

Schedule "A"

P E T R A ENGINEERING (2000) LTD.

204 -- 7536 TOPAZ DRIVE, CHILLIWACK, B.C. V2R 5Y9 Tel: (604) 824-4948

September 30, 2019

File No: 2018-257

Mr. Cole Longmuir (Owner)
5295 Goldspring Place
Chilliwack, BC V2R 3Y3

Mr. Gary Graham (Agent)
Box 2131
Hope, BC V0X 1L0

**Re: Revised Geotechnical Report for 3-Lot Subdivision of 2.893 ha Parcel (CR-1),
22175 Ross Road, Hope, B.C. V0X 1L3**

Dear Sirs:

1.0 INTRODUCTION

At the request of Mr. Cole Longmuir (the Owner) and Mr. Gary Graham (the Agent), a geotechnical site investigation was completed at the subject property for the purposes of subdivision into three new Strata Lots of approximately 0.96 hectare each, to create the proposed lower (SL1), middle (SL2) and upper (SL3) residential building sites.

This letter report replaces our previous letter report dated July 29, 2019; it includes our updated findings and recommendations for the following:

- The new access roadway and easement complete with storm-water ditches and culverts to be commissioned along the west side of the property;
- Two vehicle bypass sections with approved concrete barriers for traffic safety;
- Safe building envelopes on three Strata Lots for single-family residential buildings;
- A coordinated storm drainage plan (with easements) to conduct the seasonal upslope runoff from lands north to south along the proposed lots and the adjacent properties;
- Suitable on-site sewerage systems (including primary absorption/drain field areas) for each new proposed single-family residential Strata Lot; and
- Approved storm drainage systems (footing drains, roof rainwater leaders and soak-away structures OR stormwater 'outfalls') for each residential building site, plus proper driveway construction, parking areas and lot grading parameters.
- The old roadway easement loop along the east side of the property is redundant, therefore can be decommissioned (discharged) and returned to the respective owners.

The formal BCLS Boundary and Topographical Survey (attached) replaces our former Proposed Site Plan for Subdivision, Scale 1:1000, on Sheet No. 2 (d/ July 29, 2019).

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2.0 AREA GEOLOGY

The area geology is comprised of post glacial deposits of organics and silts, sands and gravelly sands which vary in depth from 0.5 to 2.5 metres. Underneath the gravelly sands is a weathered, jointed and friable metamorphic shale-like bedrock which becomes more competent and cemented with depth. In addition, there are dense igneous (granitic) outcroppings here and there.

Topography. The parent parcel inclines from south to north, from Elevation 126m ASL (along the SLL) to Elevation 180m ASL (along the NLL). The hillside terrain is irregular, somewhat undulating with alternating benches (with moderate grades of 10 to 15 degrees) and steeper intermediate slopes (with inclines of 27 to 45 degrees). There are many natural bedrock outcroppings and steep bedrock exposures (small cliffs) here and there, as well as, multiple more recent (artificial) cuts and fills for the roadways, the ditches and the driveways.

Vegetation. This parcel was recently logged in 2010 by the present owner, mainly for the coniferous trees. The older stump and log remains are evidence of earlier logging or harvesting activities, probably completed 4 to 5 decades ago. There are isolated second-growth deciduous and coniferous tree stands and dense brush pockets with deadfall here and there. The ground cover includes 'native' shrubs, creeping plants, herbs and grasses, as well as, ferns and mosses in the more-shaded areas.

3.0 PROPOSED DEVELOPMENT

The proposed subdivision of the subject parcel (Address: 22175 Ross Road) will create three Strata Lots, each about 0.96 hectare in area, with dimensions 72m WD x 134m DP.

Each new single-family residential building site will be located on a benched area with appropriate safe setbacks from the steep natural slopes, embankment cuts OR loose fills. The house foundations are to be founded on dense 'native' gravelly subgrade OR bedrock layer OR on an approved structural fill layer compacted to 98 percent SPMDD.

An overall coordinated storm drainage plan is required along the access roadways, along the east, west and south boundaries, as well as, between the three new Lots. Approved storm drainage systems, catchments, soak-aways OR 'outfalls' are required for each Lot.

4.0 UTILITY SERVICES BY OTHERS

There will be a new BC Hydro overhead electrical service at each Strata Lot. There will be a domestic water service for each Strata Lot (from the 'community' or licensed shared well-point). Each proposed new residential building site will require an on-site sewerage system. Each on-site sewerage system will require both primary and reserve drain field areas, plus a comprehensive future maintenance plan.

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5.0 SITE INVESTIGATION PROCEDURE

Subsoils Investigation. Subsoil probes and test-holes were made 2' to 5' deep at each of the proposed building sites down to the dense gravelly subgrade OR shale-like bedrock strata. Additional sampling of the cohesive soil layers (loams and silts) was completed. The subsoil test locations and profiles were recorded on Sheets No. 3 to No. 6, inclusive.

On-Site Sewerage Systems. Multiple probes were made at the primary and reserve drain field locations for the on-site sewerage system for each principal residence at each Lot. In addition, two observation holes, subsoil profiles and subsoil percolation tests were recorded for the primary absorption (drain field) area for each Lot.

6.0 CONSTRUCTION HISTORY

Previous Mobile Home. The previous mobile home along the east lot line (ELL) was built in the 1990's for a relative. It was demolished circa 2014 after several years of rental, wear and tear by the tenants.

Lower Road Network to the East. The road network East of the SCHKAM Reserve #2 (Easement Plan KAP76196) was constructed two decades ago by the previous owners.

Upper Private Road into NW Corner. The public road from Ross Road to the NW corner of this parcel (as per Easement Plan KAP73607) was planned and constructed circa 2004.

Subdivision of 22100 Ross Road. This Parcel #22175 was subdivided from 22100 Ross Road circa 2015. We understand that the property was also rezoned to CR1 at that time.

7.0 FINDINGS

Building Envelope for Strata Lot SL3. This Lot inclines from contour interval 162m to 180m ASL (north boundary). The building site is both flat and sloping with exposed bedrock, as well as 2'- 3' of loose fill (broken rock, gravelly, loamy and topsoil) over same. The residential building envelope lies along the upper bench (Elev. 170m ASL). The south-facing bedrock slope will require some rock excavation (steps and benching).

Building Envelope for Strata Lot SL2. This Lot inclines from contour interval 142m ASL to contour interval 162m ASL. The building site (undulating) at Lot #2 was probed at various locations. Generally, there is 18" to 36" of medium-loose silty to gravelly soil over the shallow bedrock strata. A new driveway plus culvert was constructed for access to the building site. The proposed residential building envelope for Strata Lot SL2 lies along the middle bench along contour elevation 156m ASL, as shown.

Building Envelope for Strata Lot SL1. This Lot inclines from contour interval 126m ASL (south boundary) to contour interval 142m ASL along the east-west roadway. A new access driveway was built as shown. The building site at SL1 (sloped) was probed at various locations. Generally, there is 24" to 36" of medium-loose silty to gravelly subsoil (a mix of local loamy, silty and gravelly layers plus some topsoil, organics & roots) over the shallow bedrock strata. The proposed residential building envelope for Strata Lot SL1 lies along the lower bench along contour elevation 134m ASL, as shown.

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The proposed safe building envelopes for the Strata Lots **SL1, SL2 and SL3** are shown on the CONDOR Boundary and Topographical Survey Plan (FILE: 19135-4), attached.

Natural Drainage Basins. The ancient natural drainage basins and seasonal streams are generally flowing from north to south along the parent property and north of same. The east-to-west local road network with ditches has diverted OR rerouted the surface storm run-off to some degree into an easterly and westerly (lateral) direction at this property. The roadway cuts and fill embankments plus shallow ditches and culverts will require an annual inspection OR periodic maintenance following extreme weather conditions (e.g. heavy precipitation, rainfalls, snowfalls and ice storms).

Existing Access Roads. The existing access roads lie along the Easement Plan No. KAP 76196. The existing road grades are generally satisfactory (12 percent or less). The steep embankment side-slopes (cuts and fills steeper than 1.0 VERT : 1.5 HORIZ) will require an annual inspection for slope stability OR loose rockfall fragments. The roadway ditches and culverts which served the parent property were upgraded to receive heavier storm OR seasonal flows which can be expected during the post-development period.

Commission New Access Road from the NW Corner. The new access road constructed from the NW corner along westerly side of the property (approx. 186m along centreline) will replace the older roadway loop along the north and east boundaries (approx. 330m along the centreline). The new roadway gradient is in the range of 10 – 12 percent. The new gravelled roadway requires an approved crushed gravel suwearing surface (to 2012 BC-MOT Specifications) to prevent sub-base erosion, scouring and rivulets.

Storm Drainage Easements. The post-development flows will be heavier than those experienced to date. There is additional run-off from the lands to the north. Accordingly, three storm-drainage easements (MIN 10m wide) are required across the new Strata Lots along the natural swales in the terrain to properly conduct the seasonal overland flows, the heavy rainfalls and the groundwater seepage from the new buildings and structures.

Subsoil Conditions At The Building Sites. The subgrade soils at the proposed building sites include variations of the following: (1) angular broken rock and gravelly to sandy to silty layers (imported fill); (2) topsoil (with organics) and silty loam layer (native) over dense gravelly layer over the shale bedrock; (3) exposed weathered and fissured or friable bed-rock layers to deeper cemented and dense bedrock strata.

Conventional Shallow Foundations will require Comprehensive Site Preparation Work: These include: a) excavation to the bedrock or dense subsoil layer; b) removal of the topsoil and organics, soft loams and silts or deleterious fill, and; c) placement of new compacted structural fill layers (minus 3" crushed gravel in 12" compacted lifts to 98% Standard Proctor max. dry density); d) where shallow bedrock OR outcroppings exist, use rock excavation in 0.6m increments and level benches (avoid vertical cuts in bedrock; 45 degree slopes are better). Also use engineered footings and foundation walls.

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8.0 WILDFIRE CONCERNS

During periods of drought the wooded mountainsides west of Hope have experienced wildfire events in the recent decades past. In particular, the south and west boundaries of the subject parcel could be susceptible to an uncontrolled wildfire event migrating from an adjacent property by strong prevailing winds.

To avert potential life safety and property damage issues vis-à-vis a wildfire event, we advise that new Building Permits issued for these Strata Lots incorporate fire-resistant components, claddings and flashings, moreover, encourage and promote good woodlot management practices, including:

- Removal of old logs, branches, loose stumps, dead brush and woody debris;
- Removal of the large windfall, damaged and dead trees;
- Maintenance of good fire lanes and fire breaks; and
- Provision of basic fire-fighting equipment.

9.0 RECOMMENDATIONS

New Road Easement from NW Corner. The new roadway easement from the north-west corner of the Parcel will be 20m wide and also be flared at the north and the south ends.

Two Roadway Bypass and Guard Sections. Two roadway bypass plus barrier sections were constructed (A-B-C & D-E-F) to enhance traffic safety and two-directional traffic. Refer to the BC MOT 2012 Specifications for 690mm x 2500 Precast Concrete Barriers.

Overall Stormwater Drainage Plan for Subdivision. The proper construction of the roadway, ditches, works and buildings will prevent concentrated flows (of stormwater, melt-water OR ground-water) from the dominant/upslope areas to cause/create erosion OR damage to the servient/downslope areas OR adjacent properties, other building sites OR sewerage system drain fields, sensitive structures OR related lawns and vegetation. The storm drainage easements to be MIN 10m wide to handle post development flows.

Residence Setbacks from Steep Upslopes and Downslopes. The residence foundations are to be setback MIN 5 metres from natural steep bedrock upslopes OR downslopes. Furthermore, the new residence foundations are to be setback MIN 8 metres from steep artificial loose fill embankments, along either the upslope OR downslope side, unless such embankments are first stabilized with engineered retaining walls.

For Strata Lot SL3: Any new foundation contemplated along the steep bedrock slope will require careful excavation of the steep bedrock (i.e. rock excavation with 0.6 M steps at 45 degrees plus flat benches). In addition, engineered footings, foundation walls and protective retaining walls will be required for same.

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New Reinforced Concrete Foundations. The residence and garage footings to be MIN 24" below the final grades for frost protection. The underlying bedrock depth at the building site also to be measured accurately in order to properly design the storm drainage system (e.g. catch-basins, pipelines and storm-water soak-away structures OR storm outfalls). The design of the footings may require a layer of imported structural fill (crushed gravel or crushed rock) to be placed in MAX 12" lifts and compacted to 98% Standard Proctor maximum dry density (SPMDD).

Roof Rainwater Leaders and Collection Basin. The footing drains and roof rainwater leaders to be collected into a 30" ID catch-basin, then discharged into an approved soak-away system OR approved angular 'rock outfall' constructed minimum 5 metres from the building foundation (basement area) and located remote from the drain field areas.

New On-Site Sewerage Systems. Our test-holes and percolation tests completed at each Strata Lot indicated that there are suitable primary absorption or drain field conditions at the primary field locations, as shown. [N.B. Approved Type 2 on-site sewerage system installations will be required.] Accordingly, a modest single-family two-storey residence (with 3 - 4 bedrooms) may be planned for each Lot.

The reserve drain field locations for Approved Type 3 Systems are to be held in reserve.

Subsoil Investigation for Primary Drain Fields. The subsoil and ground-water conditions were recorded for the primary absorption field areas. Observation holes and percolation tests were completed at each Strata Lot for the primary absorption/drain field locations. The subsoil conditions at the primary locations are adequate for a Type 2 on-site sewerage system (i.e. a pressurized sand mound absorption field installation).

Architectural Drawings. The new residence concept floor plans OR construction drawings will be required for each Lot to complete the proper design of a Type 2 OR Type 3 on-site sewerage system (which includes approved septic tanks, pump chamber, pipelines and absorption or drain field). N.B. The volumes and flows will be determined by the total dwelling area as shown on the Approved Floor Plans for the residence.

10.0 SUMMARY

These report recommendations are based on the detailed subsoil investigation for both the building envelopes and the primary absorption (drain) field locations for each Lot.

The construction work deficiencies on Sheet No. 7 (d/ July 24, 2019) were completed.

BCLS Boundary and Topographical Survey. In addition, the topographical features and proposed structures for the Strata Lots SL1, SL2 and SL3 were precisely located and validated during the August-September 2019 BCLS Boundary and Topographical Survey by CONDOR Land Surveying Limited, Unit B-45515 Knight Road, Chilliwack, BC.

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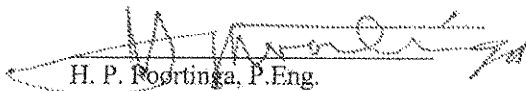
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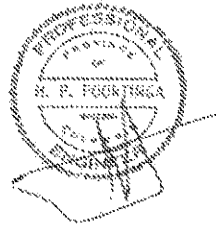
Retaining Structures OR Engineered Retaining Walls. Soil Stabilizing Structures OR Engineered Retaining Walls will be required for both the loose soil (steep fill) slopes OR the steeply cut natural embankments steeper than 30 degrees (1 VERT : 2.0 HORIZ), thereby to prevent long-term soil erosion, sloughing OR debris flows under prolonged adverse OR extreme conditions of rainfall, snowfall and snow-melt.

Pending the completion of the recommendations in this report, we hereby affirm that the residential building sites as shown on the Subdivision Site Plan dated September 30, 2019 (by Condor Land Surveying Ltd.) may be used safely for the use intended, id est, for the construction of a single-family residence on each properly serviced Strata Lot.

The recommendations contained in this report are pertinent to the residential building sites presented and the related works (e.g. absorption fields) that were investigated, hence, are not to be construed as being adequate or suitable for other structures and/or other locations.

Sincerely,
PETRA Engineering (2000) Ltd.


H. P. Roodt, P.Eng.



/rp
cc: District of Hope,
Municipal Development
attachments (4)

September 30, 2019

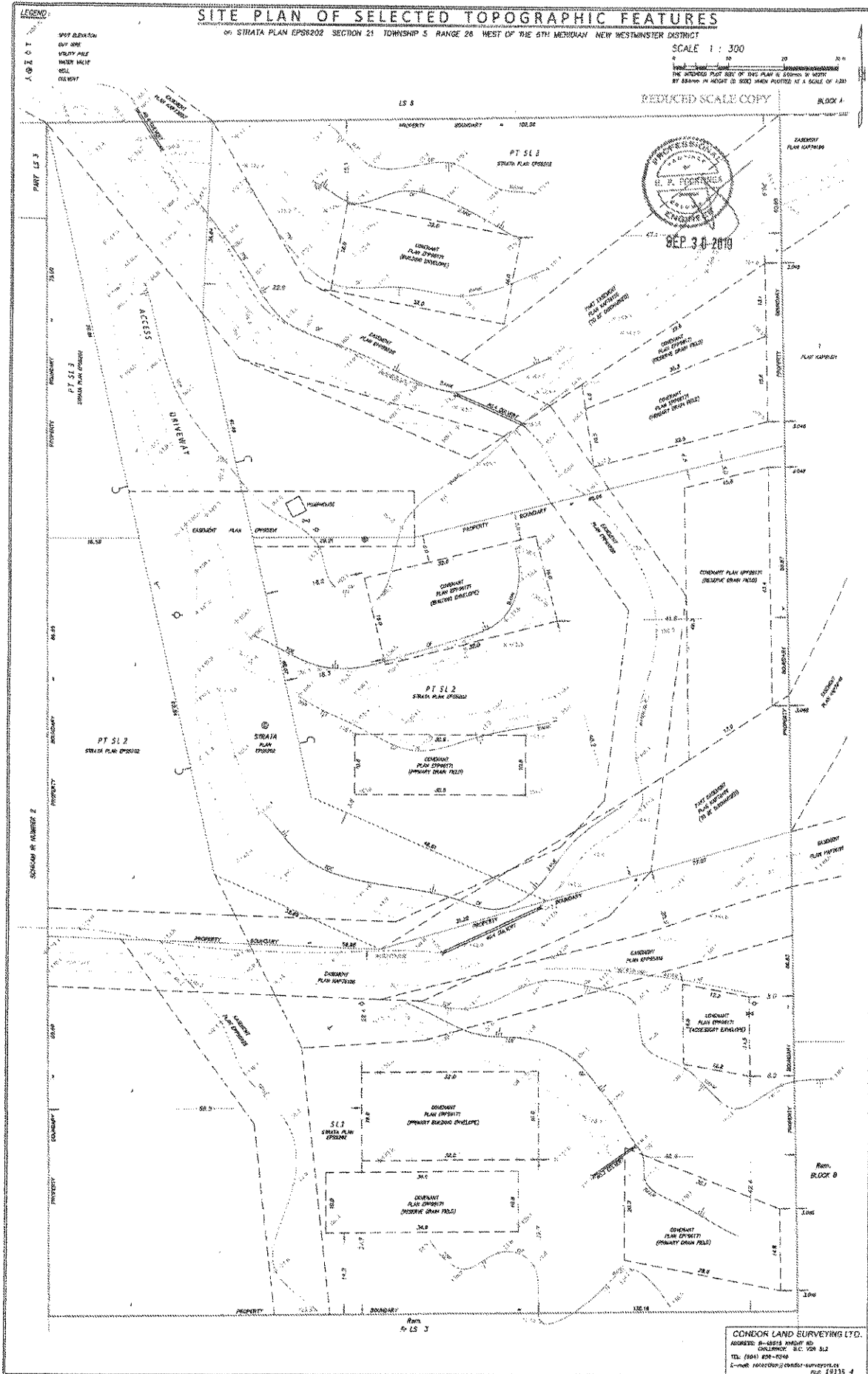
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LIST OF REFERENCES

Relevant background information was reviewed in the following references:

- A. Geotechnical Report for a Rural Access Road, by Cascade Engineering Ltd., File No. 2002-53 dated December 10, 2002.
- B. Geotechnical Report for a Single Family Dwelling, by Cascade Engineering Ltd., File No. 2004-36 dated June 08, 2004.
- C. Geotechnical Assessment for Subdivision (of Blk. B, L.S. 2) at 22150 Ross Road, by PETRA Engineering (2000) Ltd., File No. 2008-128 dated March 02, 2009.
- D. Geotechnical Assessment for Subdivision of 12.58 Acres Parcel, 22100 Ross Road, Hope, BC; PETRA Eng. (2000) Ltd., File No. 2015-221 dated March 20, 2015.



APPENDIX D: LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Note: This Statement is to be read and completed in conjunction with the "APEGBC Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia", March 2006/Revised September 2008 ("APEGBC Guidelines") and the "2006 BC Building Code (BCBC 2006)" and is to be provided for *landslide assessments* (not floods or flood controls) for the purposes of the Land Title Act, Community Charter or the Local Government Act. *Italicized words* are defined in the APEGBC Guidelines.

To: The Approving Authority

Date: SEP 30 2019

DISTRICT OF HOPE (MUNICIPAL DEV.)

325 WALLACE ST., HOPE, BC

Jurisdiction and address

V0X 1L0

With reference to (check one):

- Land Title Act (Section 86) – Subdivision Approval
- Local Government Act (Sections 919.1 and 920) – Development Permit
- Community Charter (Section 56) – Building Permit
- Local Government Act (Section 910) – Flood Plain Bylaw Variance
- Local Government Act (Section 910) – Flood Plain Bylaw Exemption
- British Columbia Building Code 2006 sentences 4.1.8.16 (8) and 9.4 4.4.(2) (Refer to BC Building and Safety Policy Branch Information Bulletin B10-01 issued January 18, 2010)

For the Property:

STRATAPLAN EPSG202, SECTION 21, TOWNSHIP 5, RANGE 26, WEST OF 61 MERIDIAN, N.W.D.
Legal description and civic address of the Property 22175 ROSS ROAD, HOPE, B.C. V0X 1L3

The undersigned hereby gives assurance that he/she is a *Qualified Professional* and is a *Professional Engineer* or *Professional Geoscientist*.

I have signed, sealed and dated, and thereby certified, the attached *landslide assessment* report on the Property in accordance with the *APEGBC Guidelines*. That report must be read in conjunction with this Statement. In preparing that report I have:

Check to the left of applicable items

- 1. Collected and reviewed appropriate background information
- 2. Reviewed the proposed *residential development* on the Property
- 3. Conducted field work on and, if required, beyond the Property
- 4. Reported on the results of the field work on and, if required, beyond the Property
- 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
 - 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
 - 6.2 estimated the *landslide hazard*
 - 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
 - 6.4 estimated the potential *consequences* to those *elements at risk*
- 7. Where the *Approving Authority* has adopted a *level of landslide safety* I have:
 - 7.1 compared the *level of landslide safety* adopted by the *Approving Authority* with the findings of my investigation
 - 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
 - 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*

[IN ACCORD WITH F.U.R.D. HAZARD ACCEPTABILITY CRITERIA (AS PER P.M. CAVE PAPER 8/NOV/1995)]

8. Where the *Approving Authority* has not adopted a *level of landslide safety* I have:

- 8.1 described the method of *landslide hazard analysis* or *landslide risk analysis* used
- 8.2 referred to an appropriate and identified provincial, national or international guideline for *level of landslide safety*
- 8.3 compared this guideline with the findings of my investigation
- 8.4 made a finding on the *level of landslide safety* on the Property based on the comparison
- 8.5 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections.

Based on my comparison between

Check one

- the findings from the investigation and the adopted *level of landslide safety* (item 7.2 above)
- the appropriate and identified provincial, national or international guideline for *level of landslide safety* (item 8.4 above)

I hereby give my assurance that, based on the conditionsⁱⁱⁱ contained in the attached *landslide assessment* report,

Check one

- for subdivision approval, as required by the Land Title Act (Section 86), "that the land may be used safely for the use intended"

Check one

- with one or more recommended registered covenants.
- without any registered covenant.

- for a development permit, as required by the Local Government Act (Sections 919.1 and 920), my report will "assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit".

- for a building permit, as required by the Community Charter (Section 56), "the land may be used safely for the use intended"

Check one

- with one or more recommended registered covenants.
- without any registered covenant.

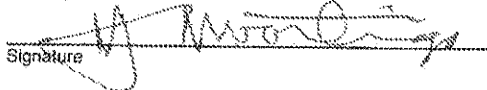
- for flood plain bylaw variance, as required by the "Flood Hazard Area Land Use Management Guidelines" associated with the Local Government Act (Section 910), "the development may occur safely".

- for flood plain bylaw exemption, as required by the Local Government Act (Section 910), "the land may be used safely for the use intended".

H. P. POORINGA, P. ENG.
Name (print)

SEP 30 2019

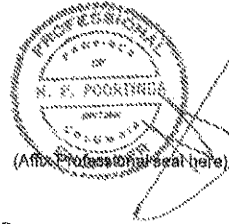
Date

Signature 

ⁱⁱⁱ When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a "life safety" criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User's Guide, Structural Commentaries, Part 4 of Division B. This states:

"The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse nor will its attachments break off and fall on people near the building. This performance level is termed 'extensive damage' because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse".

#204-7536 TOPAZ DRIVE,
 Address
CHILLIWACK, B.C. V2R 5Y9
604-824-4942
 Telephone



If the *Qualified Professional* is a member of a firm, complete the following.

I am a member of the firm PETRA ENGINEERING (2000) LTD.
 and I sign this letter on behalf of the firm. (Print name of firm)

BRITISH COLUMBIA BUILDING CODE 2012

SCHEDULE B

Forming Part of Subsection 2.2.7, Div. C of the
British Columbia Building Code

Building Permit Fee
As set out in the Building Code Act

ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW

- Notes: (i) This letter must be submitted prior to the commencement of construction activities of the components identified below. A separate letter must be submitted by each registered professional of record.
- (ii) This letter is endorsed by: Architectural Institute of B.C., Association of Professional Engineers and Geoscientists of B.C., Building Officials' Association of B.C., and Union of B.C. Municipalities.
- (iii) In this letter the words in *italics* have the same meaning as in the British Columbia Building Code.

To: The authority having jurisdiction

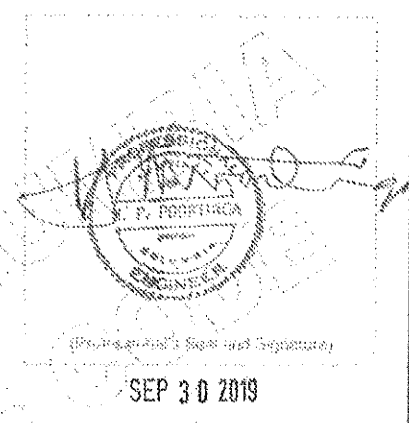
DISTRICT OF HOPE, 325 WALLACE ST., HOPE, BC
Name of Authority Having Jurisdiction

Re: 3-67 SUBDIVISION (EARTHWORKS FOR LOCAL ROADWAY AND DITCHES)
Name of Project (Print)

22175 ROSS ROAD, HOPE, B.C., V0X 1L3
Name of Project (Print)

The undersigned hereby gives assurance that the design of the
(Initial those of the items listed below that apply to this registered professional
of record. All the disciplines will not necessarily be employed on every project.)

- N/A ARCHITECTURAL
- N/A STRUCTURAL
- N/A MECHANICAL
- ✓ PLUMBING (DRAINAGE ONLY)
- N/A FIRE SUPPRESSION SYSTEMS
- N/A ELECTRICAL
- ✓ GEOTECHNICAL — temporary
- ✓ GEOTECHNICAL — permanent



components of the plans and supporting documents prepared by this registered professional of record in support of the application for the building permit as outlined below substantially comply with the B.C. Building Code and other applicable enactments respecting safety except for construction safety aspects.

The undersigned hereby undertakes to be responsible for field reviews of the above referenced components during construction, as indicated on the "SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS" below.

CRP's Initials

BRITISH COLUMBIA BUILDING CODE 2012

Schedule B - Continued

Building Permit No.
for construction of, alteration, or

22175 ROSS ROAD, HOVE, BC

PLUMBING (DRAINAGE); GEOTECHNICAL

The undersigned also undertakes to notify the authority having jurisdiction in writing as soon as possible if the undersigned's contract for field review is terminated at any time during construction.

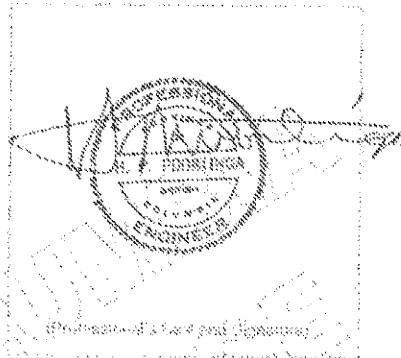
I certify that I am a registered professional as defined in the British Columbia Building Code.

H. P. POORTINGA, P. ENG.
Registered Professional of Record's Name (Print)

#204-7536 TONAZ DRIVE,
Address (Street)

CHILLIWACK, B.C. V2R 5Y9

604-824-4948
Phone No.



(Professional's Handwritten Signature)

SEP 30 2019

Date

(If the Registered Professional of Record is a member of a firm, complete the following.)

I am a member of the firm DEIRA ENGINEERING (2000) LTD.
and I sign this letter on behalf of the firm

Note: The above letter must be signed by a registered professional of record, who is a registered professional. The British Columbia Building Code defines a registered professional to mean

- (a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

CRP (Initials)

BRITISH COLUMBIA BUILDING CODE 2012

Schedule B - Continued

Building Permit No.
or other approval number

22175 ROSS ROAD, HOVE, BC
Project Address

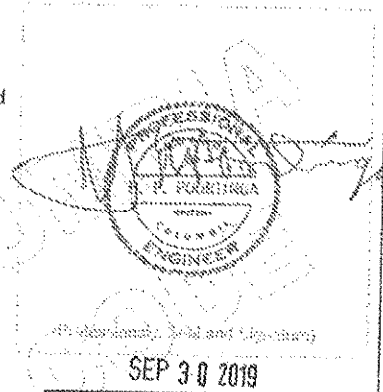
PLUMBING (DRAINAGE); GEOTECHNICAL
Discipline

SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS

(Initial applicable discipline below and cross out and initial only those items not applicable to the project.)

~~N/A~~ ARCHITECTURAL

- 1.1 Fire resisting assemblies
- 1.2 Fire separations and their continuity
- 1.3 Closures, including tightness and operation
- 1.4 Egress systems, including access to exit within suites and floor areas
- 1.5 Performance and physical safety features (guardrails, handrails, etc.)
- 1.6 Structural capacity of architectural components, including anchorage and seismic restraint
- 1.7 Sound control
- 1.8 Landscaping, screening and site grading
- 1.9 Provisions for fire fighting access
- 1.10 Access requirements for persons with disabilities
- 1.11 Elevating devices
- 1.12 Functional testing of architecturally related fire emergency systems and devices
- 1.13 Development Permit and conditions therein
- 1.14 Interior signage, including acceptable materials, dimensions and locations
- 1.15 Review of all applicable shop drawings
- 1.16 Interior and exterior finishes
- 1.17 Dampproofing and/or waterproofing of walls and slabs below grade
- 1.18 Roofing and flashings
- 1.19 Wall cladding systems
- 1.20 Condensation control and cavity ventilation
- 1.21 Exterior glazing
- 1.22 Integration of building envelope components
- 1.23 Environmental separation requirements (Part 5)
- 1.24 Building Envelope, Part 10/ASHRAE or NECB Requirements



~~N/A~~ STRUCTURAL

- 2.1 Structural capacity of structural components of the building, including anchorage and seismic restraint
- 2.2 Structural aspects of deep foundations
- 2.3 Review of all applicable shop drawings
- 2.4 Structural aspects of unbonded post-tensioned concrete design and construction

~~N/A~~ MECHANICAL

- 3.1 HVAC systems and devices, including high building requirements where applicable
- 3.2 Fire dampers at required fire separations
- 3.3 Continuity of fire separations at HVAC penetrations
- 3.4 Functional testing of mechanically related fire emergency systems and devices
- 3.5 Maintenance manuals for mechanical systems
- 3.6 Structural capacity of mechanical components, including anchorage and seismic restraint
- 3.7 Review of all applicable shop drawings
- 3.8 Mechanical Systems, Part 10/ASHRAE or NECB Requirements

BRITISH COLUMBIA BUILDING CODE 2012

Schedule B - Continued

Building Permit No.
for Section B - 10/19/2019 per Section B - 10/19/2019

22175 ROSS ROAD, HOPE, BC
Project Address

PLUMBING (DRAINAGE); GEOTECHNICAL
Discipline

~~PLUMBING~~

- ~~4.1~~ ~~Roof drainage systems~~
- ~~4.2~~ ~~Site and foundation drainage systems~~
- ~~4.3~~ ~~Plumbing systems and devices~~
- 4.4 Continuity of fire separations at plumbing penetrations
- 4.5 Functional testing of plumbing related fire emergency systems and devices
- 4.6 Maintenance manuals for plumbing systems
- 4.7 Structural capacity of plumbing components, including anchorage and seismic restraint
- 4.8 Review of all applicable shop drawings
- ~~4.9~~ ~~Plumbing Systems, Part 10/ASHRAE or NECB Requirements~~

~~NA~~ FIRE SUPPRESSION SYSTEMS

- 5.1 Suppression system classification for type of occupancy
- 5.2 Design coverage, including concealed or special areas
- 5.3 Compatibility and location of electrical supervision, ancillary alarm and control devices
- 5.4 Evaluation of the capacity of city (municipal) water supply versus system demands and domestic demand, including pumping devices where necessary
- 5.5 Qualification of welder, quality of welds and material
- 5.6 Review of all applicable shop drawings
- 5.7 Acceptance testing for "Contractor's Material and Test Certificate" as per NFPA Standards
- 5.8 Maintenance program and manual for suppression systems
- 5.9 Structural capacity of sprinkler components, including anchorage and seismic restraint
- 5.10 For partial systems — confirm sprinklers are installed in all areas where required
- 5.11 Fire Department connections and hydrant locations
- 5.12 Fire hose standpipes
- 5.13 Freeze protection measures for fire suppression systems
- 5.14 Functional testing of fire suppression systems and devices

~~NA~~ ELECTRICAL

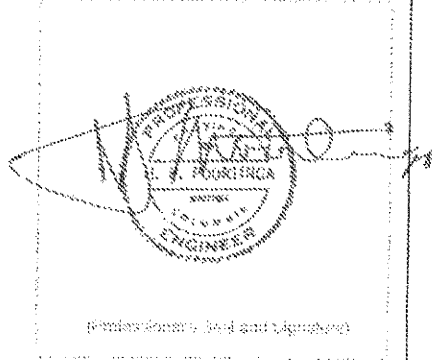
- 6.1 Electrical systems and devices, including high building requirements where applicable
- 6.2 Continuity of fire separations at electrical penetrations
- 6.3 Functional testing of electrical related fire emergency systems and devices
- 6.4 Electrical systems and devices maintenance manuals
- 6.5 Structural capacity of electrical components, including anchorage and seismic restraint
- 6.6 Clearances from buildings of all electrical utility equipment
- 6.7 Fire protection of wiring for emergency systems
- 6.8 Review of all applicable shop drawings
- 6.9 Electrical Systems, Part 10/ASHRAE or NECB requirements

~~NA~~ GEOTECHNICAL — Temporary

- ~~7.1~~ ~~Excavation~~
- ~~7.2~~ ~~Shoring~~
- ~~7.3~~ ~~Underpinning~~
- ~~7.4~~ ~~Temporary construction dewatering~~

~~NA~~ GEOTECHNICAL — Permanent

- ~~8.1~~ ~~Bearing capacity of the soil~~
- ~~8.2~~ ~~Geotechnical aspects of deep foundations~~
- ~~8.3~~ ~~Compaction of engineered fill~~
- ~~8.4~~ ~~Structural considerations of soil, including slope stability and seismic loading~~
- ~~8.5~~ ~~Backfill~~
- ~~8.6~~ ~~Permanent dewatering~~
- ~~8.7~~ ~~Permanent underpinning~~



SEP 30 2019

Date

BRITISH COLUMBIA BUILDING CODE 2018

SCHEDULE C-B

Forming Part of Subsection 2.2.7, Division C of the British Columbia Building Code

Building Permit Number (If Applicable) (Form BCP-1001, 2018)

ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE

- Notes: (i) This letter must be submitted after completion of the project but prior to final inspection by the authority having jurisdiction. A separate letter must be submitted by each registered professional of record. (ii) This letter is endorsed by: Architectural Institute of BC, Association of Professional Engineers and Geoscientists of the Province of BC, Building Officials' Association of BC, and Union of BC Municipalities. (iii) In this letter the words in italics have the same meaning as in the British Columbia Building Code.

To: The authority having jurisdiction

DISTRICT OF HOPE, 325 WALLACE ST., HOPE, B.C.

Re: PLUMBING (DRAINAGE) & GEOTECHNICAL

3-LOT SUBDIVISION (EARTHWORKS FOR LOCAL ROADWAY AND DITCHES)

22195 RASE ROAD, HOPE, B.C. V0X 1L3

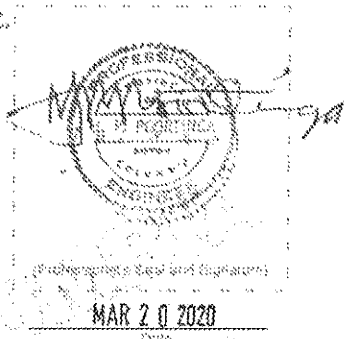
(Each registered professional of record shall complete the following.)

H.P. PROETINGA, P.ENG.

#204-7536 TOPAE DRIVE,

CHILLIWACK, B.C. V2R 5Y9

604-824-4248



I hereby give assurance that

- (a) I have fulfilled my obligations for field review as outlined in Subsection 2.2.7, Division C of the British Columbia Building Code and in the previously submitted Schedule B, 'ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW,' and
(b) those components of the project opposite my initials in Schedule B substantially comply in all material respects with:
(i) the applicable requirements of the British Columbia Building Code and other applicable enactments respecting safety, not including construction safety aspects, and
(ii) the plans and supporting documents submitted in support of the application for the building permit.
(c) I am a registered professional of record as defined in the British Columbia Building Code.

(If the registered professional of record is a member of a firm, complete the following.)

I am a member of the firm PETRA ENGINEERING (2020) LTD. and I sign this letter on behalf of the firm.

Note: The above letter must be signed by a registered professional of record, who is a registered professional. The British Columbia Building Code defines a registered professional to mean

- (a) a person who is registered or licensed to practise as an architect under the Architects Act, or
(b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.