CITY OF PORT MOODY

Development Permit No. DP000072

HOUSE OF OMEED, INC. NO. 11088998 230-3355 NORTH RD. BURNABY, BC, V3J 7T9

- 1. This Development Permit is issued subject to compliance with all applicable City Bylaws, except as specifically varied or supplemented by this Permit.
- 2. This Permit applies to those lands in Port Moody, British Columbia more particularly described below and including all buildings, structures and other development thereon:

PID: 001-009-192

LEGAL DESCRIPTION:

THE EAST HALF OF LOT 52 EXCEPT: PART SUBDIVIDED BY PLAN 908; BLOCK 1 DISTRICT LOT 202 GROUP 1 NEW WESTMINSTER DISTRICT PLAN 55

(the "Lands")

3. The following plans and documents are made part of this Permit and, notwithstanding any other provision, no works shall be performed upon the Lands covered by this Permit, nor shall any building or structure be erected, constructed, repaired, renovated or sited, that is not in substantial accordance with the following and strictly in accordance with all terms and conditions of this Permit:

Development Permit: Hazardous Lands – Soil Liquefaction

- (a) Geotechnical Report Titled "Preliminary Geotechnical Exploration Report, Proposed Structure Addition, 2340 Clarke Street, Port Moody, BC, File No. 24-9856", on file with the City, prepared by Braun Geotechnical Ltd. dated 26 June 2024, and attached as Schedule A to this permit, and any amendments thereto subsequently approved by the City.
- 4. An updated Geotechnical Report shall be submitted to the satisfaction of the City and registered on title prior to the issuance of any Building Permits for this project.
- 5. The Works contemplated in plans set out in 3 above shall be completed within two years of the date of issuance of this permit or the permit shall lapse.

CITY OF PORT MOODY, by its authorized signatories:

Wesley Woo

Manager of Development Planning (Transit Oriented Areas) (for)

Kate Zanon General Manager of Community Development

Pursuant to City of Port Moody Development Permit Delegation Bylaw, 2015, No. 3032

Dated on the _____ of _____, 2024.

SCHEDULE A

Geotechnical Report



June 26, 2024 Our File: 24-9856

Via email: <u>ahmad@houseofomeed.ca</u>

House of Omeed 2340 Clarke Street Port Moody, BC V3H 1Y8

Attn: Ahmad Zeividavi, Executive Director

Re: **Preliminary Geotechnical Exploration Report** Proposed Structure Addition 2340 Clarke Street, Port Moody, BC

1.0 INTRODUCTION

As requested, Braun Geotechnical Ltd. (BGL) completed a geotechnical exploration and assessment for the above-referenced project. The geotechnical work was performed in general accordance with the terms and conditions of the BGL proposal dated May 29, 2024 (our reference no. P24-8533 R1). The scope of work included subsurface exploration and the provision of preliminary geotechnical recommendations for the proposed structure additions at the above-mentioned site.

The scope of services was limited to the evaluation of geotechnical characteristics at the site and no consideration was given to any environmental aspects.

Should any changes be made to the proposed layout or general nature of the project, BGL should be notified to review and modify the recommendations to reflect those changes, as appropriate. Final project drawings should be forwarded to us when they become available and BGL should be provided the opportunity to comment on geotechnical aspects.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located at 2340 Clarke Street, Port Moody, BC. The subject site is generally flat lying, with existing grades ranging from El. 5.5 m to 7.0 m approximately. The site is approximately rectangular in shape, with overall maximum plan dimensions of approximately 10.1 m x 25.5 m.

Based on the preliminary architectural drawings dated May 14, 2024, prepared by Mara+Natha Architecture Inc. the proposed development included additions to the north and south, as well the third floor of the existing building

At the time of the geotechnical exploration the property was occupied by an existing two-story building with food storage and stairways on the northside of the building. The remaining areas were covered with concrete slab, block pavement and landscaped areas.

It is understood that the project property is located within an area identified by the City of Port Moody as Moderate to High Risk of Earthquake Soil Liquefaction.

Foundations, Excavation & Shoring Specialists

Braun Geotechnical

102 – 19049 95A Avenue, Surrey, BC V4N 4P3 Tel: 604-513-4190

Foundations

Excavation & Shoring

Slope Stability

Natural Hazards

Pavement Design and Management

Reinforced Soil Walls and Slopes

PTP # 1002594

3.0 SITE EXPLORATION

One test hole (TH24-01) was drilled on June 13, 2024, to a depth of 10.7 m using a truck mounted solid stem auger drill under subcontract to BGL. The soil conditions were logged in the field by BGL. Representative soil samples were returned for moisture content laboratory testing and further visual classification. A Dynamic Cone Penetration Test (DCPT) was advanced adjacent to TH24-01 to a depth of practical refusal at 10.4 m. Local experience indicates that the DCPT results can be approximately correlated with Standard Penetration Test (SPT) N-values and as a screening tool to estimate the relative in situ density of granular soils and strength of cohesive soils.

The approximate test locations are shown on the enclosed Location Plan (Dwg. no. 24-9856-01).

4.0 SOIL AND GROUNDWATER CONDITIONS

Review of available published geological information and in-house subsurface information indicated that the study site area is underlain by postglacial and pleistocene deposits comprising marine shore and fluvial sand up to 8 m thick.

The findings of the test hole exploration were generally consistent with the regional geological information. The findings of the field exploration and laboratory testing are provided on the attached test hole log. A generalized subsoil profile based on the test hole log is provided below.

<u>SILT</u>

A 100 mm thick concrete slab over dark brown, damp, firm, organic rich SILT with some sand and occasional wood pieces was encountered to a depth of approximately 0.8 m.

SAND & GRAVEL

Grey-brown to brown, moist, loose to compact SAMD & GRAVEL with some silt was encountered below to a depth of approximately 1.5 m.

SAND

Brown, occasionally rust mottled, wet, loose to compact SAND with some silt and a trace of gravel was encountered below to a depth of approximately 3.0 m. Rust brown, occasionally rust mottled color was observed below 2.7 m within this layer.

<u>SILT</u>

Grey-brown, moist, stiff to very stiff SILT with some fine sand and a trace of gravel was encountered below to a depth of approximately 5.5 m.

Silty SAND

Grey-brown, moist to wet, compact silty SAND with trace gravel was encountered below to a depth of approximately 6.1 m.

<u>Sandy SILT</u>

Grey, damp to moist, very stiff sandy SILT with some gravel (till-like) was encountered below to the depth of test hole exploration at 10.7 m.

GROUNDWATER

A perched groundwater level was encountered at approximately 1.5 m depth below the existing grade at the time of test hole exploration. Depending on the season and/or weather conditions, near-surface seepage flows should be anticipated within natural and fill soil layers overlying the relatively low permeable firm to stiff soils, and/or within sand seams. Groundwater levels and near-surface run-off flows are expected to fluctuate seasonally, and with drainage conditions.

The subsurface conditions described above were encountered at the test hole location only. Subsurface conditions at other locations could vary.



5.0 DISCUSSION AND RECOMMENDATIONS

5.1 General

The test hole exploration generally encountered an approximately 0.8 m thick layer of natural, firm organic rich silt over loose to compact sand and gravel to a depth of approximately 1.5 m, underlain by loose to compact sand with some silt to an approximate depth of 3.0 m. This was underlain by stiff to very stiff silt with some fine sand to approximately 5.5 m depth over compact silty sand to approximately 6.1 m depth overlying very stiff sandy silt till like soils to the depth of exploration at 10.7 m. Groundwater seepage was encountered at approximately 1.5 m below the existing grade.

The proposed structures could be supported on the natural compact sand & gravel / sand and/or on well compacted structural fills placed thereon, using shallow strip and pad footings.

The following sections provide our geotechnical recommendations for site preparation and foundation design. The recommendations provided below are preliminary and subject to review and revisions as required, based on a review of any potential design concepts, and actual subsurface conditions encountered during excavation.

5.2 Site Preparation

Site preparation below the proposed footings should include removal of all vegetation, organic soils, soft to firm disturbed soils, fill, and other deleterious material. Exposed subgrade soil should comprise the natural, undisturbed loose to compact sand & gravel and/or sand. The proposed footings should be bearing on a 300 mm thick structural fill, granular pad. The structural fill granular pads should extend a minimum of 300 mm on all sides of the footing. Detailed excavations should be completed with a straight edged 'clean up' bucket.

Prior to placement of structural fill for the proposed footing locations, the exposed loose to compact soils should typically be re-compacted to at least 95% Modified Proctor Maximum Dry Density (MPD). Any soft subgrade soil should be removed and replaced with structural fill.

Drainage measures should be implemented to reduce potential for water ponding on exposed subgrade surfaces. Temporary and final grades should be established to avoid uncontrolled offsite discharge of surface and/or near-surface run-off flows.

Stripped surfaces should be reviewed and approved by BGL prior to placing foundations or structural fills.

5.3 Structural Fill

Subgrade restoration fills should consist of structural fill comprised of well graded, free draining sand and gravel with less than 5% fines (percent passing the #200 sieve). Structural fill should be placed and compacted in maximum 300 mm loose layers with each layer compacted to at least 95% of MPD. For confined areas, structural fill placed under building and roadway pavements should extend horizontally beyond by a distance equal to at least the thickness of structural fill. Unconfined fills should typically extend horizontally by a distance equal to 2 times the thickness of structural fill.

Density testing should be carried out during fill placement on a regular basis to confirm adequacy of compaction, and the results forwarded to BGL for review. BGL should also be contacted to review fill quality, and placement and compaction procedures.



5.4 Foundation Design

It is recommended that the proposed footings be supported on well compacted structural fills placed on the recompacted natural sand & gravel and/or sand.

When BGL was on-site for the drilling investigation, the subgrade and footings of the existing building foundation could not be reviewed. The information from the client indicated that the existing building foundations are approximately 1.5 m below the finished grade. Based on the findings from the drilling investigation, it is anticipated that the existing foundations are supported on natural, loose to compact sand and gravel and/or sand soils. It is assumed that the existing strip footings have a minimum width of 0.45 m. Soil bearing capacity values depend on the width of the footings. The existing footing dimensions and subgrade conditions should be reviewed and confirmed by BGL.

The following soil resistance (bearing) values may be adopted for preliminary foundation design:

Foundation Subgrade	Limit States Design		Working Stress Design
	Factored Ultimate Bearing Resistance (ULS) ¹	Serviceability Limit State (SLS)	Allowable Bearing Pressure DL + LL
New footings on Compacted Structural Fill	150 kPa (3100 psf)	100 kPa (2050 psf)	100kPa (2050 psf)
Existing footings on natural loose to compact soils	112 kPa (2340 psf)	75 kPa (1550 psf)	75 kPa (1550 psf)

¹The factored ultimate bearing resistance values include a geotechnical resistance factor of 0.5.

The above design bearing pressures for soil subgrade assume the following:

- Strip and pad footings have minimum widths of 450 mm (18") and 600 mm (24"), respectively.
- Footings are founded at least 450 mm (18") below final finished adjacent grade.
- Site preparation is completed as indicated above and load-bearing surfaces are reviewed and approved by BGL.
- Foundation bearing surfaces are no higher than 2H:1V (Horizontal to Vertical) from the base or toe of adjacent walls, retaining structures, etc.
- Footings are placed below a 1H:1V line projected up from lower footings or buried structures such as utility lines, sumps, etc.
- Silty subgrade areas are protected immediately after exposure.

Foundation bearing surfaces should be reviewed by BGL. Any soft, wet, or deleterious material encountered at bearing surface level should be sub-excavated and replaced with structural fill compacted in maximum 300 mm thick layers to at least 95% MPD.

5.5 Seismic Considerations

The 2024 BC Building Code with Subsection 4.1.8 of BCBC 2018 classifies a site as "Site Class D" where the subgrade soils in the upper 30 m consist of "stiff soils" with average shear wave velocity between 180 m/s and 360 m/s, average SPT N values between 15 and 50, and average undrained shear strength (su) between 50 kPa and 100 kPa. Site Class D is considered appropriate for the study site.

The subgrade soil conditions are not considered susceptible to seismically induced liquefaction.



5.6 Slab on Grade

The slab on grade should be underlain by a drainage layer comprising a minimum 100 mm (4") thick layer of 20 mm clear crushed gravel (no sand, no fines). This drainage layer should have a suitable discharge to the permanent storm system. Polyethylene sheeting should be provided beneath the floor slab to reduce potential slab dampness.

Compaction testing should be carried out on underslab fills to confirm that all fill placed below the building has been compacted to at least 95% MPD. Prior to placement of any grade restoration fills, the subgrade should be reviewed by the BGL.

5.7 *Perimeter Drainage*

Perimeter drainage should consist of perforated PVC pipe, placed around the building perimeters, with the invert elevation at a minimum of 200 mm below floor slab and typically at footing elevation. The perimeter drain pipe should be sized by the mechanical consultant. The perimeter drain should be surrounded by at least 150 mm (6") of 19 mm ($\frac{3}{4}$ ") clear crushed gravel. A 150 mm (6") thick layer of birdseye gravel should be placed over the clear crushed gravel to act as a filter layer. Alternatively, the clear crushed gravel may be encapsulated in non-woven filter fabric (Layfield LP6 or approved equivalent).

6.0 GEOTECHNICAL FIELD REVIEWS

Geotechnical field reviews are required by the Geotechnical Registrant and to satisfy the requirements of the Letters of Professional Assurance required for the Building Permit. Field reviews are essential to confirm that the recommendations of the geotechnical report are understood and followed.

Geotechnical field reviews should be arranged by the Contractor to address the following:

- Removal of unsuitable materials below proposed footings, slab on grade area and asphalt pavement areas;
- Suitability of exposed footing subgrade;
- Review and density testing of structural fill placed below building footings and pavement structures;
- Review of perimeter drain installation with respect to geotechnical considerations only (if required) and
- Review placement and compaction of underslab gravel drainage layer.

7.0 CLOSURE

This report should be considered preliminary and is subject to review and revision as required once civil, architectural and structural design details have been finalized.

This report is prepared for the exclusive use of House of Omeed and their designated representatives and may not be used by other parties without the written permission of BGL. The City of Port Moody may also rely on the findings of this report.

If the development plans change, or if during construction soil conditions are noted to be different from those described in this report, BGL should be notified immediately in order that the geotechnical recommendations can be confirmed or modified, as required. Further, this report assumes that field reviews will be completed by BGL during construction.

The site Contractor should make their own assessment of subsurface conditions and select the construction means and methods most appropriate to the site conditions. This report should not be included in the specifications without suitable qualifications approved by BGL.



The use of this assessment report is subject to the conditions on the attached Report Interpretation and Limitations sheet. The reader's attention is drawn specifically to those conditions, as it is considered essential that they be followed for proper use and interpretation of this report.

We hope the above meets with your requirements. Should any questions arise, please do not hesitate to contact the undersigned.

Yours truly,

Braun Geotechnical Ltd.

Avninder Singh Cheema, EIT Geotechnical Engineer

Independently Reviewed by:

4.06.26

Gunther Yip, P.Eng. Geotechnical Engineer

Enclosures: Report Interpretation and Limitations Location Plan Test Hole Log (1)

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Joseph (Liston) Oh, P.Eng. Geotechnical Engineer

Braun Geolechnical Ltd.



REPORT INTERPRETATION AND LIMITATIONS

1. STANDARD OF CARE

Braun Geotechnical Ltd. (Braun) has prepared this report in a manner consistent with generally accepted engineering consulting practices in this area, subject to the time and physical constraints applicable. No other warranty, expressed or implied, is made.

2. COMPLETENESS OF THIS REPORT

This Report represents a summary of paper, electronic and other documents, records, data and files and is not intended to stand alone without reference to the instructions given to Braun by the Client, communications between Braun and the Client, and/or to any other reports, writings, proposals or documents prepared by Braun for the Client relating to the specific site described herein.

This report is intended to be used and quoted in its entirety. Any references to this report must include the whole of the report and any appendices or supporting material. Braun cannot be responsible for use by any party of portions of this report without reference to the entire report.

3. BASIS OF THIS REPORT

This report has been prepared for the specific site, development, design objective, and purpose described to Braun by the Client or the Client's Representatives or Consultants. The applicability and reliability of any of the factual data, findings, recommendations or opinions expressed in this document pertain to a specific project as described in this report and are not applicable to any other project or site, and are valid only to the extent that there has been no material alteration to or variation from any of the descriptions provided to Braun. Braun cannot be responsible for use of this report, or portions thereof, unless we were specifically requested by the Client to review and revise the Report in light of any alterations or variations to the project description provided by the Client.

If the project does not commence within 18 months of the report date, the report may become invalid and further review may be required.

The recommendations of this report should only be used for design. The extent of exploration including number of test pits or test holes necessary to thoroughly investigate the site for conditions that may affect construction costs will generally be greater than that required for design purposes. Contractors should rely upon their own explorations and interpretation of the factual data provided for costing purposes, equipment requirements, construction techniques, or to establish project schedule.

The information provided in this report is based on limited exploration, for a specific project scope. Braun cannot accept responsibility for independent conclusions, interpretations, interpolations or decisions by the Client or others based on information contained in this Report. This restriction of liability includes decisions made to purchase or sell land.

4. USE OF THIS REPORT

The contents of this report, including plans, data, drawings and all other documents including electronic and hard copies remain the copyright property of Braun. However, we will consider any reasonable request by the Client to approve the use of this report by other parties as "Approved Users." With regard to the duplication and distribution of this Report or its contents, we authorize only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of this Report by those parties. The Client and "Approved Users" may not give, lend, sell or otherwise make this Report or any portion thereof available to any other party without express written permission from Braun. Any use which a third party makes of this Report – in its entirety or portions thereof – is the sole responsibility of such third parties. BRAUN GEOTECHNICAL LTD. ACCEPTS NO RESPONSIBILITY FOR DAMAGES SUFFERED BY ANY PARTY RESULTING FROM THE UNAUTHORIZED USE OF THIS REPORT.

Electronic media is susceptible to unauthorized modification or unintended alteration, and the Client should not rely on electronic versions of reports or other documents. All documents should be obtained directly from Braun.

5. INTERPRETATION OF THIS REPORT

Classification and identification of soils and rock and other geological units, including groundwater conditions have been based on exploration(s) performed in accordance with the standards set out in Paragraph 1. These tasks are judgemental in nature; despite comprehensive sampling and testing programs properly performed by experienced personnel with the appropriate equipment, some conditions may elude detection. As such, all explorations involve an inherent risk that some conditions will not be detected.

Further, all documents or records summarizing such exploration will be based on assumptions of what exists between the actual points sampled at the time of the site exploration. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of and accept this risk.



The Client and "Approved Users" accept that subsurface conditions may change with time and this report only represents the soil conditions encountered at the time of exploration and/or review. Soil and ground water conditions may change due to construction activity on the site or on adjacent sites, and also from other causes, including climactic conditions.

The exploration and review provided in this report were for geotechnical purposes only. Environmental aspects of soil and groundwater have not been included in the exploration or review, or addressed in any other way.

The exploration and Report is based on information provided by the Client or the Client's Consultants, and conditions observed at the time of our site reconnaissance or exploration. Braun has relied in good faith upon all information provided. Accordingly, Braun cannot accept responsibility for inaccuracies, misstatements, omissions, or deficiencies in this Report resulting from misstatements, omissions, misrepresentations or fraudulent acts of persons or sources providing this information.

6. DESIGN AND CONSTRUCTION REVIEW

This report assumes that Braun will be retained to work and coordinate design and construction with other Design Professionals and the Contractor. Further, it is assumed that Braun will be retained to provide field reviews during construction to confirm adherence to building code guidelines and generally accepted engineering practices, and the recommendations provided in this report. Field services recommended for the project represent the minimum necessary to confirm that the work is being carried out in general conformance with Braun's recommendations and generally accepted engineering standards. It is the Client's or the Client's Contractor's responsibility to provide timely notice to Braun to carry out site reviews. The Client acknowledges that unsatisfactory or unsafe conditions may be missed by intermittent site reviews by Braun. Accordingly, it is the Client's or Client's Contractor's responsibility to inform Braun of any such conditions.

Work that is covered prior to review by Braun may have to be re-exposed at considerable cost to the Client. Review of all Geotechnical aspects of the project are required for submittal of unconditional Letters of Assurance to regulatory authorities. The site 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.

7. SAMPLE DISPOSAL

Braun will dispose of all samples 1 month after issuance of this report, or after a longer period of time at the Client's expense if requested by the Client. All contaminated samples remain the property of the Client and it will be the Client's responsibility to dispose of them properly.

8. SUBCONSULTANTS AND CONTRACTORS

Engineering studies frequently require hiring the services of individuals and companies with special expertise and/or services which Braun does not provide. These services are arranged as a convenience to our Clients, for the Client's benefit. Accordingly, the Client agrees to hold the Company harmless and to indemnify and defend Braun from and against all claims arising through such Subconsultants or Contractors as though the Client had retained those services directly. This includes responsibility for payment of services rendered and the pursuit of damages for errors, omissions or negligence by those parties in carrying out their work. These conditions apply to specialized subconsultants and the use of drilling, excavation and laboratory testing services, and any other Subconsultant or Contractor.

9. SITE SAFETY

Braun assumes responsibility for site safety solely for the activities of our employees on the jobsite. The Client or any Contractors on the site will be responsible for their own personnel. The Client or his representatives, Contractors or others retain control of the site. It is the Client's or the Client's Contractors responsibility to inform Braun of conditions pertaining to the safety and security of the site – hazardous or otherwise – of which the Client or Contractor is aware.

Exploration or construction activities could uncover previously unknown hazardous conditions, materials, or substances that may result in the necessity to undertake emergency procedures to protect workers, the public or the environment. Additional work may be required that is outside of any previously established budget(s). The Client agrees to reimburse Braun for fees and expenses resulting from such discoveries. The Client acknowledges that some discoveries require that certain regulatory bodies be informed. The Client agrees that notification to such bodies by Braun will not be a cause for either action or dispute.



Attachment 3



Test Hole Log: TH24-01

File: 24–9856 Project: Proposed Structure Addition Client: House of Orneed Location: 2340 Clarke St, Port Moody, BC

Attachment 3 PTP# 1002594 BEDTECHNICAL LTD.

