULE B - CAPITAL PROJECT BUDGET FOR SEISMIC STRUCTURAL UPGRADE

Victoria High School: Option 1 - Seismic Upgrade March 5, 2019

A. K-12 BUDGET MODEL COMPONENTS

1. DESIGN CAPACITY	Kindergarten	Grade 1 - 7	Grade 8 - 12
1.1 **Existing**			800
1.2 **Change** (increase or decrease)			
1.3 **Approved**			

2. SPACE ALLOCATIONS FOR CAPITAL BUDGETING	
2.1 Existing Space Allocation (m^2)	13288.00

B. CAPITAL PROJECT BUDGET

4. CONSTRUCTION ITEMS		
4.2 (a) **Construction: Seismic Upgrade**		$16,777,200
4.2 (b) **Construction: SPIR adjustment - 25% update to SRG-3**		$2,481,314
4.2 (c) **Construction: Non-Structural Seismic Upgrade (OFC)**		$317,900
4.2 **Construction: Renovations** (associated with addition/partial replacement)	0.00%	
4.3 **Site Development Allowance**		
4.4 **Site Development Location Allowance**		$0
TOTAL CONSTRUCTION BUDGET:		**$19,576,414**

5. OWNER'S COST ITEMS (Soft Costs)			
5.1 **Design Fees**		16.00%	$3,282,226
5.2 **Post-Contract Contingency: New Space/Replacement Space**		0.00%	$0
5.3 **Post-Contract (Construction) Contingency: Seismic Upgrade**		10.00%	$1,957,641
5.4 **Municipal Permits, Fees and Charges**			$685,566
5.5 **Equipment: New Space**	0.00%	0.00%	$0
5.6 **Equipment: Replacement Space**	0.00%	0.00%	
5.7 **Project Management Fees**		1.50%	$622,306
5.8 **Wrap-up Liability Insurance** (coverage under School Protection Program)			$18,691
5.9 **Seismic Project Identification Report Fees**			$53,007
5.10 **Payable Taxes**			$263,051
5.11a			$0
5.11b **Moving Costs**			$150,000
5.11c **Transportation/Bussing Costs**			$720,000
TOTAL OWNER'S COST BUDGET:			**$7,752,489**

TOTAL CAPITAL PROJECT BUDGET:	**$27,328,903**

C. CAPITAL PROJECT BUDGET RESERVE

6. IDENTIFIED SUPPLEMENTAL ITEMS

6.1	Supplementary Building: New Space/Replacement Space					$0
6.2	**Supplementary Building:** Renovations (associated with addition/partial replacement)					$24,561,300
6.3	**Supplementary Site**					$584,200
6.4	**Economic Adjustment**	No. of Months:	29	Estimated Percentage:	0.79%	$4,469,948
6.5	Demolition					$0
6.6	Abnormal Topographical or Sub-Surface Conditions					$0
6.7	**Offsite Services**					$0
6.8	**Municipal Building Codes and Bylaws**	Parking Requirements				
6.9	**Temporary Accommodation**					$0
				TOTAL IDENTIFIED SUPPLEMENTAL ITEMS:		**$29,615,448**

IDENTIFIED RISK ITEMS

6.11(a)	1a Hazardous Abatement - VHS (+25% allowance)	$941,000
6.11(b)	1b Hazardous Abatement - SJ Willis (+50% allowance)	$508,000
6.11(c)	2 Bussing and Transportation Costs	$185,000
6.11(d)	3 Heritage Issues on Building Exterior	$500,000
6.11(e)	4 Modify or Replace Existing Stairs Railings	$466,700
6.11(f)	5 Replace Existing Gymnasium Railings	$194,000
6.11(g)	6 Renovate Derelict Stair Connection	$145,400
6.11(h)	7 Heating System Upgrade - Submitted as SET project	$1,460,300
6.11(i)	8 Approval Delays	$500,000
6.11(j)	9a Code Compliance Issues at VHS	$100,000
6.11(k)	9b Code Compliance Issues at SJ Willis	$500,000
6.11(l)	10 Additional Economic Adjustment Amount	$1,000,000
6.11(m)	11 Canadian/US Tariffs	$1,651,164
6.11(n)	12 Seismic Instrumentation	$50,000
6.11(o)	13 City of Victorial Bylaw Parking Requirements at Vic High	$647,900
6.11(p)	14 NLC	$5,985,683
6.11(q)	15 City of Victorial Bylaw Parking Requirements for NLC	$445,900
6.10	Post-Project Completion Audit Allowance	$50,000
	TOTAL IDENTIFIED RISK ITEMS:	**$15,331,047**

MAXIMUM CAPITAL PROJECT FUNDING TOTAL:	**$72,275,398**

Agency name & date:	**Version #:**

Option 2:

- Design Aid Sheet
- Schedule B

DESIGN AID SHEET

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 1

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Facility Code: 61018

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Operating - As Above

Total Elective Modules: 15
Extend Day: NO

Agreed Nominal / Operating Capacity:
Ministry of Education | Date

This sheet is for use with the procedures in the Ministry of Education - Area Standards

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Business Education		Computers (3)	320.00	3.18	1.00		2.18						
Fine Arts		Dance	124.00	0.94	1.00		4.62						
		Music	122.00	0.92									
		Drama	672.00	0.95									
		Art (2)	271.00	1.81									
		Auditorium	0.00	1.00									
Home Economics		Clothing	124.00	1.04	1.00		1.02						
		Foods	141.00	0.98									
Industrial Education		Cosmetology	124.00	1.07	1.00		5.07						
		Construction/wood	277.00	1.00									
		Automotive	238.00	1.00									
		Autobody	226.00	1.00									
		Technology	154.00	1.00									
		International Classroom	81.00	1.00									
Science		Science (5)	725.00	5.04	3.00		2.04						
General Instruction		Rooms 75-95 = 5	390.00	4.88	10.00		3.98	Area = No. of modules x 80 m2			Area = No. of modules x 80 m2		
		Other rooms = 11	728.00	9.10									
Sub-totals		Ai	4660.00		17.00	0.00	17.91	Bi	Ci	0.00	Di	0.00	0.00 Dii

*Note - May not be used except for spaces agreed in writing by the Ministy

Surplus - Deficit= 17.91

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 2

(See Sheet #1 for base information)
School Name: VICTORIA HIGH SCHOOL (Options 1 & 2)

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Space Function		E- Existing	F - Allowable	G - Deficit	H - New
Admin. / Health	R	347.0	240.0	-107.0	
Counselling		101.0	70.0	-31.0	
Gen. Storage	R	389.0	110.0	-279.0	
Gym Activity		1695.0	900.0	-795.0	
Gym Ancillary		480.0	160.0	-320.0	
Media/Tech. Centre		435.0	380.0	-55.0	
Multi-Purpose		272.0	320.0	48.0	
Special Education	R	247.0	280.0	33.0	
Mechanical		616.0	195.0	-421.0	
Design Space	R	5950.0	1830.0	-4120.0	610.0
*Other				0.0	
				0.0	
Sub-Total		Ei 10532.0	Fi 4485.0	Gi -6047.0	Hi 610.0

PART 4 - TOTAL AREAS

	J - Existing		K - New	
Existing Acad. / Voc.	Ai	4534.0		
Core A/V Additions			Ci	0.0
Elective A/V Additions			Di	0.0
Service Activity	Ei	10532.0	Hi	610.0
Sub-Total		15066.0		610.0
			Ni	15066.0
				15676.0

Total Gross Allowable Area 8565 (from MOE Area Standards)

Enrolment: As of:

Kgn:	Gr. 1-7:	Gr. 8-12:	Grade Structure: Type-1:	Type-2:	Port. CR's:

*Other

Site Allowance:

	(ha)
Allow:	4.5
Actual:	5.3
Diff.	0.8

Comments: Extended Day Allowance of 0 m2 is included in design space.

Note: The additional module is attributed to the International Classroom and was paid for by the School District in 2011. It is not Considered to be one of the MOE required modules.

PDR SCHEDULE B - CAPITAL PROJECT BUDGET FOR SEISMIC STRUCTURAL UPGRADE

Victoria High School: Option 2 - Seismic Upgrade with Enhancements March 5, 2019

A. K-12 BUDGET MODEL COMPONENTS

1. DESIGN CAPACITY	Kindergarten	Grade 1 - 7	Grade 8 - 12	
1.1 **Existing**			800	
1.2 **Change** (increase or decrease)				
1.3 **Approved**				

2. SPACE ALLOCATIONS FOR CAPITAL BUDGETING	
2.1 Existing Space Allocation (m^2)	13288.00

B. CAPITAL PROJECT BUDGET

4. CONSTRUCTION ITEMS		
4.2 (a) **Construction: Seismic Upgrade**		$16,933,800
4.2 (b) **Construction: SPIR adjustment - 25% update to SRG-3**		$2,481,314
4.2 (c) **Construction: Non-Structural Seismic Upgrade (OFC)**		$317,900
4.2 **Construction: Renovations** (associated with addition/partial replacement)	0.00%	
4.3 **Site Development Allowance**		
4.4 **Site Development Location Allowance**		$0
TOTAL CONSTRUCTION BUDGET:		**$19,733,014**

5. OWNER'S COST ITEMS (Soft Costs)			
5.1 **Design Fees**		16.00%	$3,307,282
5.2 **Post-Contract Contingency: New Space/Replacement Space**		0.00%	$0
5.3 **Post-Contract (Construction) Contingency: Seismic Upgrade**		10.00%	$1,973,301
5.4 **Municipal Permits, Fees and Charges**			$687,759
5.5 **Equipment: New Space**	0.00%	0.00%	$0
5.6 **Equipment: Replacement Space**	0.00%	0.00%	
5.7 **Project Management Fees**		1.50%	$641,386
5.8 **Wrap-up Liability Insurance** (coverage under School Protection Program)			$44,066
5.9 **Seismic Project Identification Report Fees**			$53,007
5.10 **Payable Taxes**			$264,939
5.11a			$0
5.11b **Moving Costs**			$150,000
5.11c **Transportation/Bussing Costs**			$720,000
TOTAL OWNER'S COST BUDGET:			**$7,841,740**

TOTAL CAPITAL PROJECT BUDGET:	**$27,574,754**

C. CAPITAL PROJECT BUDGET RESERVE

6. IDENTIFIED SUPPLEMENTAL ITEMS

6.1	Supplementary Building: New Space/Replacement Space					$0
6.2	**Supplementary Building:** Renovations (associated with addition/partial replacement)					$25,837,000
6.3	**Supplementary Site**					$584,200
6.4	**Economic Adjustment**	No. of Months:	29	Estimated Percentage:	0.79%	$4,505,705
6.5	Demolition					$0
6.6	Abnormal Topographical or Sub-Surface Conditions					$0
6.7	**Offsite Services**					$0
6.8	**Municipal Building Codes and Bylaws**	Parking Requirements				
6.9	**Temporary Accommodation**					$0
				TOTAL IDENTIFIED SUPPLEMENTAL ITEMS:		**$30,926,905**

IDENTIFIED RISK ITEMS

6.11(a)	1a Hazardous Abatement - VHS (+25% allowance)	$941,000
6.11(b)	1b Hazardous Abatement - SJ Willis (+50% allowance)	$507,700
6.11(c)	2 Bussing and Transportation Costs	$185,000
6.11(d)	3 Heritage Issues on Building Exterior	$500,000
6.11(e)	4 Modify or Replace Existing Stairs Railings	$466,700
6.11(f)	5 Replace Existing Gymnasium Railings	$194,000
6.11(g)	6 Renovate Derelict Stair Connection	$145,400
6.11(h)	7 Heating System Upgrade - Submitted as SET project	$1,460,300
6.11(i)	8 Approval Delays	$500,000
6.11(j)	9a Code Compliance Issues at VHS	$100,000
6.11(k)	9b Code Compliance Issues at SJ Willis	$500,000
6.11(l)	10 Additional Economic Adjustment Amount	$1,000,000
6.11(m)	11 Canadian/US Tariffs	$1,707,289
6.11(n)	12 Seismic Instrumentation	$50,000
6.11(o)	13 City of Victorial Bylaw Parking Requirements at Vic High	$647,900
6.11(p)	14 NLC	$5,985,683
6.11(q)	15 City of Victorial Bylaw Parking Requirements for NLC	$445,900
6.10	Post-Project Completion Audit Allowance	$50,000
	TOTAL IDENTIFIED RISK ITEMS:	**$15,386,872**

MAXIMUM CAPITAL PROJECT FUNDING TOTAL:	**$73,888,531**

Agency name & date:	**Version #:**

Option 3:

- Design Aid Sheet
- Schedule B
- Concept Plans

DESIGN AID SHEET

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 1

School Name: **VICTORIA HIGH SCHOOL (Option 3)**
District: **61 GREATER VICTORIA**

Facility Code: 61018

Last Updated: 19-Oct-18
Printed Date: 19-Oct-18

School Capacity: Nominal - 1000 Operating - As Above

Total Elective Modules: 19
Extend Day: NO

Agreed Nominal / Operating Capacity:

Ministry of Education | Date

This sheet is for use with the procedures in the Ministry of Education - Area Standards

PART 1 - ACADEMIC / VOCATIONAL

Space Function		1A - EXISTING Description	Area	Mods	1B - MODULES Core	Deficit	Surplus	1C - NEW CORE Description	Area	Mods	1D - NEW ELECTIVE Description	Area	Mods
Business Education		Computers (3)	320.00	3.18	1.00		2.18						
Fine Arts		Dance	124.00	0.94	1.00		4.62						
		Music	122.00	0.92									
		Drama	672.00	0.95									
		Art (2)	271.00	1.81									
		Auditorium	0.00	1.00									
Home Economics		Clothing	124.00	1.04	1.00		1.02						
		Foods	141.00	0.98									
Industrial Education		Cosmetology	124.00	1.07	1.00		5.07						
		Construction/wood	277.00	1.00									
		Automotive	238.00	1.00									
		Autobody	226.00	1.00									
		Technology	154.00	1.00									
		International Classroom	81.00	1.00									
Science		Science (5)	725.00	5.04	3.00		2.04	Science	140.00	1			
											Classrooms	240.00	3.00
General Instruction		Rooms 75-95 = 2	168.00	4.88	10.00		3.98	Area = No. of modules x 80 m2			Area = No. of modules x 80 m2		
		Other rooms = 11	767.00	9.10									
Sub-totals		Ai	4534.00		18.00	0.00	17.91	Bi	Ci	140.00	Di	240.00	3.00 Dii

*Note - May not be used except for spaces agreed in writing by the Ministry

Surplus - Deficit= 17.91

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 2

(See Sheet #1 for base information)

School Name: VICTORIA HIGH SCHOOL (Option 3)

PART 2 - SERVICE / ACTIVITY

Space Function		E- Existing	F - Allowable	G - Deficit	H - New
Admin. / Health	R	347.0	280.0	-67.0	
Counselling		101.0	85.0	-16.0	
Gen. Storage	R	389.0	120.0	-269.0	
Gym Activity		1695.0	1200.0	-495.0	
Gym Ancillary		480.0	270.0	-210.0	
Media/Tech. Centre		435.0	400.0	-35.0	
Multi-Purpose		272.0	320.0	48.0	
Special Education	R	247.0	340.0	93.0	
Mechanical		616.0	235.0	-381.0	15.0
Design Space	R	5950.0	2190.0	3760.0	486.0
*Other				0.0	610.0
				0.0	
Sub-Total		Ei 10532.0	Fi 5440.0	Gi -5092.0	Hi 7310.

PART 4 - TOTAL AREAS

	J - Existing		K - New	
Existing Acad. / Voc.	Ai	4534.0		
Core A/V Additions			Ci	140.0
Elective A/V Additions			Di	240.0
Service Activity	Ei	10532.0	Hi	731.0
Sub-Total		15066.0		1111.0
			Ni	15066.0
				16177.0

Total Gross Allowable Area 8565 (from MOE Area Standards)

Enrolment: As of:

Kgn:	Gr. 1-7:	Gr. 8-12:	Grade Structure: Type-1:	Type-2:	Port. CR's:

*Other

Site Allowance:

	(ha)
Allow:	4.5
Actual:	5.3
Diff.	0.8

Comments: Extended Day Allowance of 0 m2 is included in design space.

The total module is 40 with the additional module attributed to the International Classroom which was paid for by the School District in 2011 and is not considered to be one of the MOE required modules. This leaves 39 modules as required.
*Other refers to new area required for the two new seismically required stair towers in the northeast and northwest corners of the 1914 Building.
The existing facility is 15,066 sq m. With new expansion construction of 501 sq m plus 610 sq m for the new stair towers, equalin 1,111 sq m of new construction. The Total Build-out will be 16,177 sq m.

PDR SCHEDULE B - CAPITAL PROJECT BUDGET FOR PARTIAL REPLACEMENT/SEISMIC UPGRADE

Victoria High School: Option 3 - Seismic Upgrade with Enhancements and Addition for 1000 Capacity March 5, 2019

A. K-12 BUDGET MODEL COMPONENTS

1. DESIGN CAPACITY		Kindergarten	Grade 1 - 7	Grade 8 - 12
1.1	**Existing**			800
1.2	**Change** (increase or decrease)			200
1.3	**Approved**			1000

(see Table 1)

2. SPACE ALLOCATION FOR CAPITAL BUDGETING PURPOSES			
2.1	Existing Space Allocation (m^2) requiring seismic upgrades		13,288.00
2.2	Space Allocation: Replacement Space (m^2)		1,111.00
2.3	Space Allocation: Neighbourhood Learning Centre (m^2)	0.00%	0.00
2.4	Total Space Allocation: New School or Full Replacement School (m^2)		
2.5	**Total Space Allocation: Addition (m^2)**		
2.6	Total Space Allocation: Partial Replacement (m^2)		14,399.00

3. CONSTRUCTION UNIT RATE (NEW CONSTRUCTION)				
3.1	**Base Budget Rate** ($/$m^2$)			$2,830
3.2	**Project Size Factor**			1.09
3.3	**Project Location Factor**	**Q**3 **20**18		1.097
3.4	**Unit Rate** ($/$m^2$)			**$3,384**

B. CAPITAL PROJECT BUDGET

4. CONSTRUCTION ITEMS			
4.1	**Construction: New Space/Replacement Space**		$3,759,531
4.2	**Construction: Renovations** (associated with partial replacement)	8.50%	$319,560
4.2 (a)	**Construction: Seismic Upgrade**		$16,933,800
4.2 (b)	**Construction: SPIR adjustment - 25% update to SRG-3**		$2,481,314
4.2 (c)	**Construction: Non-Structural Seismic Upgrade**		$317,500
4.3	**Site Development Allowance**	$0	$250,000
4.4	**Site Development Location Allowance**		$24,250
	TOTAL CONSTRUCTION BUDGET:		$24,085,954

5. OWNER'S COST ITEMS (Soft Costs)				
5.1	**Design Fees**		15.85%	$3,967,624
5.2	**Post-Contract (Construction) Contingency: New Space/Replacement Space**		3.00%	$121,013
5.3	**Post-Contract (Construction) Contingency: Renovations** (associated with addition/partial replacement)		10.00%	$31,956
5.3(a)	**Post-Contract (Construction) Contingency: Seismic Upgrade**		10.00%	$1,973,261
5.4	**Municipal Permits, Fees, and Charges**			$783,096
5.6	**Equipment: Replacement Space**	25.90%	3.42%	$842,180
5.7	**Project Management**		1.50%	$725,416
5.8	**Wrap-up Liability Insurance**			$22,996
5.9	**Seismic Project Identification Report Fees**			$53,007
5.10	**Payable Taxes**			$533,521
5.11(a)				$0

5.11(b) **Moving Costs**		$150,000
5.11(c) **Transportation/Bussing Costs**		$720,000
	TOTAL OWNER'S COSTS BUDGET:	**$9,924,071**
	TOTAL CAPITAL PROJECT BUDGET:	**$34,010,025**

C. CAPITAL PROJECT BUDGET RESERVE

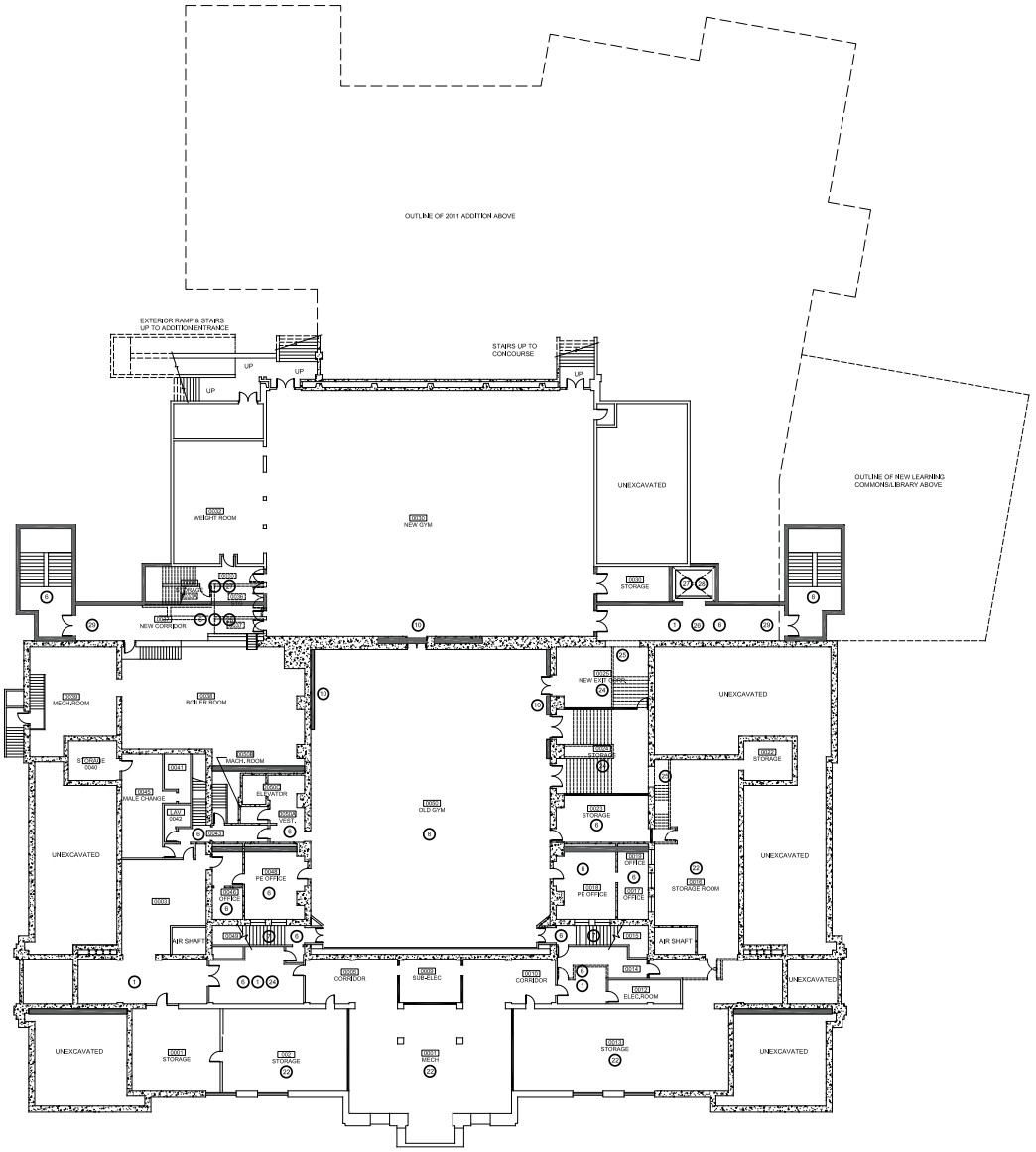
6. IDENTIFIED SUPPLEMENTAL ITEMS

6.1	**Supplementary Building:** New Space/Replacement Space					$688,400
6.2	**Supplementary Building: Renovations** (associated with addition/partial replacement)					$26,564,800
6.3	**Supplementary Site**					$583,500
6.4	**Economic Adjustment**	No. of Months:	29	Estimated Percentage:	0.79%	$5,499,626
6.5	**Demolition**					$0
6.6	**Abnormal Topographical or Sub-Surface Conditions**					$0
6.7	**Offsite Services**					$0
6.8	**Municipal Building Codes and Bylaws**					
6.9	**Temporary Accommodation**					$0
				TOTAL IDENTIFIED SUPPLEMENTAL ITEMS:		**$33,336,326**

IDENTIFIED RISK ITEMS

6.11(a)	1a Hazardous Abatement - VHS (+25% allowance)	$940,000
6.11(b)	1b Hazardous Abatement - SJ Willis (+50% allowance)	$507,200
6.11(c)	2 Bussing and Transportation Costs	$185,000
6.11(d)	3 Heritage Issues on Building Exterior	$500,000
6.11(e)	4 Modify or Replace Existing Stairs Railings	$466,133
6.11(f)	5 Replace Existing Gymnasium Railings	$193,777
6.11(g)	6 Renovate Derelict Stair Connection	$145,199
6.11(h)	7 Heating System Upgrade - Submitted as SET project	$1,458,453
6.11(i)	8 Approval Delays	$500,000
6.11(j)	9a Code Compliance Issues at VHS	$100,000
6.11(k)	9b Code Compliance Issues at SJ Willis	$500,000
6.11(l)	10 Additional Economic Adjustment Amount	$1,000,000
6.11(m)	11 Canadian/US Tariffs	$1,935,856
6.11(n)	12 Seismic Instrumentation	$50,000
6.11(o)	13 City of Victorial Bylaw Parking Requirements at Vic High	$716,800
6.11(p)	14 NLC	$5,985,683
6.11(q)	15 City of Victorial Bylaw Parking Requirements for NLC	$445,400
6.10	Post-Project Completion Audit Allowance	$50,000
	TOTAL IDENTIFIED RISK ITEMS:	**$15,679,501**
	MAXIMUM CAPITAL PROJECT FUNDING TOTAL:	**$83,025,852**

Agency name & date:	**Version #:**



1 BASEMENT
A1.00 1:200

RENOVATION KEYNOTES

1. NEW ACT CEILING
2. NEW GWB CEILING
3. REPAIR EXISTING ACT CEILING AS REQ'D
4. REPAIR EXISTING PLASTER CEILING AS REQ'D
5. REPAIR EXISTING WALLS
6. NEW LINOLEUM FLOORING
7. NEW NOSINGS/RISERS & HANDRAILS TO EXISTING STAIRS
8. REFINISH EXISTING WOOD FLOORING
9. NEW CERAMIC TILE FLOORING
10. REPAIR & PATCH EXISTING WOOD FLOOR AS AFFECTED BY SEISMIC WORK
11. PATCH CARPET AS REQUIRED
12. REPAIR & PATCH LINOLEUM FLOORING AS AFFECTED BY SEISMIC WORK
13. R/A AND MAKE GOOD PLASTER WALLS
14. REPLACE TALL WOOD BASEBOARDS
15. REINSTATE WALL MOLDINGS
16. MOVE EXISTING DOOR
17. NEW STORAGE MILLWORK
18. NEW SCIENCE MILLWORK
19. NEW FUME HOOD
20. RETAIN EXISTING HERITAGE DETAILS
21. REINFORMICE HCT WALLS FROM BACK SIDE
22. PATCH AND PAINT ALL WALLS
23. NEW STEEL STUD & GWB WALL
24. NEW DOOR
25. NEW OPENINGS
26. EXCAVATE FOR NEW CONSTRUCTION
27. REMOVE EXISTING STAIR
28. NEW ELEVATOR
29. NEW CONSTRUCTION
30. NEW KITCHEN MILLWORK
31. NEW INFILL FLOOR
32. RATED GLAZING WALL

NEW WALL TYPES

- CONCRETE - SEE STRUCT.
- STEEL STUD - 152MM
- WALL TO BE REMOVE
- NEW STOREFRONT GLAZING
- NANAWALL OR SIMILAR
- NEW EXTERIOR RAINSCREEN WALL

203-655 TYEE ROAD
VICTORIA, BC
V9A 6X5
T.250.386.5588

SEALS

CONSULTANTS

METRIC — ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETERS

ISSUED FOR

NO.	DATE	DESCRIPTION

PROJECT TITLE

Greater Victoria School District

VICTORIA HIGH SCHOOL
1260 GRANT STREET
VICTORIA, BC
V8T 1C2

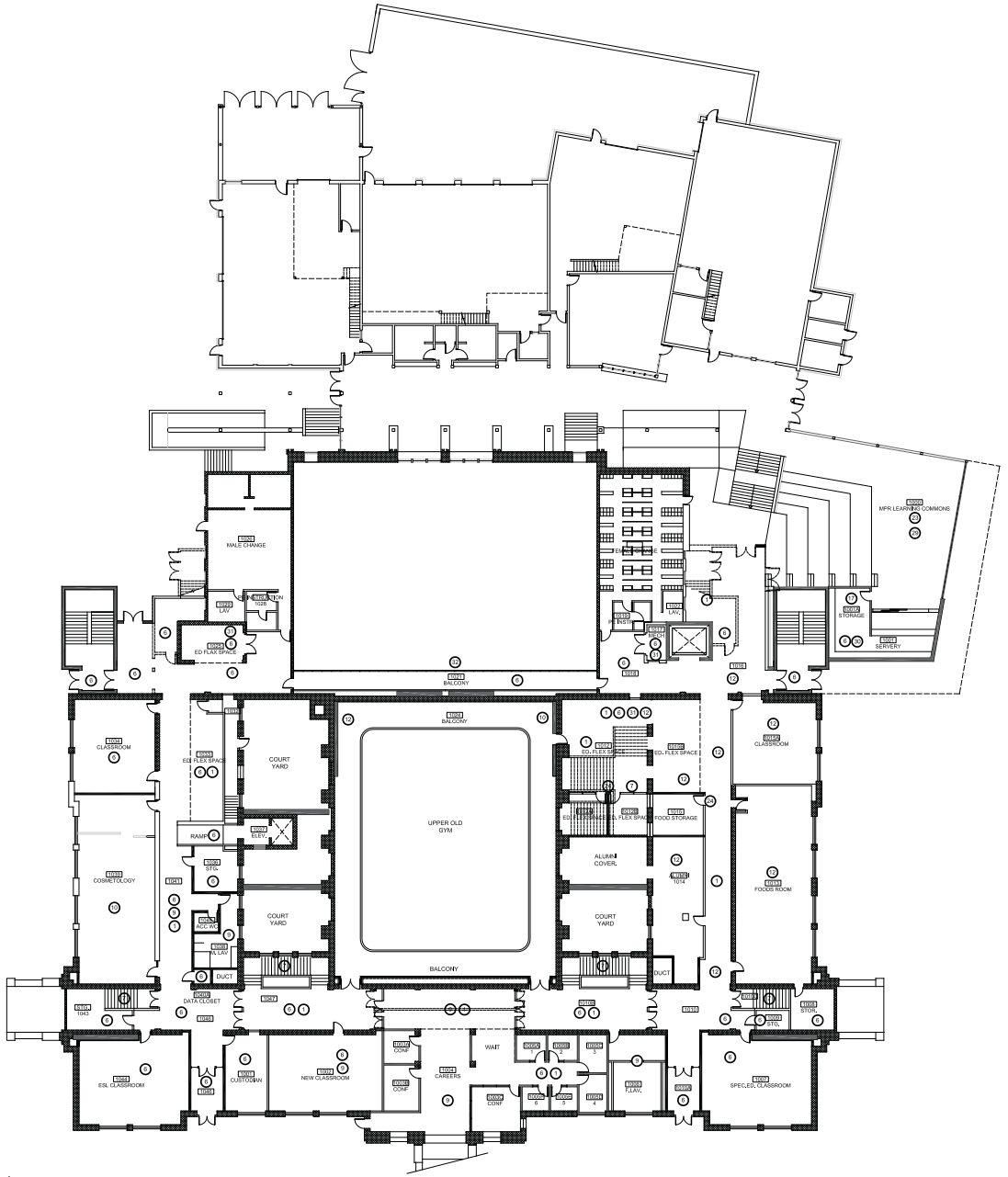
DRAWING TITLE

LEVEL 0 NEW PLAN

CHECKED BY: DRAWN:

SCALE: DATE: FEB. 01, 2017

PROJECT NO. 2016-031 DRAWING NO. A1.10



2 | LEVEL 1
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RENOVATION KEYNOTES

1. NEW ACT CEILING
2. NEW GWB CEILING
3. REPAIR EXISTING ACT CEILING AS REQ'D
4. REPAIR EXISTING PLASTER CEILING AS REQ'D
5. REPAIR EXISTING WALLS
6. NEW LINOLEUM FLOORING
7. NEW NOSINGS/RISERS & HANDRAILS TO EXISTING STAIRS
8. REFINISH EXISTING WOOD FLOORING
9. NEW CERAMIC TILE FLOORING
10. REPAIR & PATCH EXISTING WOOD FLOOR AS AFFECTED BY SEISMIC WORK
11. PATCH CARPET AS REQUIRED
12. REPAIR & PATCH LINOLEUM FLOORING AS AFFECTED BY SEISMIC WORK
13. FIX AND MAKE GOOD PLASTER WALLS
14. REPLACE TALL WOOD BASEBOARDS
15. REINSTATE WALL MOLDINGS
16. MOVE EXISTING DOOR
17. NEW STORAGE MILLWORK
18. NEW SCIENCE MILLWORK
19. NEW FUME HOOD
20. RETAIN EXISTING HERITAGE DETAILS
21. REINFORCE INCT WALLS FROM BACK SIDE
22. PATCH AND PAINT ALL WALLS
23. NEW STEEL STUD & GWB WALL
24. NEW DOOR
25. NEW OPENINGS
26. EXCAVATE FOR NEW CONSTRUCTION
27. REMOVE EXISTING STAIR
28. NEW ELEVATOR
29. NEW CONSTRUCTION
30. NEW KITCHEN MILLWORK
31. NEW INFILL FLOOR
32. RATED GLAZING WALL

NEW WALL TYPES

- CONCRETE - SEE STRUCT.
- STEEL STUD - 152MM
- WALL TO BE REMOVE
- NEW STOREFRONT GLAZING
- NANAWALL OR SIMILAR
- NEW EXTERIOR RAINSCREEN WALL

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SEALS

CONSULTANTS

METRIC — ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETERS

ISSUED FOR

NO.	DATE	DESCRIPTION

PROJECT TITLE

Greater Victoria School District

VICTORIA HIGH SCHOOL
1260 GRANT STREET
VICTORIA, BC
V8T 1C2

DRAWING TITLE

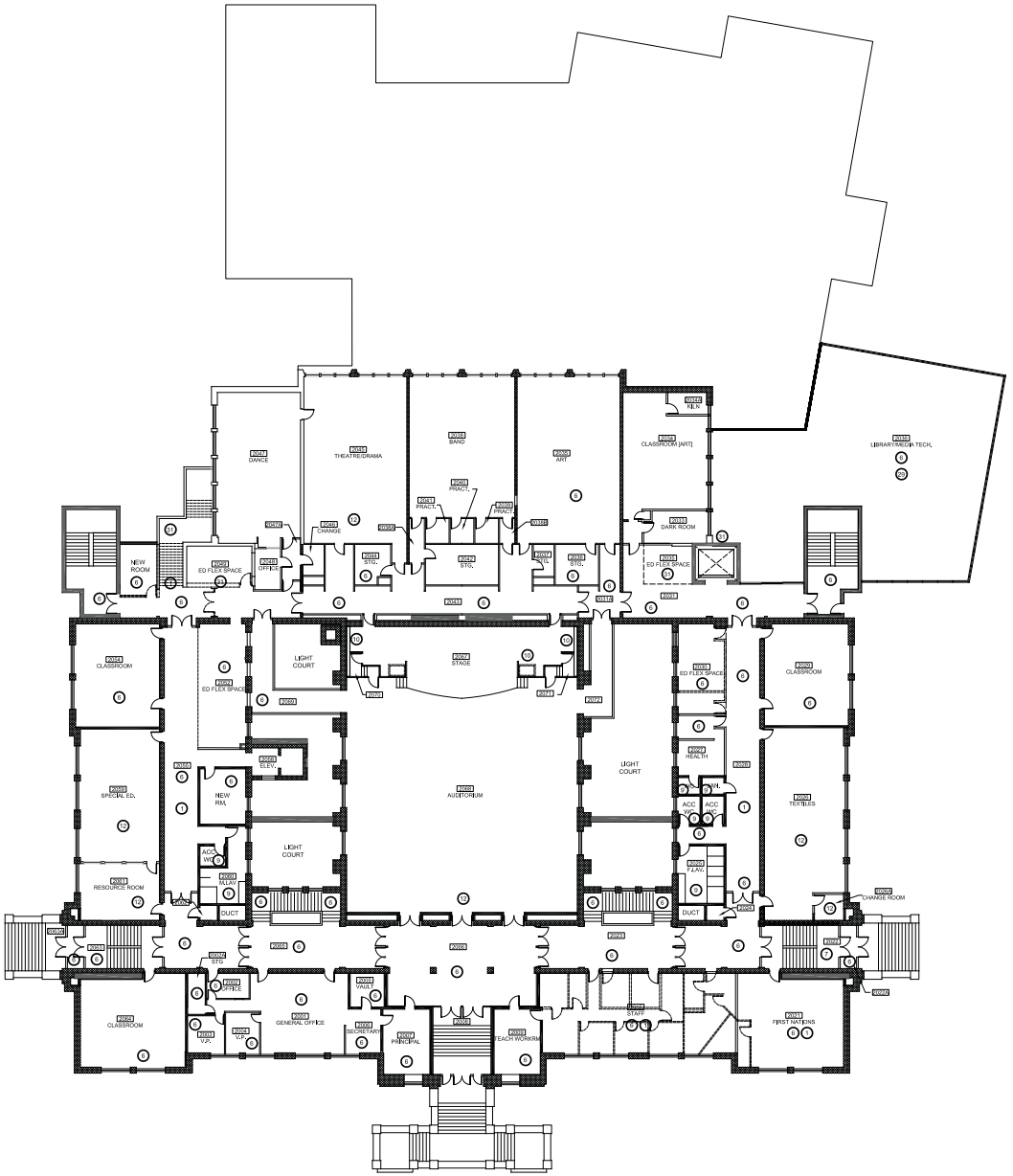
LEVEL 1 NEW PLAN

CHECKED BY: DRAWN:

SCALE: DATE: FEB 1, 2017

PROJECT NO. 2016-031

DRAWING NO. A1.11



2 | LEVEL 2
A1.01 | 1:200

RENOVATION KEYNOTES

1. NEW ACT CEILING
2. NEW GWB CEILING
3. REPAIR EXISTING ACT CEILING AS REQ'D
4. REPAIR EXISTING PLASTER CEILING AS REQ'D
5. REPAIR EXISTING WALLS
6. NEW LINOLEUM FLOORING
7. NEW NOSINGS/RISERS & HANDRAILS TO EXISTING STAIRS
8. REFINISH EXISTING WOOD FLOORING
9. NEW CERAMIC TILE FLOORING
10. REPAIR & PATCH EXISTING WOOD FLOOR AS AFFECTED BY SEISMIC WORK
11. PATCH CARPET AS REQUIRED
12. REPAIR & PATCH LINOLEUM FLOORING AS AFFECTED BY SEISMIC WORK
13. PIN AND MAKE GOOD PLASTER WALLS
14. REPLACE TALL WOOD BASEBOARDS
15. REINSTATE WALL MOLDINGS
16. MOVE EXISTING DOOR
17. NEW STORAGE MILLWORK
18. NEW SCIENCE MILLWORK
19. NEW FUME HOOD
20. RETAIN EXISTING HERITAGE DETAILS
21. REINFORMCE HCT WALLS FROM BACK SIDE
22. PATCH AND PAINT ALL WALLS
23. NEW STEEL STUD & GWB WALL
24. NEW DOOR
25. NEW OPENINGS
26. EXCAVATE FOR NEW CONSTRUCTION
27. REMOVE EXISTING STAIR
28. NEW ELEVATOR
29. NEW CONSTRUCTION
30. NEW KITCHEN MILLWORK
31. NEW INFILL FLOOR
32. RATED GLAZING WALL

NEW WALL TYPES

- CONCRETE - SEE STRUCT.
- STEEL STUD - 152MM
- WALL TO BE REMOVE
- NEW STOREFRONT GLAZING
- NANAWALL OR SIMILAR
- NEW EXTERIOR RAINSCREEN WALL

HDR | CEI

203-655 TYEE ROAD
VICTORIA, BC
V9A 6X5
T.250.386.5588

SEALS

CONSULTANTS

METRIC — ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETERS

ISSUED FOR

NO.	DATE	DESCRIPTION

PROJECT TITLE

Greater Victoria School District

VICTORIA HIGH SCHOOL
1260 GRANT STREET
VICTORIA, BC
V8T 1C2

DRAWING TITLE

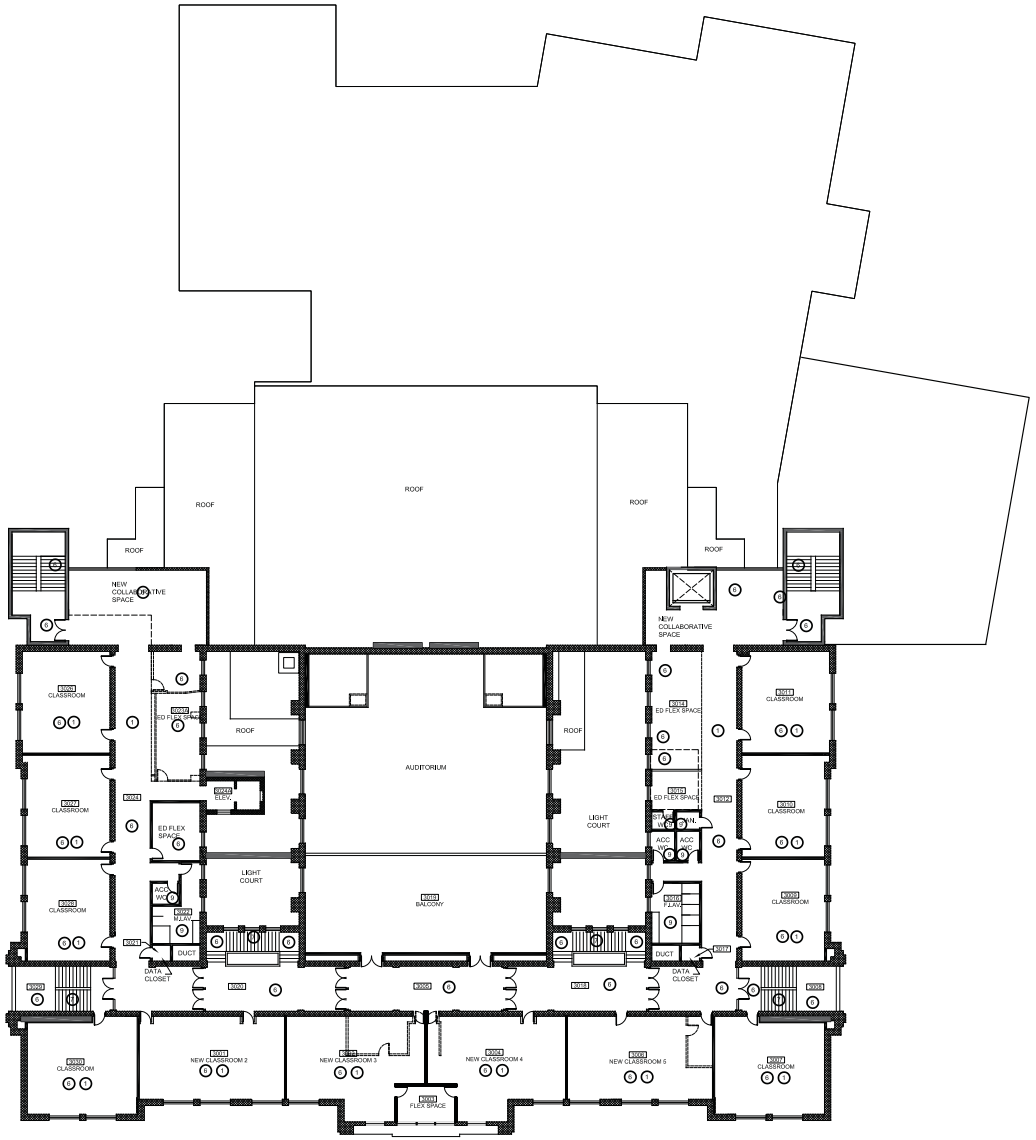
LEVEL 2 NEW PLAN

CHECKED BY: DRAWN:

SCALE: DATE: FEB. 01, 2017

PROJECT NO. 2016-031

DRAWING NO. A1.12



2 | LEVEL 3
A1.01 | 1:200

RENOVATION KEYNOTES

1. NEW ACT CEILING
2. NEW GWB CEILING
3. REPAIR EXISTING ACT CEILING AS REQ'D
4. REPAIR EXISTING PLASTER CEILING AS REQ'D
5. REPAIR EXISTING WALLS
6. NEW LINOLEUM FLOORING
7. NEW NOSINGS/RIBERS & HANDRAILS TO EXISTING STAIRS
8. REFINISH EXISTING WOOD FLOORING
9. NEW CERAMIC TILE FLOORING
10. REPAIR & PATCH EXISTING WOOD FLOOR AS AFFECTED BY SEISMIC WORK
11. PATCH CARPET AS REQUIRED
12. REPAIR & PATCH LINOLEUM FLOORING AS AFFECTED BY SEISMIC WORK
13. FIX AND MAKE GOOD PLASTER WALLS
14. REPLACE TALL WOOD BASEBOARDS
15. REINSTATE WALL MOLDINGS
16. MOVE EXISTING DOOR
17. NEW STORAGE MILLWORK
18. NEW SCIENCE MILLWORK
19. NEW FUME HOOD
20. RETAIN EXISTING HERITAGE DETAILS
21. REINFORMICE HCT WALLS FROM BACK SIDE
22. PATCH AND PAINT ALL WALLS
23. NEW STEEL STUD & GWB WALL
24. NEW DOOR
25. NEW OPENINGS
26. EXCAVATE FOR NEW CONSTRUCTION
27. REMOVE EXISTING STAIR
28. NEW ELEVATOR
29. NEW CONSTRUCTION
30. NEW KITCHEN MILLWORK
31. NEW INFILL FLOOR
32. RATED GLAZING WALL

NEW WALL TYPES

- CONCRETE - SEE STRUCT.
- STEEL STUD - 152MM
- WALL TO BE REMOVE
- NEW STOREFRONT GLAZING
- NANAWALL OR SIMILAR
- NEW EXTERIOR RAINSCREEN WALL

HDR | CEI
203-655 TYEE ROAD
VICTORIA, BC
V9A 6X5
T.250.386.5588

SEALS

CONSULTANTS

METRIC — ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETERS

ISSUED FOR

NO.	DATE	DESCRIPTION

PROJECT TITLE

Greater Victoria School District

VICTORIA HIGH SCHOOL
1260 GRANT STREET
VICTORIA, BC
V8T 1C2

DRAWING TITLE

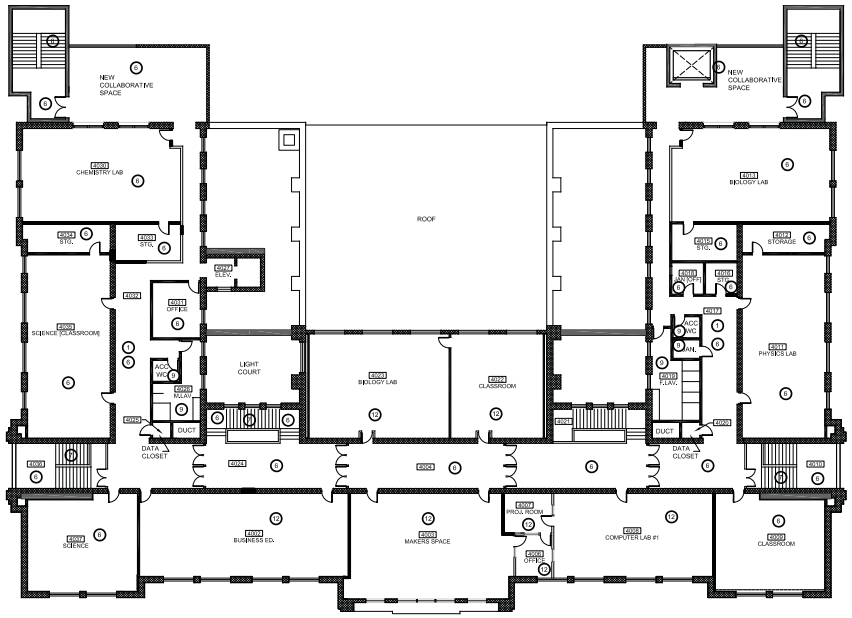
LEVEL 3 NEW PLAN

CHECKED BY: DRAWN:

SCALE: DATE: FEB. 01, 2017

PROJECT NO. 2016-031

DRAWING NO. A1.13



2 LEVEL 4
A1.01 1:200

RENOVATION KEYNOTES

1. NEW ACT CEILING
2. NEW GWB CEILING
3. REPAIR EXISTING ACT CEILING AS REQ'D
4. REPAIR EXISTING PLASTER CEILING AS REQ'D
5. REPAIR EXISTING WALLS
6. NEW LINOLEUM FLOORING
7. NEW NOSINGS/RISERS & HANDRAILS TO EXISTING STAIRS
8. REFINISH EXISTING WOOD FLOORING
9. NEW CERAMIC TILE FLOORING
10. REPAIR & PATCH EXISTING WOOD FLOOR AS AFFECTED BY SEISMIC WORK
11. PATCH CARPET AS REQUIRED
12. REPAIR & PATCH LINOLEUM FLOORING AS AFFECTED BY SEISMIC WORK
13. FIX AND MAKE GOOD PLASTER WALLS
14. REPLACE TALL WOOD BASEBOARDS
15. REINSTATE WALL MOLDINGS
16. MOVE EXISTING DOOR
17. NEW STORAGE MILLWORK
18. NEW SCIENCE MILLWORK
19. NEW FUME HOOD
20. RETAIN EXISTING HERITAGE DETAILS
21. REINFORINCE HOT WALLS FROM BACK SIDE
22. PATCH AND PAINT ALL WALLS
23. NEW STEEL STUD & GWB WALL
24. NEW DOOR
25. NEW OPENINGS
26. EXCAVATE FOR NEW CONSTRUCTION
27. REMOVE EXISTING STAIR
28. NEW ELEVATOR
29. NEW CONSTRUCTION
30. NEW KITCHEN MILLWORK
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SEALS

CONSULTANTS

METRIC

ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETERS

ISSUED FOR

NO.	DATE	DESCRIPTION

PROJECT TITLE

Greater Victoria School District

VICTORIA HIGH SCHOOL
1260 GRANT STREET
VICTORIA, BC
V8T 1C2

DRAWING TITLE

LEVEL 4 NEW PLAN

CHECKED BY: DRAWN:

SCALE: DATE: FEB. 01, 2017

PROJECT NO. 2016-031

DRAWING NO. A1.14

Option 4:

- Design Aid Sheet
- Schedule B

DESIGN AID SHEET

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 1

Last Updated: 19-Oct-18

School Name: **VICTORIA HIGH SCHOOL (Option 4)**
District: **61 GREATER VICTORIA**

Facility Code: 61018

Printed Date:

School Capacity:
Nominal - 1000
Operating - As Above

Total Elective Modules: 19
Extend Day: NO

Agreed Nominal / Operating Capacity:

Ministry of Education | Date

This sheet is for use with the procedures in the Ministry o f Education - Area Standards

PART 1 - ACADEMIC / VOCATIONAL

Space Function		1A - EXISTING			1B - MODULES			1C - NEW CORE			1D - NEW ELECTIVE		
		Description	Area	Mods	Core	Deficit	Surplus	Description	Area	Mods	Description	Area	Mods
Business Education								Computers	120.00	1.00			
											Computers	120.00	1.00
Fine Arts								Music	180.00	1.00			
											Choral Music	120.00	1.00
											Dance	120.00	1.00
											Drama	250.00	1.00
											Art	280.00	2.00
Home Economics								Foods	120.00	1.00			
											Textiles (clothing)	120.00	1.00
Industrial Education		Construction/wood	277.00	1.00									
		Automotive	238.00	1.00									
		Autobody	226.00	1.00	1.00		4.00						
		Technology	154.00	1.00									
		International Classroom	81.00	1.00							Cosmetology	120.00	1.00
Science								Science	560.00	4.00			
											Science	560.00	4.00
General Instruction								General Instruction	960.00	12.00			
											General Instruction	320.00	4.00
Sub-totals		Ai	976.00		1.00	0.00	4.00	Bi Ci	1940.00	19.00	Di	2010.00	16.00

*Note - May not be used except for spaces agreed in writing by the Ministy

Surplus - Deficit= 3.00

DESIGN AID SHEET FOR SECONDARY SCHOOLS -- SHEET # 2

(See Sheet #1 for base information)

School Name: VICTORIA HIGH SCHOOL (Option 4)

PART 2 - SERVICE / ACTIVITY

Space Function		E- Existing	F - Allowable	G - Deficit		H - New
Admin. / Health			280.0	0.0		280.0
Counselling			85.0	0.0		85.0
Gen. Storage			120.0	0.0		120.0
Gym Activity			1200.0	0.0		1200.0
Gym Ancillary			270.0	0.0		270.0
Media/Tech. Centre			400.0	0.0		400.0
Multi-Purpose			320.0	0.0		320.0
Special Education			340.0	0.0		340.0
#Mechanical		69.0	235.0	27.0		208.0
#Design Space		558.0	2190.0	273.0		1917.0
#Supplementary Mechanical						
#Supplementary Design Space						
Sub-Total		Ei *627.0	Fi 5440.0	Gi 300.0		Hi 5140.0

PART 4 - TOTAL AREAS

	J - Existing		K - New	
Existing Acad. / Voc.	Ai	976.0		
Core A/V Additions			Ci	1940.0
Elective A/V Additions			Di	2010.0
Service Activity	Ei	627.0	Hi	5140.0
Sub-Total		1603.0		**9090.0
			Ni	1603.
				***10693.0

Total Gross Allowable Area 10240 (Ministry Area Standards)

Enrolment: As of:

Grade Structure:

Kgn:	Gr. 1-7:	Gr. 8-12:	Type-1:	Type-2:	Port. CR's:

*Other

Site Allowance:

	(ha)
Allow:	4.5
Actual:	
Diff.	

A total of 40 modules are provided. The existing International Classroom module was paid for by the School District in 2011 and is not counted toward the required 39 modules.
*The actual measured area of the Tech Ed Wing, without mezzanine storage, is 1,603 sq m.
**The area of new building is 9,090 sq m.
*** The area of the Total Build-out of a 1000 student school is 10,693.

OVERAGE: **10,693 sq m** (Total Build-out) **minus 10,240 sq m** (MoE Allocation) **equals 453 sq m overage** –see following table for details.

AREA	EXISTING (SQ M)	MoE ALLOCATION (SQ M)	OVERAGE
Tech Ed Instruction	895	845	50
Mechanical	69	34	35
International Classroom	81	0	81
Design Space	558	237	321
TOTAL	1,603	1,116	**487**

PDR SCHEDULE B - CAPITAL PROJECT BUDGET FOR FULL REPLACEMENT SCHOOLS

Victoria High School: Option 4 - Full Replacement of VHS on the Current Site, Retain 2010 Addition March 5, 2019

A. K-12 BUDGET MODEL COMPONENTS

1. DESIGN CAPACITY	Kindergarten	Grade 1 - 7	Grade 8 - 12	(see Table 1)
1.1 **Existing**			800	
1.2 **Change** (increase or decrease)			200	
1.3 **Approved**			1000	

2. SPACE ALLOCATIONS FOR CAPITAL BUDGETING		
2.1 Existing Space Allocation (m^2)		
2.2 Space Allocation: New Space/Replacement Space (m^2)		9090
2.3 Space Allocation: Neighbourhood Learning Centre (m^2)	14.14%	1285
2.4 Total Space Allocation: New School or Full Replacement School (m^2)		10375
2.5 **Total Space Allocation: Addition (m^2)**		
2.6 Total Space Allocation: Partial Replacement (m^2)		

3. CONSTRUCTION UNIT RATE			
3.1 **Base Budget Rate** ($/$m^2$)			$2,830
3.2 **Project Size Factor**			1.010
3.3 **Project Location Factor**	**Q**3 **20**18		1.097
3.4 **Unit Rate** ($/$m^2$)			$3,136

B. CAPITAL PROJECT BUDGET

4. CONSTRUCTION ITEMS		
4.1 **Construction: New Space/Replacement Space**		$32,532,406
4.2 **Construction: Renovations** (associated with addition/partial replacement)	0.00%	
4.3 **Site Development Allowance**		$1,500,000
4.4 **Site Development Location Allowance**		$145,500
TOTAL CONSTRUCTION BUDGET:		**$34,177,906**

5. OWNER'S COST ITEMS (Soft Costs)			
5.1 **Design Fees**		15.00%	$5,276,686
5.2 **Post-Contract Contingency: New Space/Replacement Space**		3.00%	$1,025,337
5.3 **Post-Contract** (Construction) **Contingency: Renovations** (associated with addition/partial replacement)		0.00%	
5.4 **Municipal Permits, Fees and Charges**			$799,811
5.5 **Equipment: New Space**	0.00%	0.00%	
5.6 **Equipment: Replacement Space**	19.40%	3.42%	$5,161,270
5.7 **Project Management Fee**		1.50%	$728,711
5.8 **Wrap-up Liability Insurance** (coverage under School Protection Program)			$25,762
5.9 **Seismic Project Identification Report Fees**			$53,007
5.10 **Payable Taxes**			$2,043,404
5.11(a)			$0
5.11(b) **Moving Costs**			$150,000
5.11(c) **Transportation/Bussing Costs**			$1,080,000
TOTAL OWNER'S COST BUDGET:			**$16,343,988**

					TOTAL CAPITAL PROJECT BUDGET:	**$50,521,894**
C. CAPITAL PROJECT BUDGET RESERVE						
6. IDENTIFIED SUPPLEMENTAL ITEMS						
6.1	**Supplementary Building: New Space/Replacement Space**					$11,314,800
6.2	**Supplementary Building: Renovations** (associated with addition/partial replacement)					
6.3	**Supplementary Site**					$537,100
6.4	**Economic Adjustment**	No. of Months:	29	Estimated Percentage:	0.79%	$7,803,955
6.5	**Demolition**					$4,995,400
6.6	**Abnormal Topographical or Sub-Surface Conditions**					$0
6.7	**Offsite Services**					$536,800
6.8	**Municipal Building Codes and Bylaws**	Parking Requirements				
6.9	**Temporary Accommodation**					$0
					TOTAL IDENTIFIED SUPPLEMENTAL ITEMS:	**$25,188,055**
IDENTIFIED RISK ITEMS						
6.11(a)	2a Hazardous Abatement - VHS (+25% allowance)					$865,000
6.11(b)	2b Hazardous Abatement - SJ Willis (+50% allowance)					$507,700
6.11(c)	3 Demolition (+10% allowance)					$499,540
6.11(d)	4 Bussing and Transportation Costs					$185,000
6.11(e)	5 Approval Delays					$500,000
6.11(f)	6 Code Compliance Issues at SJ Willis					$500,000
6.11(g)	7 Additional Economic Adjustment Amount					$1,000,000
6.11(h)	8 Canadian/US Tariffs					$1,835,910
6.12(i)	9 City of Victorial Bylaw Parking Requirements for NLC					$410,000
6.10	Post-Project Completion Audit Allowance					$50,000
					TOTAL IDENTIFIED RISK ITEMS:	**$6,353,150**
					MAXIMUM CAPITAL PROJECT FUNDING TOTAL:	**$82,063,099**

Agency name & date:	**Version #:**

Neighbourhood Learning Centre (NLC):

- Schedule B

  Cost information for a Neighbourhood Learning Centre has been incorporated into each of the Options examined.

5.2 Life Cycle Analysis

Refer to Life Cycle Analysis on following page.

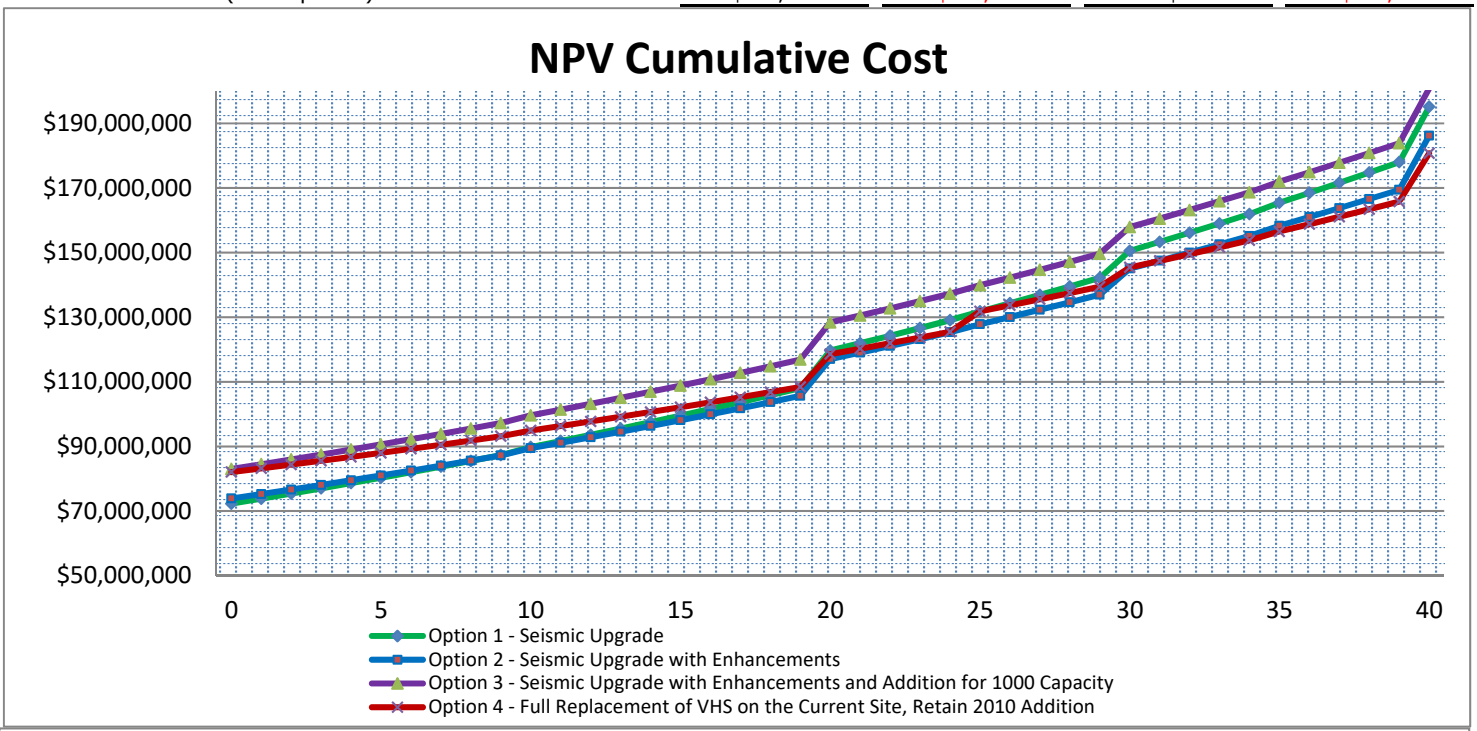
SCHEDULE D - Life Cycle Cost Analysis

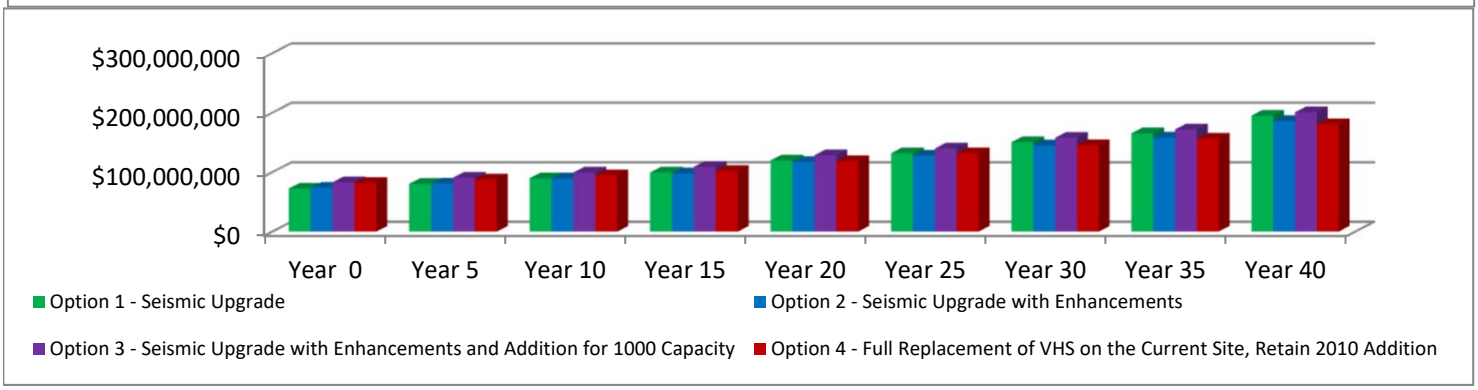
Victoria High School Seismic Upgrade
School District #61 (Victoria)

March 5, 2019

Life Cycle Cost Summary

	Option 1 - Seismic Upgrade	Option 2 - Seismic Upgrade with Enhancements	Option 3 - Seismic Upgrade with Enhancements and Addition for 1000 Capacity	Option 4 - Full Replacement of VHS on the Current Site, Retain 2010 Addition
Project Cost Total - Capital Cost + Risk Reserves	**$72,275,398**	**$73,888,531**	**$83,025,852**	**$82,063,099**
Gross Floor Area (m²)	13,288	13,288	14,399	10,375
Escalation Rate for O&M and Energy (combined)	4.0%	4.0%	4.0%	4.0%
Discount Rate	2.0%	2.0%	2.0%	2.0%
Life Cycle Study Period	40	40	40	40
Total Net Annual Cash Flow (Future Value Year 40)	**$206,814,474**	**$189,742,783**	**$198,636,282**	**$166,865,722**
Net Present Value of Cumulative Cost at Year 40	**$195,140,519**	**$186,204,953**	**$200,837,619**	**$180,748,997**
Net Present Value of Cumulative Costs During Life Cycle Study Period:				
Year 0	$72,275,398	$73,888,531	$83,025,852	$82,063,099
Year 5	$80,306,918	$81,004,174	$90,618,623	$87,984,211
Year 10	$89,785,132	$89,473,131	$99,613,354	$94,948,501
Year 15	$99,537,933	$98,113,772	$108,833,374	$102,138,601
Year 20	$119,676,769	$117,027,051	$128,385,107	$118,559,858
Year 25	$131,815,486	$127,815,251	$139,876,857	$131,815,633
Year 30	$150,538,553	$145,050,103	$157,886,995	$145,407,706
Year 35	$165,444,533	$158,316,130	$172,007,355	$156,534,819
Year 40	$195,140,519	$186,204,953	$200,837,619	$180,748,997
Difference at Year 20 (Over Option 3) - NPV	-$8,708,338	-$11,358,056	$0	-$9,825,249
Difference at Year 40 (Option 3) - NPV	-$5,697,100	-$14,632,666	$0	-$20,088,622
Annual Cost Excluding Building Cost (Average)	$3,071,628	$2,807,911	$2,945,294	$2,467,147
Annual Cost Difference (Over Option 3)	$126,334	-$137,384	$0	-$478,147





5.3 Risks:

5.3.1 Additional Hazardous Materials and Demolition – Options 1, 2, 3 and 4:

There is a risk of increases in the scope and associated cost of demolition and remediation of hazardous material encountered during demolitions and seismic retrofit work, by removal and/or encapsulation. This includes work at both Victoria High School and SJ Willis School.
(Risk Items 1a & 1b)

5.3.2 Busing and transportation costs between SJW and VHS – Options 1, 2, 3, and 4:

It is being proposed that all VHS students be offered youth Transit bus passes, which will enable them to use Transit bussing to and from SJW, and to travel between schools as required for athletics and Tech Ed programming that will stay at VHS. It is anticipated that some bussing may also be required between the schools to manage students that are unable to use Transit, or for instances where travel time and scheduling is problematic.
(Risk Item 2)

5.3.3 Heritage Issues – Options 1, 2 and 3:

The project will be affecting a number of architectural elements at the interior and the exterior that have significant heritage value. Though we believe that the design and construction cost estimate has made adequate provision for the protection, preservation, or replacement of items with significant heritage value, it is possible that additional items may be discovered, or that heritage groups may insist on additional work for which we have not budgeted.
(Risk Item 3)

5.3.4 Code Compliance issues at VHS – Options 1, 2, and 3:

A number of issues at Victoria High School are non-compliant with current Building and Municipal Codes, and have been identified by the City as requiring correction, most significantly the absence of a complete fire sprinkler system. We have identified several significant Code upgrade items, and are proposing a contingency amount in the event that additional issues are uncovered, or identified by the City of Victoria, as requiring correction. In addition to the absence of a fire sprinkler system, the City has identified existing exit stair handrails / guardrails, existing gymnasium railings and the derelict stair condition in the northeast corner of the 1914 gymnasium as non-compliant.
(Risk Items 4, 5, 6 & 9a)

5.3.5 Code Compliance issues SJ Willis – Options 1, 2, 3 and 4:

Also identified, and included, are a number of less significant but critical non-compliant issues at SJ Willis School that the City is requiring us to address during renovations, and others that the City is not requiring us to address at this time. We are also proposing a contingency for SJ Willis School in the event that additional issues are uncovered, or identified by the City of Victoria, as requiring correction.
(Risk Item 9b)

5.3.6 Heritage Issues – Option 4:

The VHS site is registered but not designated heritage. While the School District could proceed with attempting to demolish the existing school buildings and build a new facility, the City has multiple levers with required consultation, approvals and permits to delay and/or prevent the work that would be required to complete Option 4. The School District believes that the City of Victoria could, if they so wish, delay proposed demolition of Vic High, as part of Option 4, for a lengthy period of time, and we have privileged legal opinion that would support their assertion in this regard. Any option involving demolition of the existing heritage structure will incur the significant risk of multiple year delays to the project.

5.3.7 Heating System Upgrade – Options 1, 2, & 3

Much of the existing HVAC system in the school is significantly affected by the seismic mitigation work and is being replaced. Portions of the existing system that are not directly affected are antiquated and are based on obsolete HVAC technology. Funding to replace the boilers, DHWT heater and DDC controls, and thus equipping the school with a modern and fully coordinated and integrated HVAC system, is being applied for under the Ministry's SEP program. In the event the SEP project is not approved, additional funding will be required. (Risk Item 7)

5.3.8 Land and Title Issues – Option 4:

The land title underlying the school is mainly City of Victoria title associated with the *Public Schools Act* in 1946. While the land is for school purposes, the City of Victoria does have title. We believe that there is a requirement to treat such lands as a type of trust. We understand that the City's position would not agree with the District's view of this matter. This could lead to the City litigating the matter to prevent the demolition of the site.

There are a number of anomalies in the ownership of lots under the school. Three titles are in the name of a deceased individual. While we feel that the matter can be rectified such rectification would have to involve the City. In the event of a new build, if the City were to object they could delay the process and thus delay the implementation of the planning.

The site has multiple lot lines as well as road closures that need to be completed. While it is our view that the City should treat the lot as one, their recent practice has not been to treat School District lands as such. If this were the case, the District would have to petition to consolidate lands that it has the beneficial interest but not technical title in. Otherwise, we would need a large number of variances causing time effort and money to achieve.

5.3.9 Approval Delays – Options 1, 2, 3 and 4:

The current plan and budget are predicated on obtaining Ministry approval of the project in November 2018, and preliminary earlier approval of the SJ Willis Design, to allow the renovations at SJW to proceed in January 2019, followed by approvals for the VHS work in November 2018. This is necessary to move the school and carrying out the seismic upgrade work at VHS. If the approval is not received in time to suit the current schedule, work on one or both schools may be delayed by up to a year (to suit the school calendar) resulting in increased costs due to escalation, and increased operating costs to keep both schools in operation.
(Risk Item 8)

5.3.10 Additional Economic Adjustment Amount – Options 1, 2, 3 and 4:

The funding request for the project includes an escalation factor, as established by the Cost Consultant, for the period from approval of the CPA to the mid-point of construction. However, due to significant cost escalation in the current marketplace, a reserve item to cover additional escalation for this period has also been included. Activity in the current marketplace suggests that escalation may exceed estimated amounts.
(Risk Item 10)

5.3.11 Canadian / US Tariffs– Options 1, 2, 3 and 4:

The funding request for the project includes a pricing factor, as established by the Cost Consultant, to adjust for the impact of recent US imposed tariffs impacting construction materials and equipment.
(Risk Item 11)

5.3.12 Seismic Instrumentation – Options 1, 2, 3 and 4:

The Ministry has proposed that seismic monitoring instrumentation be provided for schools undergoing seismic mitigation work. There has been no confirmation that this will be required at VHS and a reserve amount is included to cover the cost if it is deemed necessary.
(Risk Item 12)

5.4.13 Neighbourhood Learning Centre (NLC) – Options 1, 2, and 3:

The funding request for the project includes a funding to include additional parking stalls to comply with the City of Victoria's new Off Street Parking Bylaw, based on building area and not occupant load. This request is included in case the City does not grant a variance to reduce the parking requirement to as needed levels.
(Risk Item 13)

5.4.14 Neighbourhood Learning Centre (NLC) – Options 1, 2, 3 and 4:

The funding request for the project includes a funding request to include a Neighbourhood Learning Centre. This request is driven by the School District's commitment to life-long learning, community engagement and recognized community need.
(Risk Item 14)

5.4.15 Neighbourhood Learning Centre (NLC) Parking– Options 1, 2, 3 and 4:

The funding request for the project includes a funding request to include parking to serve the Neighbourhood Learning Centre. This request is driven by actual need and the City's Off Street Parking Bylaw. The need for this funding is linked to the Ministry's approval of the Neighbourhood Learning Centre..
(Risk Item 15)

Qualitative Risk Analysis Summary – Advantages

Option One

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Retains a theatre space.

Option Two

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Improves life safety conditions.
- Retains a theatre space.
- Upgrades antiquated building systems.
- Restores deteriorating building envelope masonry and terracotta.
- Provides some contemporary education support areas.

Option Three

- Retains heritage building.
- Retains Fairey Technical wing addition.
- Improves exiting conditions.
- Retains a theatre space.
- The expanded capacity to 1000 students meets current and future enrollment demands.
- Upgrades antiquated building systems.
- Restores deteriorating building envelope masonry and terracotta.
- Provides contemporary education support areas.
- Improves building planning layout.
- Planning opportunities support improved adjacencies and flexible learning spaces.
- Provides contemporary education support spaces.

Option Four

- Retains Fairey Technical wing addition.
- The expanded capacity to 1000 students meets current & future enrollment demands.
- New classrooms and education spaces will be in full compliance with all codes, standards and bylaws.
- New construction will provide a high performance building envelope.
- New planning provides the opportunity for a two or three storey structure in lieu of the existing four.

Qualitative Analysis Summary – Disadvantages

Option One

- Maintaining the current capacity of 800 students will not accommodate current or future enrollment demands.
- Retains heritage building which limits operational energy performance.
- Does not meet current life safety standards.
- Does not address antiquated building systems.
- Does not comply with Ministry standards or design principles.
- Retains poor circulation patterns and poor space usage.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Two

- Maintaining the current capacity of 800 students will not accommodate current or future enrollment demands.
- Retains heritage building which limits operational energy performance.
- Does not comply with Ministry standards or design principles.
- Retains poor circulation patterns and poor space usage.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Three

- Retains heritage building which limits operational energy performance.
- Retains a larger allowable area than found in new schools without modifying to useable space.

Option Four

- Removal of the heritage building carries an extreme risk of being denied by the City of Victoria.
- Risk of legal action related to demolition application denials by City of Victoria.
- This option does not have public support as confirmed through community meetings and polls.
- Does not provide a theatre space.

5.4 Procurement:

5.4.1 SD61 Experience with Capital Projects:

Greater Victoria School District No. 61 is very experienced with major capital projects ranging from the recent new build of Oak Bay High School and several seismic upgrades to existing Elementary and Middle schools. SD No.61 has the knowledge and experience required for successful management of complex major construction projects. The Greater Victoria School District's staff's experience encompasses the range of procurement options including Stipulated Sum (Design / Bid / Build) contracts, Construction Management, Construction Management at Risk, and Design / Build contracts.

5.4.2 Procurement appropriate for this project:

In examining critical aspects of the assessment criteria in the context of the state of the current Greater Victoria construction industry and future industry expectations, it is the recommendation of this report that the Greater Victoria School District No. 61 implement the Construction Management model of project procurement for the seismic mitigation and expansion of Victoria High School.

5.4.3 This recommendation is supported by the following:

.1 The current and projected market conditions, while currently very busy, support controlled competitive bidding of project components, as is inherent in Construction Management. The expectation is that there will be a high level of interest amongst the experienced Construction Management firms which, in turn, will generate a high level of interest amongst
Sub-Contractors qualified to be involved in the project.

.2 Due to the programmatic and technical complexity of the project and the need for fast and flexible responses to unknown building conditions, this delivery option allows the School District direct involvement in the determination of solutions and their cost.

.3 Due to the expectation that competitive pricing will extend into 2021 and the better pricing considerations afforded local Construction Management firms by the sub-trades, the Construction Management model well suited to the Greater Victoria market.

.4 Seismic mitigation projects are generally driven by work prescribed in the SPIR yet methods of performing the work and are most effectively coordinated by an integrated team comprising the Client, the professional consultants and Builder. In the case of Victoria High School, buildability, associated costs and design performance are best accomplished through the early and direct relationship afforded by the Construction Management procurement model.

.5 In a situation where the School District has the opportunity to decant the existing school operation into swing space, fast-tracking need not be a consideration. For VHS, the value of the direct relationship between a Construction Manager, Design Team and the School District is of greater consequence than the potential for a reduced schedule time-line.

.6 The Construction Management model allows the School District to be involved in maintaining acceptable quality levels while directly monitoring price and decisions from the start to finish of the project and does not demand that they relinquish control.

.7 Both Stipulated Sum and Design Build contracts, in projects such as this one, provide for a transfer risk from the Owner to the Builder. However, in current competitive market conditions and in light of the significantly higher Opportunity Costs to the Builder, much of the cost of these risks is passed on to the Owner by way of contingencies built in to their prices. These are contingency costs the Owner may never control.

5.4.4 Procurement Summation:

In summation, where an Owner is knowledgeable and experienced in construction and working with a Construction Manager, as the Facilities Staff of the Greater Victoria School District is, and can assemble a Design Team that is dedicated to an Integrated Design Process, experienced in working with Construction Managers as buildability consultants and can produce a comprehensive set of construction documents, the project procurement model preference will be a Construction Management process. This process will provide the best end result with the School District involved in its determination and process from start to finish. The key components: a knowledgeable client; an Integrated Design Team; an experienced Construction Manager and a comprehensive set of construction documents.

COMPLETED PROJECTS

School Name	Date	Budget	Final Cost	Variance	% Var	Procurement Method
Mount Doug Seismic	2007	$9,483,000	$6,365,015	($3,117,985)	-33%	Construction Mgmt.
Doncaster Addition	2009	$4,711,148	$4,995,389	$284,241	6%	Construction Mgmt.
Margaret Jenkins Seismic	2009	$8,526,755	$4,874,109	($3,652,646)	-43%	Construction Mgmt.
Willows Seismic	2010	$8,638,000	$7,337,769	($1,300,231)	-15%	Construction Mgmt.
Central Seismic	2010	$14,112,000	$14,804,003	$692,003	5%	Construction Mgmt.
Vic High Seismic PH 1	2010	$10,165,180	$11,556,856	$1,391,676	14%	Construction Mgmt.
Quadra Seismic	2013	$8,913,393	$8,520,573	($392,820)	-4%	Construction Mgmt.
New Oak Bay High	2013	$54,044,743	$54,044,743	$0	0%	Design Build
Tillicum Seismic	2014	$2,641,948	$2,781,348	$139,400	5%	Construction Mgmt.
George Jay Seismic	2014	$6,032,000	$6,342,602	$310,602	5%	Construction Mgmt.
Cloverdale Seismic	2015	$2,900,000	$4,043,273	$1,143,273	39%	Construction Management
Totals		$130,168,16	$125,665,6	($4,502,487)	-3%	

UNIT RATE COMPARISONS

School Name	Date	Final Cost	Size - sqm		Unit Rates $/sqm	Project Type
Mount Doug Seismic	2007	$6,365,015	105,12	9,770	$651	
Doncaster Addition	2009	$4,995,389	0		N/A	Part Demo/Replace
Margaret Jenkins Seismic	2009	$4,874,109	51,125	4,751	$1,026	Seismic Upgrade
Willows Seismic	2010	$7,337,769	55,656	5,172	$1,419	Seismic Upgrade
Central Seismic	2010	$14,804,003	80,941	7,522	$1,968	Seismic Upgrade
Vic High Seismic PH 1	2010	$11,556,856	0		N/A	Part Demo/Replace
Quadra Seismic	2013	$8,520,573	47,060	4,374	$1,948	Seismic Upgrade
New Oak Bay High	2013	$54,044,743	0		N/A	Replacement
Tillicum Seismic	2014	$2,781,348	15,285	1,420	$1,959	Seismic Upgrade
George Jay Seismic	2014	$6,342,602	64,829	6,025	$1,053	Seismic Upgrade
Cloverdale Seismic (partial)	2015	$4,043,273	22,776	2,116	$1,911	Seismic Upgrade

ONGOING PROJECTS

Campus View Seismic Upgrade	underway	$2,400,000
underway	Seismic Upgrade	

5.5 SCHEDULES A, C, D, E, G

Option 3: Seismic Upgrade with Enhancements and Increased Enrollment Capacity to 1,000 Students.

Schedules

The following Schedules form an integral part of this Capital Project Funding Agreement:

A. Project Rationale, Scope and Design Parameters

B. Project Financial Summary (not included here – will be found in the Body of the PDR)

C. Reserve Items

D. Project Schedule and Projected Cash Flow

E. Project Risks Management Plan

F. Not Applicable

G. Capital Project Bylaw

SCHEDULE A: Option 3

PROJECT RATIONALE, SCOPE AND DESIGN PARAMETERS

School Name: **Victoria High School**

Project No: **111909**

Project Description: **Seismic Mitigation**

1.1 **Rationale** – The Victoria School District's 2004/2005 Capital Plan submission included two projects at Victoria High School. One was to replace boilers and upgrade mechanical systems, and carry out seismic upgrading of the main building. The other was to renovate the Fairey Technical wing, including modernization of systems and finishes, and to carry out seismic upgrading. Support was announced in June 2004 for both the structural seismic upgrading of the Fairey Technical wing, and of the main building. Subsequent to those approvals, it was determined that the best approach to these projects was to demolish and replace Fairey Technical Wing with an addition to the main building as Phase 1, and then to carry out a seismic upgrading of the main building as Phase 2. Phase 1 was completed in 2012 and Phase 2 is the current seismic upgrade project.

The Victoria High School main building includes two blocks, Block 1, the original building constructed in 1911, and Block 2, the north gymnasium addition and classrooms constructed in 1955. Seismic Project Identification Reports (SPIR's) were completed in September 2012 by Genivar and confirmed that Block 1 has an H1 Classification, and Block 2 has an H2 Classification. These H1 and H2 ratings qualify this School for a seismic upgrade under the Ministry of Education's Seismic Mitigation Program.

1.2 **Options Considered** – We originally contracted with John A. Neilson Architects (now HDR Architecture) to carry out a Feasibility Study in conformance with the Ministry's Project Procurement Procedures and Guidelines.

That Feasibility Study considered three options for the Seismic Upgrading of Fairey Technical Wing, and we selected Option 2 that comprised the demolition of Fairey Technical and the construction of a new Tech Ed wing as an addition to the Main Building, followed by the Seismic Upgrading of the Main Building.

The Due Diligence Review conducted by Killick Metz Bowen Rose at the request of the Ministry also concluded, in their Final Report of September 26, 2007, that Option 2 was the preferred solution. Victoria High School is a Registered Heritage Building, and options that included partial or complete demolition of the building were not seriously considered.

Seismic Project Identification Reports (SPIR's) were completed by Genivar for Block 1 (1911 Original Building) and Block 2 (1955 Addition) in 2012. These SPIR's confirmed that Block 1 and Block 2 had retrofit priority rankings of H1 and H2, respectively.

Following the SPIR's, HDR Architecture was engaged by the SD to prepare the Project Definition Report that further develops the SPIR upgrade scheme to verify the feasibility of the proposed upgrade and to include consideration of the impacts of the seismic upgrade work on Architectural, Mechanical and Electrical finishes and systems. The PDR also explores options for additional work necessary for implementation of the seismic upgrade, such as temporary accommodation, mandatory Code upgrading, etc. It also considered major recapitalization or deferred maintenance projects required for the building, which could be carried out very cost effectively in conjunction with the seismic upgrading, while the school was closed.

We also identified a number of Operational and Functional Components (OFC's) throughout the school that required remediation, and we have included for those costs.

We reviewed a number of options related to the scheduling and phasing of the seismic upgrading of Victoria High School. Those options included several variations on carrying out seismic upgrading work while the school was occupied, utilizing portable classrooms for swing space, and/or moving parts of the school population to other adjacent schools, but it was determined that all of the options would provide unsuccessful learning environments to our students, while also generating very significant additional costs for procurement and operation of portable classrooms.

We determined that the best option for learning, and the least expensive option, would be to close Victoria High School for the duration of the project, and to move the student population to a closed High School at our SJ Willis Education Centre. SJ Willis School closed over a decade ago, and since then has been home to several of our other programs such as our International Program, Alternative Education and Continuing Education.

We relocated our International Program to another closed school a few years ago, and are currently planning an alternate location to accommodate the remainder of the programs still at SJ Willis. Once ready, we will move those programs and carry out renovations at SJ Willis in order to accommodate the Victoria High School population. All programs at Victoria High School will move to SJ Willis, with the exception of the Technical Education Program, which will stay at Victoria High School in the new Fairey Technical wing, which will stay open while the seismic upgrading is underway.

1.3 **Scope -** Seismic upgrading of Blocks 1 and 2, and non-structural seismic upgrading of the entire school, all in accordance with the SPIR's prepared by Genivar, and the Project Definition Report (PDR) prepared by HDR Architecture.

Also included in the scope are enhancements to the building envelope, interior stair vestibules, interior circulation, 21st Century Learning spatial enhancements, and an addition to increase the enrollment to 1,000 students.

1.4 Schedule - If approval is received in March 2019, design work and Contract Documents for the renovations at SJ Willis will be complete by April 2019 and designD work and Construction Documents for Victoria High School will take place from April 2019 through July 2020. Renovations at SJ Willis will occur between June 2019 and March 2020. Victoria High School will move to SJ Willis in June 2020. Construction at Victoria High School will take place between August 2020 and July 2022 making the School ready for September 2022.

For either Option 1, 2, or 3 seismic upgrading at Victoria High School would start in August 2020, and scheduled to complete in July 2022, at which time the School will move back to Victoria High School. The 2-year construction period is a result of the size and complexity of this project and the very active construction climate presently observed in the Capital Region.

1.5 **Design Parameters** - The Performance Based Seismic Assessment and Retrofit of BC Low Rise School Buildings (Seismic Retrofit Guidelines, 2nd Edition).

SCHEDULE C: Option 3

RESERVE ITEMS

#	Identified Risks	Fixed	"Not to Exceed" Contingency Rationale Summary of Risk	Amount
1a	Additional unexpected Hazmat removal at Victoria High School including asbestos containing materials.	$3,758,700	Remediate additional unexpected hazardous material encountered at VHS during demolition and seismic retrofit work, by removal and/or encapsulation.	$ 940,000
1b	Additional unexpected Hazmat removal at SJ Willis School including Asbestos containing Materials.	$1,014,400	Remediate additional unexpected hazardous material encountered at SJ Willis School during renovation work, by removal and/or encapsulation	$ 507,200
2	Busing and Transportation costs	$ 720,000	It is proposed that all VHS students by offered youth Transit bus passes, which will enable them to use transit busing to and from SJ Willis school, and to travel between schools as required for athletics and Tech Ed programming that will remain at VHS. It is anticipated that some busing may also be required between the schools to manage students that are unable to use Transit, or in instances where travel time and scheduling is problematic.	$ 185,000
3	Heritage issues on building exterior	$1,490,400	The project work will be affecting a number of elements, both interior and exterior, of architectural heritage significance. The exterior elements comprising the terracotta stabilization and masonry rehabilitation are the most significant. While we believe the cost estimate has made adequate provision for the protection, preservation, or replacement of these items, it is possible that additional items may be discovered. Additional may also be required by the City of Victoria or other heritage groups.	$ 500,000
4	Modify / Replace existing stair railings	Nil	The City of Victoria has identified the existing exit stair railings and guardrails as being non-compliant to the current BC Building Code. An official determination requiring them to be modified or replaced has not been made by the local authority however, due to the extent of the work being carried out in the school, a reserve amount for this work is necessary.	$ 466,133
5	Replace existing Gym Railings	Nil	The City of Victoria has identified the existing guardrails at the upper level running track as being non-compliant to the Current BC Building Code. An official determination requiring them to be modified or replaced has not been made by the local authority however, due to the extent of the work being carried out in the school, a reserve amount for this work is necessary.	$ 193,777

6	Renovate existing derelict stair connection	Nil	The City of Victoria has identified the existing stair at the northeast corner of the 1914 Gym as being non-compliant to the current BC Building Code. An official determination requiring it to be renovated has not been made by the local authority however, due to the extent of the work being carried out in the school and related exiting circulation conditions, a reserve amount for this work is necessary.	$ 145,199
7	Mechanical Enhancements applied for under the SEP program	Nil	Upgrades to the mechanical system including boiler replacement, DHWT replacement and new DCC controls will be applied for under the Ministry SEP program. This work includes boiler replacement, DHWT heater replacement and new DCC controls, all required to complement the work triggered by the scope of the seismic retrofit. In the event the SEP project is not approved, additional funding will be required.	$ 1,458,453
8	Approval delays	Nil	The current plan and budgets are predicated on obtaining Ministry approval to proceed with renovations at SJ Willis School in November 2018, followed by moving VHS to SJW and carrying out the seismic upgrade work at VHS. If the approval is not received in time to suit the proposed Schedule, work on one or both schools may be delayed by up to a year, to suit the school calendar. This will result in increased costs due to escalation and increased operating costs to keep both schools in operation.	$ 500,000
9a	Code Compliance Issues at Victoria High School	$2,690,000	A number of conditions at VHS are not compliant with the current BC Building Code, and identified by the City of Victoria as requiring correction. Most significantly is the Absence of a complete fire sprinkler system. We have identified and included several significant Code upgrade items but are proposing a contingency in the event that additional items are uncovered or identified by the City of Victoria and deemed to require correction.	$ 100,000
9b	Code Compliance Issues at SJ Willis School	Nil	We have identified and included a number of non-compliant items at SJ Willis School that the City of Victoria considers critical and needing to be rectified, while identifying others as non-critical, not requiring attention. We propose a contingency in the event that other items are uncovered or identified by the City of Victoria as requiring correction.	$ 500,000
10	Additional Economic Adjustment Amount	$ 5,499,626	We have included an item in the Reserve amounts for the Estimated Economic Adjustment, as established by our Cost Consultant, for the period between the approval of the CPA and the mid-point of construction. Due to significant cost escalation in the current marketplace, we are concerned that the escalation for this period may exceed the estimated amount.	$ 1,000,000
11	Canadian / US Tariffs	Nil	The funding request for the project includes a pricing factor, as established by the Cost Consultant, to adjust for the impact of recent US imposed tariffs impacting construction materials and equipment.	$ 1,935,856

12	Seismic Instrumentation	Nil	Provision of seismic instrumentation has been proposed for Schools undergoing seismic remediation, however there has been no confirmation that it will be required at VHS. We are carrying an estimated amount to provide for this monitoring if it is required by the Ministry.	$ 50,000
13	City of Victoria Parking Bylaw requirement increase	Nil	Based on the new City of Victoria Parking bylaw, the PDR includes additional parking area to comply with the bylaw. Based on building area, the bylaw requires the school to provide an additional 93 stalls.	$ 716,800
14	NLC	Nil	Based on community need, the PDR recommends including a Neighbourhood Learning Centre as part of the project. The Requested NLC is based on 15% of the floor area allocated for an 800 student secondary school or 1,285 sq.m.	$ 5,985,683
15	NLC Parking	Nil	Based on the size of the NLC, the PDR includes parking for 64 vehicles, in compiance with the City of Victoria Off Street Parking Bylaw.	$ 445,400
15	Post Construction Audit Allowance	Nil	Allowance to be used should a post-construction audit be necessary.	$ 50,000

TOTAL	**$15,173,126**	**MAXIMUM "NOT TO EXCEED" CONTINGENCY**	**$15,677,501**

NOTES:

1. The # and Identified Risks must be the same as set out under Reserve Items on Schedule B – Project Financial Summary.
2. The Fixed Allocation amount for each Identified Risk is included within the amount on Line A - Total Project Budget in Schedule B - Project Financial Summary. Justification for inclusion of funding for each Identified Risk in the Capital Project must be provided in the Project Definition Report (PDR).
3. This section summarizes the rationale for any additional contingency funds that may need to be allocated in excess of the Fixed Allocation. Justification for inclusion of contingency funding for each Identified Risk in the Capital Project must be provided in the Project Definition Report (PDR).
4. The Board may apply for "Not to Exceed" Contingency funding for each of the above Identified Risks in accordance with subparagraph 3.01 (b) of this Capital Project Funding Agreement.
5. Cost consultant services required as per subparagraphs 3.01 (b) (ii), 3.01 (c) (iv), and 3.01 (d) (iii) may be funded from the Maximum "Not to Exceed" Contingency allocation.

ECONOMIC ADJUSTMENT

Estimated from the 3rd Quarter, 2018 Location Factor to the close of tender for the Capital Project

Location Factor Date	Aug 2018
Anticipated Tender Close Date (as per Schedule D – Project Schedule and Projected Cash Flow)	SJ Willis - 30 May 2019 Vic High - 30 Aug 2020
Interval - (no. of months between Location Factor date and tender close)	2 for SJW / 16 for VHS
Projected Economic Adjustment per Month	0.79%
Total Economic Adjustment Factor	17.29%
Total Project Budget Eligible for Economic Adjustment (as per Line B on Schedule B – Project Financial Summary)	$31,798,220
Estimated Economic Adjustment Amount [as per Line D on Schedule B – Project Financial Summary]	$ 5,499,626

SCHEDULE D: Option 3
PROJECT SCHEDULE AND PROJECTED CASH FLOW

PROJECT MILESTONES					
Fiscal Year	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/2023**
	Apr 18 - Mar 19	Apr 19- Mar 20	Apr 20 - Mar 21	Apr 21- Mar 22	Apr 22 - Mar 23
Renovations at Burnside School	Dec 2018				
Design Development SJW	Oct 2018				
Construction Documents SJW	Dec 2018				
Contract Award SJW		May 2019			
Construction SJW		June 2019			
Occupancy SJW			Mar 2020		
PDR Completion	Jan 2019				
Ministry Review	Feb 2019				
Schematic Design		Apr- Aug 2019			
Design Development VHS		Sept - Mar 2019			
Construction Documents VHS			Apr - Jul 2020		
Contract Award VHS			Aug 2020		
Construction VHS			Aug 2020		June 2022
Occupancy VHS					July 2022
Final Completion					Sept 2022
PROJECT SCHEMATIC TIMELINE AND CRITICAL DATES					
Fiscal Year	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/2023**
	Apr 17 - Mar 19	Apr 19 - Mar 20	Apr 20- Mar 21	Apr 21 - Mar 22	Apr 22 - Mar 23
Renovations at Burnside School	xxxxxxxxxxx				
Design Development SJW	xxx				
Construction Documents SJW	xxxx				
Contract Award SJW		x			
Construction SJW		xxxxxxxxxx			
Occupancy SJW			x		
PDR Complete	x				
Ministry Review	xx				
Schematic Design VHS		xxxx			
Design Development VHS		xxxxx			
Construction Documents VHS		xxxxx			
Contract Award VHS			xx		
Construction VHS			xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		
Occupany VHS					xx
Final Completion					x
Anticipated Mid-point Date of Tender Closings		15-Dec-18	15-Jul-19		
CASH FLOW PROJECTION					
Fiscal Year	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/2023**
	Apr 18 - Mar 19	Apr 19 - Mar 20	Apr 20 - Mar 21	Apr 21 - Mar 22	Apr 22 - Mar 23
Qtr 1: Apr-Jun	$ 53,000	$ 2,922,000	$ 3,500,000	$7,500,000	$5,000,000
Qtr 2: Jul-Sep	$	$ 1,125,000	$ 5,500,000	$7,500,000	$1,746,351
Qtr 3: Oct-Dec	$	$ 2,500,000	$ 5,500,000	$7,500,000	$ 500,000
Qtr 4: Jan-Mar	$	$ 3,000,000	$ 6,500,000	$7,000,000	$0
Annual Forecast	$ 53,000	$ 9,547,000	$ 21,000,000	$ 29,500,000	$ 7,246,351
Cumulative Cash Flow	$ 53,000	$ 9,600,000	$ 30,600,000	$ 60,100,000	$ 67,346,351

Note: The Cash Flow Projection excludes the amount on Line E – Total Reserve Items set out in Schedule B – Project Financial Summary.

SCHEDULE E: Option 3

PROJECT RISKS MANAGEMENT PLAN

The Project Risks Management Plan is based on an on-going program of identification, analysis and allocation of risks from project inception through planning, design development, procurement, contracting, construction, and commissioning.

The project risks listed below have been identified as a priority for the Capital Project and will continue to be managed throughout the life of the Capital Project until completion. This table may require updating and/or revisions as the Capital Project progresses.

PROJECT COST AND SCHEDULE RISKS

#	Identified Risks	Probability	Impact	Risk Management Strategy	Manage/ Price or Transfer
1a & 1b	Additional unexpected Hazmat removal at Vic High & SJ Willis	Moderate	Moderate	Carry out comprehensive Hazmat survey prior to construction.	Manage
				Include hazardous material removal costs in budget.	Price
				Carry hazardous material abatement cost contingency for both schools in the event that additional unexpected hazardous material is encountered.	Transfer
2	Increasing busing and transportation costs.	Moderate	Moderate	We have determined and costed the most the most probable scenario(s) for enabling Vic High Staff and Students to attend the temporary location at JS Willis School, while at the same time making provision for some athletics and the Tech Ed program to remain at the Vic High site.	Manage / Price
				There is some uncertainty as to what additional bussing might be required to deal with scheduling problems and/or students with additional needs. To address this, we propose a contingency amount to cover alternate arrangements.	Transfer
3	Heritage Issues	Moderate	High	The project work will have an impact on a number of architectural elements at the interior, and on the exterior, that have significant heritage value. We have made provision for the protection, preservation,	Manage / Price

				or replacement of items with significant heritage value that are being impacted by the seismic upgrade work.	
				It is possible that additional unexpected items may be discovered or impacted, or that Heritage Groups may insist on additional work that we have not budgeted for, and we propose a contingency to deal with that eventuality.	Transfer
4	Modify / Replace existing stair railings	High	Moderate	The City of Victoria has identified existing stair railings as non-compliant. While they have not officially required them to be replaced, the extent of the remedial work will probably trigger a replacement directive.	Transfer
5	Replace Gym Railings	High	Moderate	The City of Victoria has identified existing guardrails surrounding the upper running track as being non-compliant. While they have not officially required them to be replaced, the extent of the remedial work will probably trigger a replacement directive.	Transfer
6	Renovate derelict stair	High	Moderate	The City of Victoria has identified the existing stair in the northeast corner of the 1914 Gym as being non-compliant. While they have not officially required them to be replaced, the extent of the remedial work will probably trigger an official renovation directive.	Transfer
7	Mechanical Enhancements	High	High	Significant mechanical upgrades are directly attributable to the seismic mediation work and have been included in the project cost estimate. Additional work is required to update the antiquated system to augment these upgrades and are being applied for under the Ministry's SEP program.	Transfer
8	Approval Delays	Moderate	Moderate	The current plan and budget are predicated on obtaining Ministry Approval in November 2018 to proceed with the renovations at SJ Willis, followed by moving Vic High and carrying out the required Seismic Upgrade work.	Manage / Price
				If the approval is not received in time to suit the proposed schedule, work on one or both schools may be delayed by up to a year (to suit school calendar) resulting in increased costs due to escalation, and an increase in operating costs to keep both schools in operation.	Transfer

9a & 9b	Code Compliance Issues	Moderate	Moderate	A number of conditions at Vic High are non-compliant with current Building and Municipal Codes, and identified by the City as requiring correction, most Significant is the absence of a complete fire sprinkler system. We have confirmed the requirement and budgeted for this work.	Manage / Price
				We propose a contingency in the event that additional issues are uncovered, or identified by the City of Victoria, as requiring correction.	Transfer
				We have identified, and included, a number of less significant but critical non-compliant conditions at SJ Willis School that the City requires us to address during renovations. Other conditions have been identified that the City is not requiring us to address at this time.	Manage / Price
				We propose a contingency in the event that additional issues are uncovered, or identified by the City of Victoria, as requiring correction.	Transfer
10	Additional Economic adjustment	Moderate	High	We have included an item in the Reserve amounts for the Estimated Economic Adjustment, as estimated by our Cost Consultant, during the period between the approval of the CPA, and the mid-point of construction.	Manage / Price
				Currently there is significant cost escalation in the marketplace and we are concerned that this escalation between the date of approval of the CPA and the midpoint of construction may exceed the estimated amount.	Transfer
11	Canadian / US Tariffs	High	High	We have included this item in Reserve to adjust for the impact of ongoing tariffs imposed on construction materials and equipment. The potential impact of these tariffs is not known as yet.	Transfer
12	Seismic Instrumentation If required by MoE	Moderate	Low	The Ministry of Education has asked that we carry a contingency for the installation of seismic instrumentation at the school as part of a Provincial Initiative.	Transfer
13	City of Victoria Parking Bylaw Compliance	Low	Low	The City of Victoria has revised their school parking requirements to be based on building area. As VHS has excess area to population, the additional 93 stalls are not needed and a variance will be requested.	Transfer

14	Neighbourhood Learning Centre	Moderate	High	There is high demand in the VHS neighbourhood for community access space to support lifelong learning and child care. We have included an item in the Reserve Amounts for a NLC, as estimated by our Cost Consultant.	Manage / Price
15	Neighbourhood Learning Centre Parking	Moderate	High	Should the Ministry approve the addition of a NLC to the project, the City of Victoria parking bylaw requires that 64 parking stalls be provided for NLC use. These parking stalls are shown as a Risk Item.	Manage / Price
16	Post Construction Audit	Moderate	Low	An amount has been included in reserve should the Ministry require a post construction audit.	Manage /

SCHEDULE G: Option 3

CAPITAL PROJECT BYLAW

In accordance with section 143 of the *School Act* [RSBC 1996] c. 412, the Board must prepare a Capital Project Bylaw for the Capital Project, a copy of which is to be included as Schedule G.

6. Conclusions

6.1 Long-term Results

Victoria High School has played a key role in the delivery of education in Victoria for over 140 years. The current facilities have served the community very well for over a century with a number of additions and renovations to adapt to changing needs. It is anticipated that with appropriate upgrades and maintenance, Vic High can continue to effectively serve the youth of this community for many future generations.

When the building was commissioned in 1914, it was on the cutting edge of school design and building systems. This is an opportunity for Victoria High School to retain its authentic Heritage character and be updated with state of the art building systems.

6.1.1 Option 1: Seismic Upgrade

Extent of Seismic Work Impact

The current critical concern with Victoria High School is the level of seismic risk which is the primary focus for this Project Definition Report. However, in addressing the seismic risk, the proposed measures for the necessary seismic mitigation affect almost all areas of the 1914 building and a portion of the 1955 addition to a lesser degree. Most of the ceilings and floors in the building are significantly affected, most of the hollow clay tile partitions must be removed, some are to be braced from behind, and the clay tile duct shafts need to be removed.

New flooring and ceilings are required in most of the 1914 building with a few exceptions where a few repairs and patching will suffice. The removal of the clay tile partitions and duct shafts allows some resizing and optimization of the educational spaces to more closely reflect current area standards. It also facilitates reconfiguring of washrooms and support spaces to reflect current occupant loads, accessibility requirements, and best practices.

Since the steam piping distribution system and the existing ductwork will largely need to be removed and replaced to perform the seismic work, and the clay tile duct shafts need to be removed, the Mechanical Report has made a strong case for replacing the steam heat system with a new hot water system, new air-handling equipment and ductwork to replace the building's original system, some of which is over a century old. A new digital control system would also replace the current obsolete system.

Similarly, to carry out the seismic work, most of the suspended ceilings will need to be removed and replaced. Most of the electrical systems, lighting systems, data, telephone systems and life safety systems will also be greatly impacted by the seismic work and are currently obsolete or nearing the end of their service life. The Electrical Report recommends upgrade/replacement of most of these systems as part of this project.

6.1.2 Option 2 Seismic Upgrade with Enhancements

Building Envelope Remediation and Enhancement

If VHS is to continue to serve the community for decades to come, there are other maintenance/upgrades required to prevent long-term damage to the building and address global warning issues by decreasing by GHG emissions. This is the building envelope remediation and window replacement/upgrade. It would be less expensive and less disruptive to the school and the community if this work was undertaken at the same time the school is vacated for the seismic project. Funding for the window upgrade work is being requested under the Ministry of Education's SEP program and not included in the cost estimates.

Stair Vestibule Upgrades

An important feature of the original building are the internal stairs from Levels 0 through 4 flanking the central block of the original gymnasium and auditorium. These stairs were intended to provide a strong connection between floors with the corridor at each floor level acting as a landing of the stair. Part of the draw of these stairs are the beautiful ascending stained glass windows into the east and west courtyards beyond.

In the nineteen-seventies, changes in the building code resulted in a physical and visual disconnect between the east-west corridor and these stairs so that it is no longer possible to enjoy the stained glass windows except when directly within the new stair enclosures.

The scope of work in the seismic upgrade provides opportunities to re-integrate these stairs into each floor level more closely in line with the original design. The current Building Code still requires fire separations at these stairs but it is proposed to capture the full width of the corridor adjacent to each these stairs as part of the stairs to expose the unique heritage stained glass features of these stairs to all persons passing through these corridors on each floor level as during the first 5 decades of the building.

6.1.3 Option 3 Seismic Upgrade with Enhancements to 1000 Student Capacity

Along with the work described for Options 1 and 2 and the benefits it provides, Option 3 increases the student capacity of the school from 800 students to 1000 students. This is necessitated by the increased enrollment demand currently being faced by the School District in the core areas of Victoria and the shortfall in available spaces in the schools of this area (Vic High / Reynolds Secondary / Oak Bay High). Demand is expected to increase steadily over the next fifteen years. The capacity utilization for an 800 student Vic High will be at 123% in 2023/24 or 98% for a 1,000 student school in the same school year. The steady increase in demand in the core area schools is anticipated, given the growth trends the City of Victoria is seeing in these areas.

6.1.4 Option 4 New 1000 Student Capacity School on the Existing Site

While the option of replacing the existing school complex with new facilities on the existing VHS site does have its benefits in providing state of the art educational space. These benefits are offset by the complex nature of the existing Land Titles, the heritage nature of the existing 1914 building and its importance to the community and the city as a whole. Open House information sessions and surveys conducted by the Greater Victoria School District have shown overwhelming support for retaining the existing building as a functioning secondary school and undertaking seismic mediation and building enhancement measures to do so.

As the VHS site is registered but not designated heritage, the School District could proceed with an attempt to demolish the existing school buildings and build a new facility. The City requires multiple levels of consultation, approvals and permits for this to happen and their capacity to delay and/or prevent the work from happening will pose a definite obstacle to Option 4. Combined with the complexity of the Land Titles underlying the school, anomalies in ownership and multiple unconsolidated lots, demolishing or relocating the school to another site, the risks to this option increase. In fact, while the related delays are difficult to estimate, we anticipate a multiple year delay at minimum, based on advice received.

6.2 Short-term Needs to Achieve Long-term Results

6.2.1 Renovation of SJ Willis School for use as swing space

The scope of the work is such that VHS needs to be vacated for 2 years. This means that a suitable facility is required to decant the students and staff while the project is under construction. SJ Willis School has been assessed as being a suitable facility for this as well as decanting for seismic projects at other secondary schools in the near future.

However, in order to accommodate VHS and other schools to follow, SJ Willis School requires remediation and renovations which are outlined in this report. It is not the intent to fully renovate SJW to a level for long-term school use but only as reasonable to safely and effectively accommodate short-term decanting of schools over the next 5-10 years until the secondary school seismic upgrade program is completed for SD No. 61.

6.2.2 Renovations to Burnside Elementary School for District educational facility

In order to enable use of the SJ Willis Education Centre as swing space for the Victoria High School Seismic Upgrade, and possibly other Middle School and Secondary School seismic upgrades, the SD has undertaken to re-open the Burnside School as a District educational facility, reconfigure and renovate the school to bring it back up to an acceptable educational level, including a full seismic upgrade, and to relocate the primary users of SJ Willis to the new Burnside Education Centre. Those users are our Alternate Education and Continuing Education Programs. It is anticipated that those Programs will remain in the Burnside Education Centre for the foreseeable future.

6.3 Life Cycle Analysis

Life Cycle Analyses was done to compare Option 1: Seismic Upgrade, and Option 2: Seismic Upgrade with Enhancements, both for an 800 student enrollment.

Life Cycle Analyses was done to compare Option 3: Seismic Upgrade with Enhancements and increased enrollment to 1000 students, and Option 4: New School on VHS Site with increased enrollment to 1000 students.

The Life Cycle Analysis shows that after 40 years:

- Option 4 is the least expensive option with a Net Present Value of Cumulative cost at Year 40 of $98,686,000 including Capital Costs and Risk Reserves.
- Option 2 is the second least expensive option with a Net Present Value of Cumulative cost at Year 40 of $112,316,000 including Capital Costs and Risk Reserves. (Option 2 does not meet enrollment demands.)
- Option 3 is the third highest option with a Net Present Value of Cumulative cost at Year 40 of $117,812,000 including Capital Costs and Risk Reserves. (Option 1 does not meet enrollment demands.)
- Option 1 is the most expensive option with a Net Present Value of Cumulative cost at Year 40 of $122,865,000 including Capital Costs and Risk Reserves.

7. Recommendation

7.1 Basis:

.1 Enrollment demand.
.2 The physical condition of the school supports seismic remediation work.
.3 The remediation scope facilitates work that will bring the school in line with current educational design initiatives to support contemporary learning and create the types of spaces needed to support those activities.
.4 Consideration of the risks associated with securing approvals from the Authorities Having Jurisdiction particularly around the Heritage aspect of the existing 1914 structure.
.5 Financial considerations.

7.2 Recommendations:

.1 It is the recommendation of this report to pursue Option 3, Seismic Upgrade with Enhancements to a 1000 Student Capacity, as the best course of action for the school and the community.
.2 It is the recommendation of this report that Option 3 work be geared to revitalize the school to current standards making it a relevant educational facility for years to come.
.3 It is the recommendation of this report that Option 3 include consideration to construct a Neighbourhood Learning Centre as part of this project. It has been determined that an NLC could be constructed as a stand-alone structure integrated into the School campus. Discussions between the School District and the City of Victoria have indicated that there is a profound need for such a facility in the Fernwood neighbourhood, and it is anticipated that, in partnership with the City of Victoria, this NLC facility would include a significant Daycare component, similar to what was recently built at the new Oak Bay High School.
.4 It is the recommendation of this report that the work described in Option 3 be undertaken through a Construction Management procurement process.
.5 It is the recommendation of this report that renovation work to SJ Willis School be undertaken as soon as possible to facilitate a smooth transition of the VHS student body to the temporary premises and not encumber VHS work with delays.

8. Project Team