



Memorandum

vancouver school board



2004 October 22

ITEM 5

To: Planning and Facilities Committee II

From: Les King, P.Eng, Director – Facilities
Henry Ahking, Manager – Planning and Facilities

Re: Seismic Assessment of VSB Schools

In a news release on 2004 May 28, the Ministry of Education (MOE) announced a \$2 million program for seismic assessment of schools that lie within high-risk seismic zones to enable the MOE to prepare a long-range plan to implement the seismic upgrade of schools in BC.

The seismic assessments have been undertaken during the months of July to September 2004 and results have been submitted to the MOE on 2004 October 30. They were carried out utilizing a new tool developed in consultation with partner groups including the UBC and the Association of Professional Engineers and Geoscientists of BC and using findings from recent earthquakes in the last 10 years and criteria set out in the draft 2005 National Building Code.

At each school, the buildings were identified into blocks according to age and structure and each assessed and categorized according to its risk category. There were a total of 235 blocks at the elementary schools, of which 86 blocks at 56 schools were categorized as high risk. At the secondary schools, there were a total of 83 blocks of which 37 at 13 schools were categorized as high risk. Each block was also provided with an estimated remediation cost based on standardized rates.

The MOE has requested that seismic upgrade projects in the 2005/2006 Capital Plan submission incorporate the results of the seismic assessments, and has extended the deadline to 2004 October 29 to enable school districts to review and prioritize the results.

Planning and Facilities staff are in the process of prioritizing projects (excluding those supported in previous years' capital plans), based on the assessed risk category, occupancy, and existing facility audit assessments. The methodology is outlined as follows:

- 1) Identifying the blocks of buildings categorized as high risk
- 2) Determining the occupant load for each high-risk block

- 3) Due the limitation of time and resource, for the purpose of identifying the schools to be included in the 2005/2006 Capital Plan, a short list was compiled consisting of the 5 highest-risk secondary schools and the 10 highest-risk elementary school / annexes based on occupant load
- 4) For each school, determine occupant load for all blocks and apply weight for each risk category based on a range of 20-60% of seismic code for existing high to low risk buildings. (High = 5; Moderate-High = 3.33; Moderate = 2.5; Low-Moderate = 2; Low = 1.66); calculate occupant load risk factor for each block and total for each school
- 5) Similar to deriving the previous blended ranking, apply Facility Audit factor to each school total and rank according to score

The total remediation cost for all assessed VSB schools (excluding those supported in previous years' capital plans) has been estimated at \$365 Million. In order to complete the seismic upgrade of moderate to high risk VSB schools within a 15-year time frame, it is estimated that a funding request of approximately \$25 Million should be made each year. (For a 10-year time frame, this amount would be increased to \$36.5 Million per year.)

The schools, from the priority ranking based on the 2004 Seismic Assessment, to be submitted in the 2005 / 2006 Capital Plan are:

- | | |
|--------------------|---|
| Year 3 (2007/2008) | Strathcona Elementary School
Secord Elementary School
Kitsilano Secondary School |
| Year 4 (2008/2009) | Jules Quesnel Elementary School
Carleton Elementary School
Killarney Secondary School |
| Year 5 (2009/2010) | General Gordon Elementary School
Kitchener Elementary School
Gladstone Secondary School |

The seismic upgrade of VSB schools will effectively mitigate extensive structural damage in the event of a major earthquake. The seismic upgrade, in addition to the VSB's ongoing programs in emergency preparedness and non-structural hazard mitigation, will provide for the safety of the occupants in allowing them to evacuate safely after a major earthquake.

A comparison of the 5 highest-risk secondary schools and the 10 highest-risk elementary schools with the previously published Blended (Seismic & Facility Audit) Ranking is provided for reference (Attachment 1). The compilation of priority ranking based on the 2004 seismic assessment is expected to be completed by mid-November 2004 and a more detailed report will be presented to Planning and Facilities Committee II at the December 7th, 2004 meeting.

This item is provided for information.

Attachment: 1

2004 Priority Ranking of VSB Schools		
Moderate to High-Risk Secondary Schools		
	Elementary School Blended Ranking	Priority Ranking based on 2004 Seismic Assessment
Prince of Wales Secondary	1	5
Killarney Secondary	2	2
Gladstone Secondary	3	3
David Thompson Secondary	4	4
Templeton Secondary	5	
Windermere Secondary	6	
Kitsilano Secondary	7	1
University Hill Secondary	8	
Moderate to High-Risk Secondary Schools		
	Elementary School Blended Ranking	Priority Ranking based on 2004 Seismic Assessment
Strathcona Elementary	1	1
Lloyd Geoge Elementary	2	
Maple Grove Elementary	3	
Secord Elementary	4	2
Quesnel Elementary	5	3
Livingstone Elementary	6	
Nelson Elementary	7	9
Bayview Elementary	8	
Gordon Elementary	9	5
Beaconsfield Elementary	10	
Kitchener Elementary	11	6
L'Ecole Bilingue Elementary	12	
Tennyson Elementary	13	
MacDonald Elementary	14	
Wolfe Elementary	15	
Hudson Elementary	16	
Nightingale Elementary	17	
Fleming Elementary	18	8
Queen Alexandra Elementary	19	
Carleton Elementary	20	4
Queen Mary Elementary	21	
Douglas Elementary	22	
Renfrew Elementary	23	
Trafalgar Elementary	24	10
Weir Elementary	25	
McKechnie Elementary	26	
Grandview Elementary	27	
Thunderbird Elementary	28	
Waverley Elementary	29	
Quilchena Elementary	30	
Tecumseh Annex Elementary	31	
Queen Elizabeth Elementary	32	
Tyee Annex Elementary	33	
Moberly Elementary	34	7