

Comox-Strathcona

December 15, 1999

Our File No.: 08603.010

Hornby Island Fire Department
3850 Central Road
Hornby Island, BC
V0R 1Z0

Attention: Giff LaRose, Fire Chief

Dear Giff:

Re: Hornby Island Fire Hall
Preliminary Seismic Evaluation Report
Block C, Section 11, Nanaimo Land District
3850 Central Road

Electoral Area "K"

PURPOSE

This letter will confirm the findings of the site inspection carried out by Giff LaRose, Fire Chief, Andrew Carmicheal, Hornby Island Resident's and Ratepayer,s Association and J. Claude Bédard, Chief Building Official on December 9, 1999. The purpose of the inspection was to provide a structural evaluation of the existing Fire Hall principally concerning the seismic requirements of the BC Building Code (the "Code").

FINDINGS

The Fire Hall is a 2 storey building with 3 parking bays and dispatch office on the 1st storey. The 2nd storey is used as a meeting and recreation area complete with a small kitchen and an office. There are no plans available therefore we must rely on anecdotal information. The building dimensions and size were not established. The building uses are Group A-2 Assembly, Group D Business and Personal Services and Group F-2 Medium Hazard Industrial. We did not substantiate the materiality of any fire separations or fire resistance ratings between the major occupancies. The interior stairway does not conform to Section 3.4. "Exits" of the Code. There are no exits off the 2nd floor. The building is also deficient plumbing facilities. The meeting and recreation room is approximately 70 m² (750 ft²) in floor area. The occupant load for this space with non-fixed seats is 93 persons. The building is not accessible to persons with disabilities.

We did not examine the soils on which the building is supported. Due to the interior finish we were unable to verify the size, spacing and span of any dimensional lumber or determine their structural adequacy except as may be otherwise noted in this report.

The original building was constructed of concrete block and heavy timber posts and beams, 1st storey and wood frame walls and site built truss roof, 2nd storey. We did not verify the existence of any pad footings, concrete piers, perimeter footings or foundations. Mechanical connectors and plywood gussets were recently added to strengthen post/beam connections. The slab and mechanical connectors anchor the base of the posts. Seismic protection for the concrete block walls consists of 2 X 4 frame walls complete with intermediate blocking and sheathed with $\frac{3}{8}$ " plywood nailed at 3" on centre. These walls serve the dual purpose, to carry the roof and floor loads in the event that the concrete block wall failure and to prevent the blocks from collapsing inward thereby impeding the removal of the emergency vehicles. We could not determine how the floor above is anchored to these walls.

The 1st addition was constructed of concrete block walls, wood frame pony walls and roof. We were unable to verify the existence of perimeter footings or foundations. We were informed that the block walls were constructed with columns complete with rebar and concrete core at an undetermined spacing. There is no evidence for the existence of any bond beams. We could not determine if the addition was anchored to the foundations. The flat roof constructed of 2 X 8's at 24" on centre is over spanned for design live loads, rain, snow and occupants. Snow should not be allowed to accumulate during a prolonged snowfall or immediately after. Water ponding at the midpoint of the roof aggravates an already under designed roof structure. A roof drain is required at the low point to reduce the unnecessary rain load. The torch on roofing membrane is not suitable for use as a walking surface. You should refrain from using the roof as a deck until the roof structure is upgraded, an acceptable walking surface is installed and the area is protected with guards and exit facilities.

The 2nd addition was constructed of concrete block walls, wood frame pony walls and roof. We were unable to verify the size of the perimeter footings or foundations. We could not determine if the addition was anchored to the foundations. We were informed that the block walls were constructed with columns complete with rebar and concrete core at an undetermined spacing. There is no evidence for the existence of any bond beams. Lateral loads on the block foundation walls likely exceed design parameters. The exterior finish is wood siding. The flat roof constructed of 2 X 10's at 12" on centre. The torch on roofing membrane is not suitable for use as a walking surface. Use of the roof as a deck should cease until an acceptable walking surface is installed and the area is protected with guards and exit facilities.

CONCLUSIONS

Generally wood frame buildings constructed with substantial compliance to the Code and good engineering practices may be expected to perform well during a seismic event.

Concrete block buildings are more rigid and may be expected to suffer some damage the extent of which is dependent on the severity of the seismic event. Our findings indicate that the building fails to meet the structural design requirements of the Code including those for seismic loads.

The building is likely to be damaged in a seismic event due to:

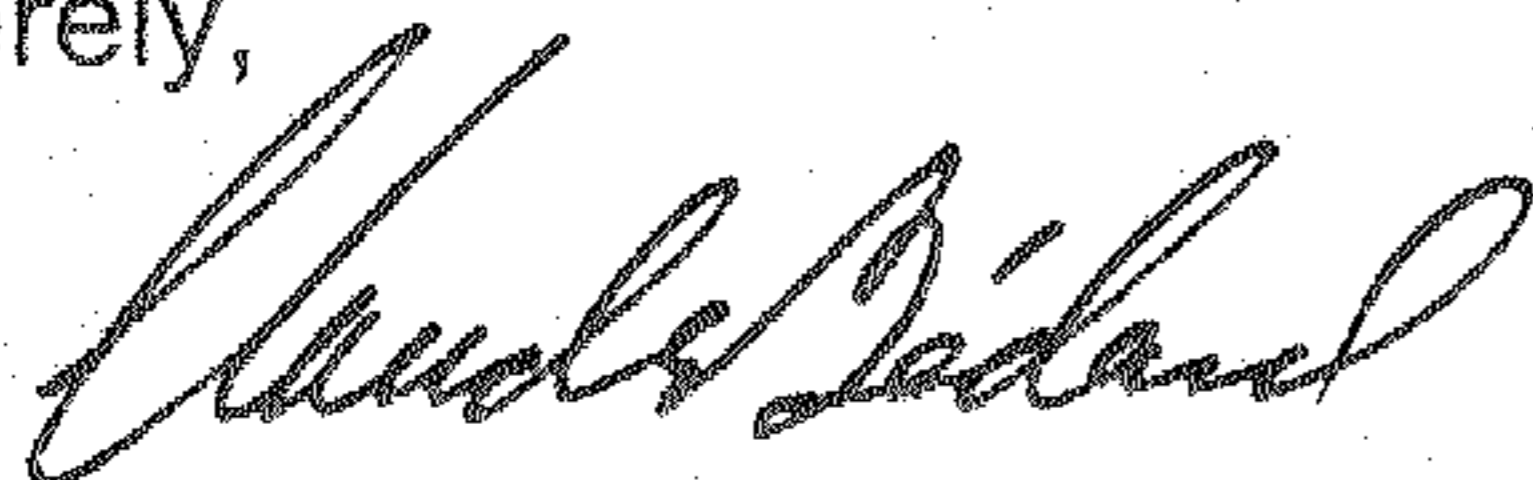
- soils with inadequate bearing capabilities;
- insufficient load distribution building to ground;
- incomplete footings and foundations;
- lack of or insufficient anchors building to foundations;
- lack of mechanical connectors;
- inadequate design;
- faulty framing practices; or
- poor engineering practices.

RECOMMENDATION

The Building Official recommends that Hornby Island Fire Department:

- commission a registered professional, with experience in structural and geotechnical engineering, to conduct a thoroughgoing assessment of the building;
- prepare a budget for any upgrades required under the registered professional's report or for Code compliance;
- verify the completeness of required fire separations and fire resistance rated assemblies;
- provide exits from the 2nd floor;
- provide washroom facilities for persons of each sex;
- install a walking surface on the roof/deck;
- protect the roof/deck with guards;
- provide exits from the roof/deck;
- install a roof drain at the low point in the roof; and
- create a snow removal policy.

Sincerely,



J. Claude Bédard, RBO
Manager, Building Inspection

cc Roxanna Mandryk, Director, Electoral Area K
Janet LeBlancq, Administrator, Hornby Island Resident's and Ratepayer's
Association
Harry Harker, General Manager, Development Services
Jean Ennis, Manager of Human Resources
John France, Risk Manager