

TO: CITY MANAGER DATE: 1997 SEPTEMBER 2

FROM: DIRECTOR ENGINEERING
DIRECTOR PLANNING & BUILDING
CHIEF BUILDING INSPECTOR
EMERGENCY PLANNING COORDINATOR

SUBJECT: FUNDING REQUESTS FOR SEISMIC STUDIES

PURPOSE: TO COMPLY WITH COUNCIL'S REQUEST FOR INFORMATION
ON EARTHQUAKE PREPAREDNESS.

RECOMMENDATION:

1. THAT a copy of this report be sent to the GVRD.

REPORT

1. DESIGN, DEVELOPMENT AND CONSTRUCTION OF PROPERTIES ON THE
EDGE OF THE FRASER RIVER DELTA

An article in the May 1, 1997 edition of *The Vancouver Sun* contained comments on a seismic study that was done by Dr. Garry Rogers and his colleagues at the Pacific Geoscience Centre in Victoria. Dr. Rogers was quoted as saying that buildings situated within the edge of the Fraser River Delta (southernmost portion of Burnaby and portions of other Lower Mainland Municipalities) " ... may be prone to intense shaking and buildings may need extra reinforcement." Council subsequently requested a report on this matter.

Burnaby, the five other municipalities with property on or near the edge of the Delta and the Association of Professional Engineers and Geoscientists of BC are of the opinion that no changes are required at this time as a result of the study conducted by Dr. Rogers.

Existing building codes and the design and construction process are considered to be adequate for development of properties in those areas of Burnaby that lie in close proximity to the Fraser River. Section 4 of the B.C. Building Code pertains to structural design and contains criteria that address seismic considerations. When applying the criteria in Section 4, a structural engineer relies on load-bearing information from a geotechnical engineer who has evaluated soil conditions and made recommendations on suitable structural alternatives for specific conditions based on the design of the building to be constructed on the site. When incorporating these recommendations into the final

design, the structural engineer makes whatever adjustments are required relative to soil conditions and susceptibility to seismic activity. It should also be noted that most designs exceed the minimum requirements of the Code, and that professionals are ethically required to consider any new information in addition to the Code that may have an impact on the structural design or seismic performance of a building.

If this or a future study reveals that building codes are inadequate for specific situations, the normal course of action would be to utilize the National or Provincial code change processes to propose amendments as may be required. This would normally be through a submission by the Association of Professional Engineers and Geoscientists of BC who believe that such action is not warranted at this time. Codes are periodically reviewed and updated and as this occurs in the future, special consideration will continue to be given to those sections concerning seismic implications relative to soil conditions and the design and construction of buildings.

2. SEISMIC STUDIES IN THE GVRD

Council requested information on whether or not the GVRD has received or approved any requests for support from persons or organizations that may be interested in conducting seismic studies in the Lower Mainland. The current status on this matter is as follows:

a) Pacific Geoscience Centre

Dr. Garry Rogers has advised that the study referred to in the newspaper article was carried out with several instruments that measured only strong motions, and that a more extensive study using instrumentation that measures the magnitude of weaker earthquakes would be required for a thorough and more detailed evaluation of seismic activity in the Delta area. He stated that such a study should be conducted over a period of approximately five years. The cost for the first year would be about \$100,000 to acquire instruments and an additional \$75,000 to \$100,000 for the professional services of a scientist to oversee the project. The annual cost for each of the subsequent four years would be approximately \$75,000 to \$100,000 for the continued services of a project scientist.

Natural Resources Canada, the federal agency that funds the work performed at Pacific Geoscience Centre of which Dr. Rogers is the Director, has significantly curtailed funding to the Centre in recent years and is not expected to make available a financial base that would support further seismic studies in the Delta in the foreseeable future.

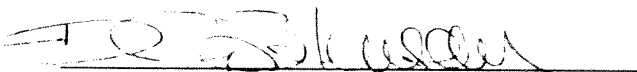
b) UBC Earthquake Engineering Research Group

Dr. Liam Finn, Professor of Civil Engineering at the University of British Columbia, has requested the GVRD to make a contribution toward the cost of a three year project which would study the occurrence of damage to buildings and utilities as the result of earthquakes. He requested a financial contribution which would allow a geotechnical consultant and building experts to be retained for the study.

Dr. Finn appeared before the Regional Administrative Advisory Committee on 1997 April 30. The Committee on that occasion expressed its support for regional participation in the proposed UBC research project and requested staff to investigate the possibility of making a financial contribution. A decision was subsequently made to include Dr. Finn's request in the 1998 GVRD budget review process so that it can be considered together with all the other projects that will be advanced for consideration at that time. In the interim, Dr. Finn was informed that if he wished to do so, he could personally contact individual municipalities to ascertain what level of support might be available from those jurisdictions. The City of Burnaby has not been approached in this regard.

CONCLUSION

Council requested a report on the seismological study that was recently done under the direction of Dr. Garry Rogers in the Fraser River Delta. This report contains information on that study and also on a seismological study that has been proposed for this region by Dr. Liam Finn. There are no other studies on which to report at this time.


Director Planning & Building


Director Engineering


Chief Building Inspector


Emergency Planning Coordinator

