

File No. 04-1000-20-2016-384

October 25, 2016

s.22(1)

Dear s.22(1)

Re: Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")

I am responding to your request of October 24, 2016 for:

Environmental report related to 3327 West 4th Avenue.

All responsive records are attached.

Under section 52 of the Act you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your request. The Act allows you 30 business days from the date you receive this notice to request a review by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number assigned to your request (#04-1000-20-2016-384); 2) a copy of this letter; 3) a copy of your original request for information sent to the City of Vancouver; and 4) detailed reasons or grounds on which you are seeking the review.

Please do not hesitate to contact the Freedom of Information Office at foi@vancouver.ca if you have any questions.

Yours truly,



Barbara J. Van Fraassen, BA
Director, Access to Information
City Clerk's Department, City of Vancouver

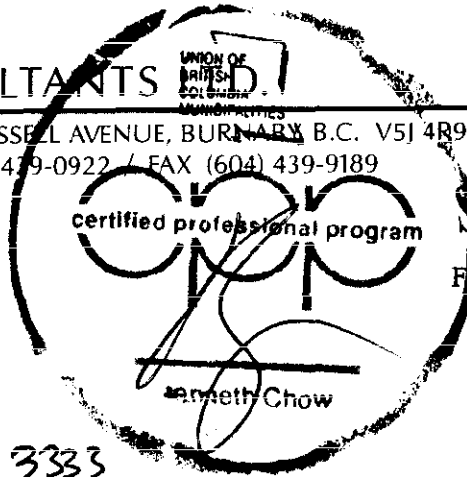
Encl.

:kt

GEPACIFIC

CONSULTANTS

102 - 6968 RUSSELL AVENUE, BURNABY B.C. V5J 4R9
PHONE (604) 439-0922 / FAX (604) 439-9189



SEAL VERIFIED

February 6, 1998

Redekop Properties Inc.
P.O. Box 11526
3360 - 650 West Georgia Street
Vancouver, B.C.
V6B 4N7

408740

Re: Proposed Residential Development at ~~3325-3347~~ West 4th Avenue, Vancouver, B.C.

1.0 Introduction

We understand that Redekop Properties Inc. intends to develop a site located at ~~3325-3347~~ West 4th Avenue in Vancouver, B.C. We further understand that the development is to consist of three levels of wood framed construction over a single level of above grade concrete construction over a maximum of two levels of below grade parking.

THE CERTIFIED PROFESSIONAL STAMP APPLIED HEREON SHALL ONLY OPERATE TO SIGNIFY THAT THESE DOCUMENTS FORM PART OF THE CERTIFIED PROFESSIONAL PROJECT AND SHALL NOT CONSTITUTE A GUARANTEE OF DESIGN OR CONSTRUCTION.

This report was prepared exclusively for Redekop Properties Inc. for their use and the use of others on their design team. The report presents a review of the subsurface soil and groundwater conditions at the site of the proposed development and also makes recommendations for the design and construction of buildings. We have received a copy of the Geotechnical Assessment of the property prepared by SCS Consulting Engineers Ltd for Canada Mortgage & Housing Corporation, dated October 22, 1993.

2.0 Site Description

The site is located on the north side of West 4th Avenue, west of Blenheim Street. The site is essentially flat though the centre of the site is three to four feet lower than grades at property line (within the footprint of the demolished apartment building). Up to six inches of ponded water was observed within the lower portion of the site. The site has a frontage of approximately 165 feet on West 4th Avenue and a depth of approximately 113 feet. The site is bounded by City of Vancouver property north and south and by adjacent private property east and west.

3.0 Field Investigation

The site was investigated on January 31, 1998. A total of 2 test pits were excavated at the site to supplement the test hole information available in the SCS report. The test pits were excavated to depths of up to 16 feet below existing grade at the back lane. The field work was carried out using a back hoe excavator supplied and operated by R.M.B. Hoe Services of Abbotsford, B.C. The test pits were logged in the field by an Engineer from our office and backfilled immediately upon completion of testing and logging.

4.0 Subsurface Conditions

The site is underlain by thin surficial fills and topsoil (less than 2 feet in thickness) over natural soils

which consist of compact to stiff light brown weathered sandy silt to silty sand over very dense, highly stratified silty fine sand to sandy silt over dense to hard sandstone/siltstone bedrock.

The depth to sandstone at the site appears to varies from about 12 to 22 feet below existing grade at the test hole locations.

Significant zones of free water were encountered within the stratified sand/silt deposit overlying the sandstone. Groundwater inflow into the test pit resulted in sloughing and caving of the test pit walls below about 9 to 12 feet. We would expect moderate to heavy seepage from zones containing free water.

Effective refusal for the drilling equipment used by SCS was encountered at between 9 and 22 feet below grade indicating that there could be zones of heavily cemented bedrock at depth. Blasting is generally carried out to permit excavation of cemented zones which cannot be ripped with conventional excavation equipment (CAT 235 back hoe equipped with ripper tooth).

5.0 Site Preparation

We expect that the development would be founded below the depths of any unsuitable soils so that we do not envisage the requirement for any special site preparation.

however:

It is very important that the stripped subgrade be protected to preserve its bearing qualities. The subgrade should remain dry and free of ponded water prior to the pouring of any footings. The wet silty fine sand present between 9 and 20 feet below existing grades is particularly sensitive to disturbance and may require blinding for protection.

We recommend that the stripped site be graded in such a manner that water drains towards a collection point or sump so that ponding of water cannot occur inside the building area. Any water-softened soils should be removed and replaced with well compacted granular fill except for in footing areas where concrete should be used.

As noted above the site contains zones of perched groundwater beneath about 9 feet below existing grades. Moderate to heavy seepage was noted in our test pits, causing instability (caving) in the side walls of the pit.

We expect that some form of dewatering will be required to allow installation of a conventional anchored shotcrete shoring system. Initially, we suggest that a series of deep sumps (4 to 6) be installed well in advance of the installation of shoring below the 10 foot depth. The sumps should be socketed a minimum of 2 feet into the hard sandstone and pumped to draw the water level down towards the base of the excavation. Additional dewatering techniques such as vacuum well pointing may be required.

6.0 Foundations

As noted the site is underlain by very strong natural sand and/or sandstone bedrock at proposed founding elevation, so that we expect that the proposed building can be founded on normal spread foundations.

Foundations on grey to light brown silty fine sand may be designed on the basis of maximum allowable

static bearing pressures of 6,000 psf (286 kPa).

Higher bearing pressures, up to say 20,000 psf (952 kPa), are appropriate for foundations on undisturbed sandstone bedrock. Based on the available test hole information, it appears as if the sandstone may be encountered at the base of the second parking level (along 4th Avenue). We suggest that it would be prudent to initially design foundations on the basis of the lower bearing pressure and have an allowance to utilize the higher bearing (20,000 psf) upon field confirmation.

Allowable static bearing pressures should be reduced to 3,000 psf (143 kPa) where foundations are to be constructed on the weathered silty sand in the upper 8 feet of the profile (access ramp for underground).

We estimate that total settlements should be less than 1 inch and differential settlements should be less than 0.001 radians for foundations designed as recommended.

We recommend that we should inspect all foundation subgrades to confirm the recommended bearing capacity throughout the site.

Footings should be located a minimum of 18 inches (450 mm) below final exterior grade for frost protection.

Stripped sub-grades for foundations should be inspected by the geotechnical engineer of record to confirm the recommended bearing capacity throughout the site prior to placing concrete.

Irrespective of actual bearing pressures, footings should not be less than 18 inches (450 mm) in width for strip footings and not less than 24 inches (600 mm) in width for square or rectangular footings.

The foundation factor, F, as given in Sentence 4.1.9.1.(11) of the 1992 British Columbia Building Code should be assumed to be 1.0 for this site in accordance with Table 4.1.9.C.

The recommended maximum allowable static bearing pressures can be increased by up to 1/3 for short-term, transient loadings such as are induced by winds and earthquakes.

7.0 Grade Supported Floors Slabs

We envisage that the proposed lower parking level and the north half of the upper parking level will have a slab-on-grade floor. In order to provide suitable support for the floor slab-on-grade and allow efficient transfer of groundwater to the site and foundation system, we recommend that a minimum of 6 inches of clear crushed gravel be placed beneath floor slab.

We suggest that the floor slab should be directly underlain by a moisture barrier to inhibit moisture movement up through the slab (in accordance with the Building Code), which is in turn underlain by a "free draining" granular layer at least 6 inches in thickness to inhibit capillary attraction of moisture.

8.0 Temporary Excavation and Excavation Support

We envisage that the depth of excavation for the underground parking basement will vary between about 12 and 22 feet below current local grades.

We recommend that the effect of this excavation on all adjacent properties be evaluated.

We envisage that the "anchored-shotcrete" support system will be used for temporarily shoring of the basement excavation since this is the most economical method in use in the Lower Mainland at this time and has proved to be reliable.

The timely installation of an efficient temporary dewatering system is crucial and necessary to permit the installation of anchored shotcrete. It may also be necessary to make use of additional materials such as "Nudrain" and sheet plywood to control caving of wet sands during panel installation.

9.0 Lateral Earth Pressures For Foundation Walls

Earth pressures on foundation walls depend on a number of factors including wall rigidity, backfill material and required degree of compaction, any surcharge loads, backfill slope, the drainage conditions and method and sequence of construction.

In general, we would expect that foundation and basement walls will be restrained near the top of the wall (by intervening floors) and therefore relatively rigid. We assume that a free draining, self compacting material such as pea gravel and/or control density fill will be used as backfill against foundation walls adjacent to City property (as required by the revised City of Vancouver Backfill Specifications - in effect on all new projects commencing after January 1, 1998)

Sloped Excavations

For sloped excavations, backfilled with lightly tamped free draining material such as washed sand or sand and gravel, we recommend that fully restrained (top and bottom) foundation walls be designed on the basis of an earth pressure equal to $45H$ psf triangular static plus $20H$ psf inverted triangular dynamic (where H is final backfill height in feet).

Vertical Excavations

For vertical excavations, backfilled with free draining, self compacting material such as pea gravel, we recommend that basement and foundation walls be designed on the basis of an earth pressure equal to $15H$ at the ground surface and increasing linearly to $35H$ psf to the base of the wall plus $20H$ psf inverted triangular dynamic (where H is final backfill height in feet).

We suggest that the wall designer treat the static earth pressure as a dead load.

Additional "Surcharge" Loads

Where the proposed basement walls are to support existing adjacent structures constructed on or near property line, as is the case at the west and east property lines, we suggest that an allowance be made for an additional 1,500 pounds/lineal foot acting at 3 feet below existing grade, the full length of the wall to be underpinned on both the east west sides. The loading described herein is an estimate based on our experience with other similar projects. We suggest that the Structural Engineer review the suggested building loads.

The earth pressure stresses given herein are unfactored, and are intended to represent or best estimate

of actual working stress conditions. It should be noted that these earth pressures are for the backfill specified herein. Other types of backfill material will give different earth pressures.

The earth pressures given above make no allowance for water pressures acting on the wall or for any surcharges other than those explicitly described. We recommend that foundation walls should be constructed with a back-of-wall drain to ensure that water pressures do not act on the walls.

Backfill on City of Vancouver property must comply with the latest "Revised Backfill Specification".

The City now requires full time inspection of backfilling by the project geotechnical engineer (or compaction testing), sieve tests on all granular fill and reporting of results.

10.0 SITE AND FOUNDATION DRAINAGE SYSTEMS

As noted in Section 4.0 moderate to heavy seepage can be expected below about 9 feet. We recommend that the designer of "site and foundation drainage" include perimeter drains as well as drains beneath the slab-on-grade on both parking levels. We suggest that initially the designer include one "run" of perforated drain along the centre of each of the P1 and P2 parking levels. The drain should be installed a minimum of 12 inches below the subgrade level.

All drains should be designed to prevent migration of fines into the drain.

11.0 FIELD REVIEWS

As required by "Letters of Assurance", GeoPacific Consultants Ltd. will carry out sufficient field reviews during construction to ensure that the Geotechnical Design recommendations contained within this report have been adequately communicated to the design team and to the Contractor(s) implementing the Design. These field reviews are not carried out for the benefit of the Contractor(s) and therefore do not in any way effect the Contractor(s) obligations to perform under the terms of his/her Contract.

It is the Contractor responsibility to advise GeoPacific Consultants Ltd. (a minimum of 24 hours in advance) that a field review is required. Geotechnical field reviews are normally required at the time of the following activities.

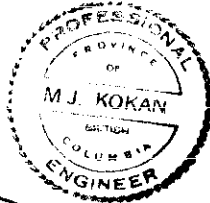
- 1) Excavation - Review of Temporary Slopes/Shoring (see Section 8.0)
- 2) Foundations - Review of Foundation Subgrade (See Section 6.0)
- 3) Slab-on Grade - Review of Subgrade and Under-Slab Fill (see Section 7.0)
- 4) Backfill - Review of Backfill Placed Against Basement/Foundation Walls (see Section 9.0).

12.0 CLOSURE

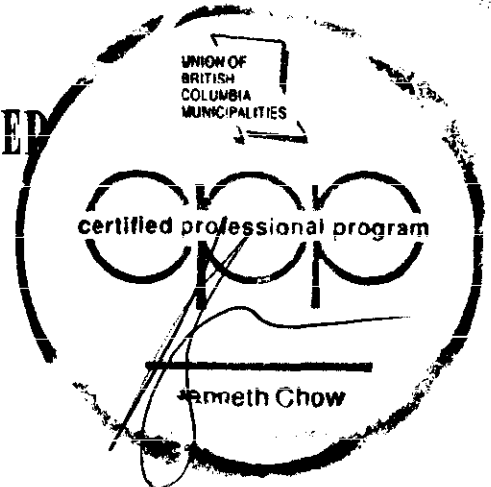
We are pleased to be of assistance to you on this project and we trust that our comments and recommendations are both helpful and sufficient for your current purposes. If you would like further details or require clarification of the above, please do not hesitate to call.

For:
GeoPacific Consultants Ltd.


Matt Kokan, M.A.Sc., P.Eng.



SEAL VERIFIED



ref:disk:mk20;file:2614.rpt

THE CERTIFIED PROFESSIONAL STAMP APPLIED HEREON SHALL ONLY OPERATE TO SIGNIFY THAT THESE DOCUMENTS FORM PART OF THE CERTIFIED PROFESSIONAL PROJECT AND SHALL NOT CONSTITUTE AN APPROVAL OF DESIGN SERVICES RENDERED BY OTHERS.