THE CORPORATION OF THE CITY OF VERNON
REPORT TO COUNCIL

SUBMITTED BY: Matt Faucher, Current Planner

COUNCIL MEETING: REG ☒ COW ☐ I/C ☐
COUNCIL MEETING DATE: March 28, 2022
REPORT DATE: March 18, 2022
FILE: DVP00531

SUBJECT: **DEVELOPMENT VARIANCE PERMIT APPLICATION FOR 117 KALAMALKA LAKE ROAD**

PURPOSE:

To review the application to vary Zoning Bylaw 5000 Section 4.16.1 to permit construction on slopes greater than 30% and Section 6.5.11 to vary the maximum height of a retaining wall from 1.2m to 4.0m at 117 Kalamalka Lake Road.

RECOMMENDATION:

THAT Council support Development Variance Permit application 00531 (DVP00531) to vary Zoning Bylaw 5000 on LT 1, SEC 27, TWP 9, ODYD, PL 17042 Except PL KAP78227 (117 Kalamalka Lake Road) as follows:

a) Section 4.16.1 to allow the construction of buildings, structures and swimming pools on slopes greater than 30%;

b) Section 6.5.11 to increase the maximum height of a retaining wall from 1.2m to 4.0m;

AND FURTHER, that Council's support of DVP00531 is subject to the following:

a) That the site plan and building elevations (Attachment 1), as well as cross-sections (Attachment 5), intended to illustrate the siting of structures, drive access and retaining wall height in the report titled "Development Variance Permit Application for 117 Kalamalka Lake Road" dated March 18, 2022 and respectfully submitted by the Current Planner, be attached to and form part of DVP00531 as Schedule 'A';

b) That a restrictive covenant be registered on title to ensure that the recommendations of the geo-technical reports, as submitted by Interior Testing Services Ltd, dated December 10, 2020, and February 4, 2022, are implemented at the building permit stage and that the areas that are not to be developed remain undeveloped; and

c) That a statutory right of way over the undeveloped area be registered on the property to establish public access for a future trail connection in accordance with the Pedestrian and Bike Master Plan.

ALTERNATIVES & IMPLICATIONS:

1. THAT Council not support Development Variance Permit application 00531 (DVP00531) as outlined in the report titled "Development Variance Permit Application for 117 Kalamalka Lake Road" dated March 18, 2022 and respectfully submitted by the Current Planner to vary Zoning Bylaw 5000 on LT 1, SEC 27, TWP 9, ODYD, PL 17042 Except PL KAP78227 (117 Kalamalka Lake Road).

   Note: This alternative does not support the development variance permit application and would require the applicant to develop the site in compliance with Zoning Bylaw 5000.

ANALYSIS:

A. Committee Recommendations:

At its meeting of March 1, 2022, the Advisory Planning Committee passed the following resolution:

"THAT Council support Development Variance Permit application 00531 (DVP00531) to vary Zoning Bylaw 5000 on LT 1, SEC 27, TWP 9, ODYD, PL 17042 Except PL KAP78227 (117 Kalamalka Lake Road) as follows:

a) Section 4.16.1 to allow the construction of buildings, structures and swimming pools on slopes greater than 30%;

b) Section 6.5.11 to increase the maximum height of a retaining wall from 1.2m to 4.0m;

AND FURTHER, that Council's support of DVP00531 is subject to the following:

a) That the site plan, building elevations and cross-sections, intended to illustrate the siting of structures, drive access and retaining wall height (Attachment 1) in the report titled "Development Variance Permit Application for 117 Kalamalka Lake Road" dated February 25, 2022 and respectfully submitted by the Current Planner, be attached to and form part of DVP00531 as Schedule 'A';

b) That a restrictive covenant be registered on title to ensure that the recommendations of the geo-technical report are implemented at the building permit stage and that the areas that are not to be developed remain undeveloped; and

c) That a statutory right of way over the undeveloped area be registered on the property to establish public access for a future trail connection in accordance with the Pedestrian and Bike Master Plan."

B. Rationale:

1. The subject property is located at 117 Kalamalka Lake Road (Figures 1 and 2). The property is approximately 14,421m^2 (3.56 ac) in size.

2. The purpose of the application is to review a request to vary two provisions of Zoning Bylaw 5000 in order to construct two triplex buildings on the subject property (Attachment 1).

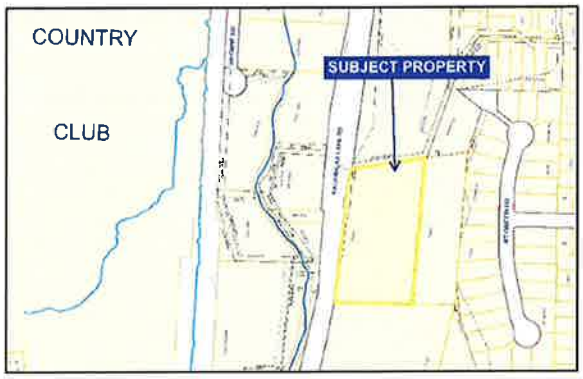


Figure 1 - Property Location Map

3. The subject property is zoned R5 – Fourplex Housing Residential (Attachment 2) and the subject application pertains to development regulations within Section 4.16.1 (30% slopes) and Section 6.5.11 (maximum height of a retaining wall) of Zoning Bylaw 5000 (Attachment 3).

4. The application proposes to vary Section 4.16.1 of Zoning Bylaw 5000 in order to allow the proposed structures and access drive to be located on slopes exceeding 30% slopes. A slope analysis of the subject property is illustrated in Figure 3 and Attachment 4.

   Additionally, the application proposes to vary Section 6.5.11 of Zoning Bylaw 5000 in order to allow the construction of retaining structures to a maximum of 4m in height to support the slope post development. Cross-sections of the proposed retaining walls are illustrated in Attachment 5.

Figure 2: Aerial Photo of Property

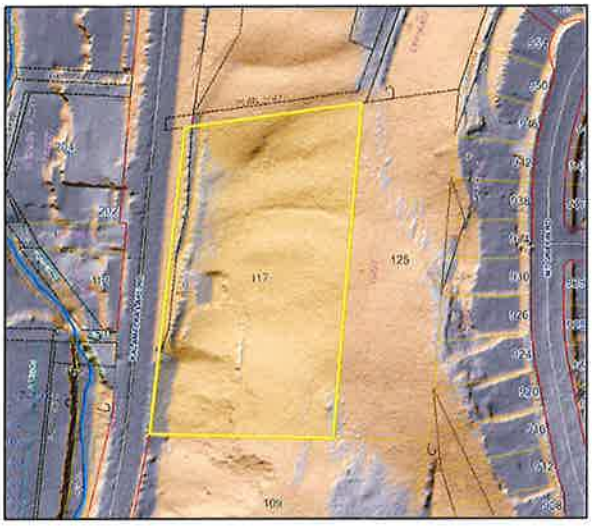


Figure 3: Lidar Imagery of Property with 30% Slopes

5. In support of the Development Variance Permit, the applicant retained a geotechnical engineer to review the site and plans for the proposed development. The report (Attachment 6) concludes that "the site appears adequately suited for residential development and suitable safe building sites appear possible at the proposed building locations". The geotechnical engineer would need to be involved with the foundation design and construction at the building permit stage.

6. To ensure that the integrity of the remainder of the property is protected, it is recommended that a restrictive covenant be registered on the property title to ensure that no additional development shall occur on the remaining portions of the lands, most of which is in excess of 40%.

7. As part of the Development Permit process, the applicant will need to satisfy all bylaw requirements, as well as access and egress requirements of Vernon Fire Rescue.

8. Master Transportation Plan – Pedestrian and Bike Master Plan, identifies a future trail connection from Middleton Way to Kalamalka Lake Road (Figure 4). Administration is requesting that a statutory right of way be established over the undeveloped area for public access to a future trail connection. The proposed statutory right of way is intended to provide alignment options for a future trail (Attachment 7).

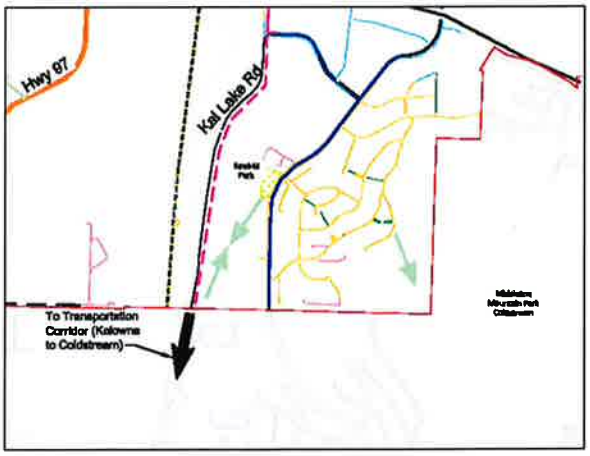


Figure 4: Master Transportation Plan

9. Administration supports the requested variance for the following reasons:

   a) The applicant has retained a qualified geotechnical engineer to assess the site and make recommendations. A restrictive covenant is recommended to be registered on title to ensure that the geotechnical engineering requirements are implemented at the building permit stage;

b) A restrictive covenant is to be registered on title that would ensure that no additional development or disturbance shall occur on the remaining portions of the subject property; and

c) A statutory right of way is to be registered on title that would allow for pedestrian access to a future trail connecting Middleton Way to Kalamalka Lake Road in support of the Pedestrian and Bike Master Plan.

C. Attachments:

Attachment 1 – Site plan
Attachment 2 – R5 – Fourplex Housing Residential Zone
Attachment 3 – Section 4.16.1 and Section 6.5.11 of Zoning Bylaw 5000
Attachment 4 – Slope analysis
Attachment 5 – Cross-Sections of Proposed Retaining Structures
Attachment 6 – Geotechnical Reports dated December 10, 2020, and February 4, 2022
Attachment 7 – Potential Trail Alignment

D. Council's Strategic Plan 2019 – 2022 Goals/Action Items:

The subject application involves the following goals/action items in Council's Strategic Plan 2019 – 2022:

- N/A

E. Relevant Policy/Bylaws/Resolutions:

1. The following provision of Zoning Bylaw 5000 is relevant to the subject application:

Section 4.16.1	No construction of a building, structure or swimming pool is permitted on slopes 30% or greater.
Section 6.5.11	Retaining walls on all residential lots, except those required as a condition of subdivision approval, must not exceed a height of 1.2m measured from grade on the lower side, and must be constructed so that multiple retaining walls are spaced to provide at least a 1.2m horizontal separation between them.

BUDGET/RESOURCE IMPLICATIONS:

N/A

Prepared by:

X _____
Signer 1
Matt Faucher, CPT
Planner

Approved for submission to Council:

_____
Will Pearce, CAO

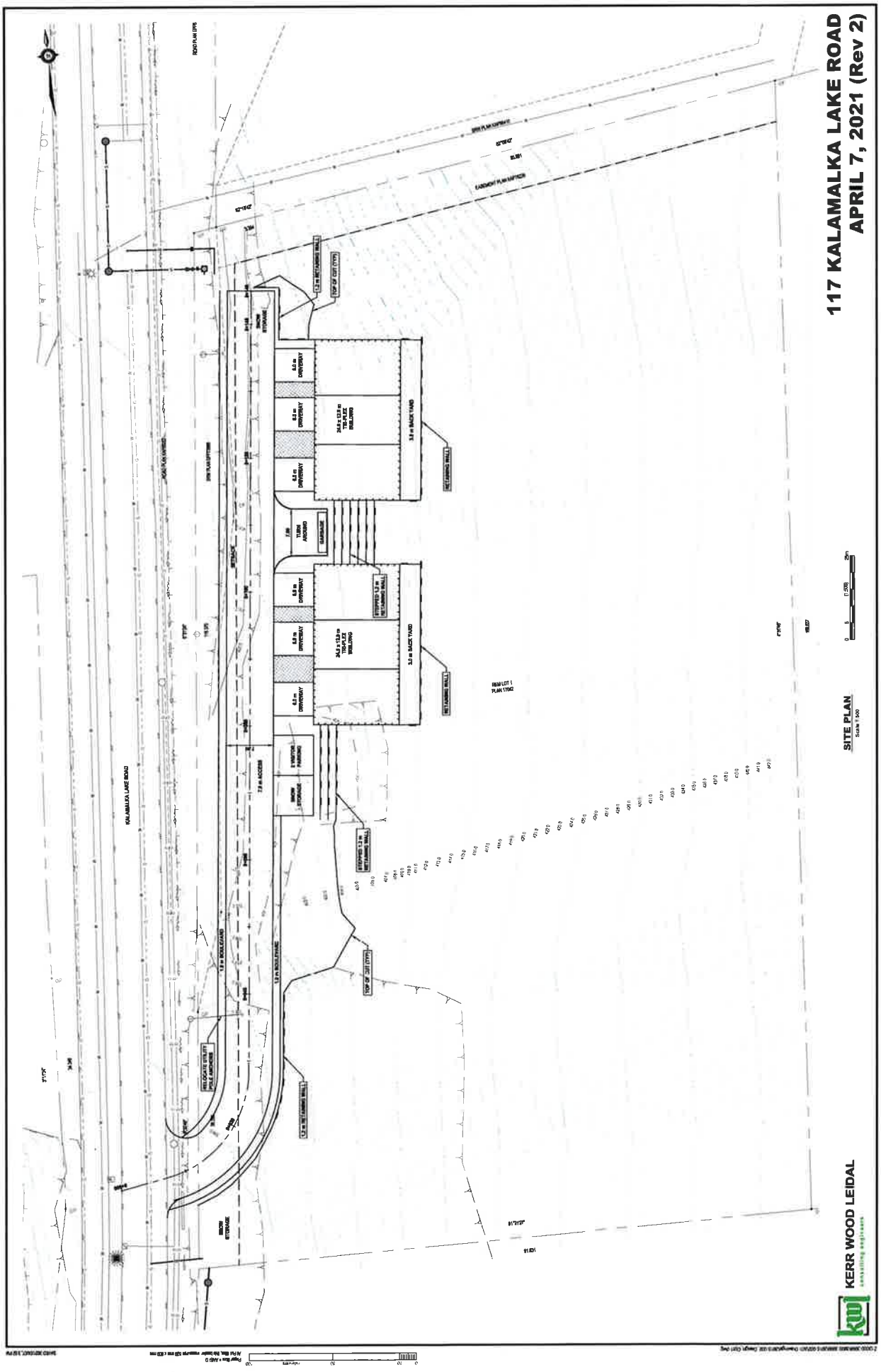
Date: 21. MARCH. 2022

X _____
Signer 2
Kim Flick
Director, Community Infrastructure and Development

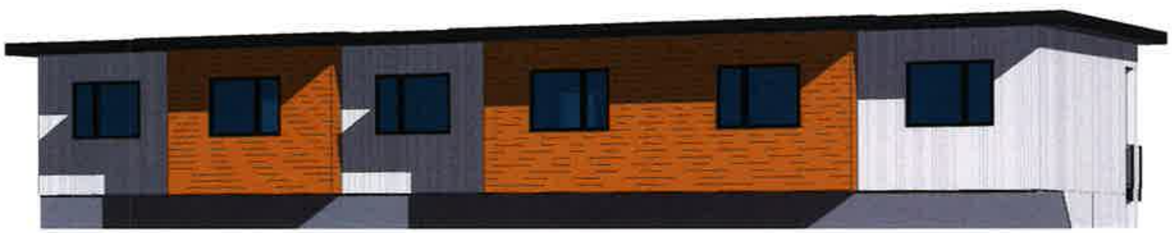
REVIEWED WITH

- ☐ Corporate Services
  - ☐ Bylaw Compliance
  - ☐ Real Estate
- ☐ RCMP
- ☒ Fire & Rescue Services
- ☐ Human Resources
- ☐ Financial Services
- ☒ COMMITTEE: APC – March 1, 2022
- ☐ OTHER:
- ☐ Operations
  - ☐ Public Works/Airport
  - ☐ Facilities
  - ☐ Utilities
- ☐ Recreation Services
- ☐ Parks
- ☒ Current Planning
- ☒ Long Range Planning & Sustainability
- ☒ Building & Licensing
- ☒ Engineering Development Services
- ☐ Infrastructure Management
- ☒ Transportation
- ☐ Economic Development & Tourism

G:\3000-3699 LAND ADMINISTRATION\3090 DEVELOPMENT VARIANCE PERMITS\20 Applications\DVP00531\2 PROC\Rpt\220318_mf_Council Rpt_DVP00531.docx


117 KALAMALKA LAKE ROAD
APRIL 7, 2021 (Rev 2)
SITE PLAN
Scale 1:300
KERR WOOD LEIDAL
consulting engineers
KALAMALKA LAKE ROAD
REM LOT 1
PLAN 17062
24.4 x 12.8 m TRI-PLEX BUILDING
3.0 m BACK YARD
8.0 m DRIVEWAY
7.3 m ACCESS
5.0 m BOULEVARD
TOP OF CUT (TYP)
RETAINING WALL
SNOW STORAGE
VISITOR PARKING
TURN AROUND
GARBAGE
SETBACK
RELOCATE UTILITY POLE AND ANCHOR

② Front View



① Back View

GENERAL NOTES:
1. These documents outline the general character and quality of the work and some of its details. Parts not detailed shall be constructed in accordance with best practices of work of this class, and shall provide the required strength and quality to complete all requirements of the work.
2. The construction shall be in accordance with the British Columbia Building Code, 2018 Edition. Every effort will be made to ensure that any changes to the code are complied with and all amendments are incorporated in the work. Materials and workmanship shall be per BCBC, Part 10 " Energy and Water Efficiency".
3. All work shall conform to local building codes and by-laws whichever may take precedence.
4. Prior to proceeding with construction, the Contractor must verify all information. Start of construction signifies the Contractor's acceptance of the contract documents.
5. Any variances from the drawings and specifications, and adverse conditions encountered at the job site, shall be resolved by the Owner Representative in consultation with the Designer.
6. All workmanship is to be of a standard equal in all respects to good building practice.
7. The Consultants do not assume liability for any errors or omissions in the contract documents, unless advised in writing of such errors or omissions prior to commencement of construction. The Contractor shall advise the Consultants if any discrepancies are observed or explanations are required
8 Dimensions are to face of studs
9. All doors between garage and dwelling units, including mechanical rooms, to be tight fitting, and weather stripped, and shall be fitted with a self-closing device (excluding closets and storage).

CONSTRUCTION NOTES:
1 Exterior walls to liveable area 2x6 studs at 16" o c
2 Range hood and dryer to be exhausted to outside
3 All ceilings 5/8" gypsum board
4 5/8" fire guard gypsum board at all garage walls/ceilings common to liveable area;
5 All handrails to conform to BCBC
6 Provide 6 mil poly vapour barrier at warm side of insulation (heating mode) under wall finish and under all concrete slabs on grade
7 Exterior wall insulation RSI 4 23 glass fibre batt at 6" walls; attic insulation to be RSI 8 8 glass fibre;
8. 25% of required attic vents to be at top 1/3 of roof as per BCBC,
9. Verify all rough opening requirements for doors, windows, equipment and fixtures before ordering
10 Verify/coordinate these plans with truss system final design;
11 All bedroom windows to have a minimum vent size of 24" x 36" for egress

General Foundation Notes
1 All work to be in accordance with Structural Drawings and Specifications
2 Footings and foundation walls indicated on the drawings are generic. The Contractor is responsible for testing the soil and assure adequacy of the structure
3 All concrete to
-be minimum 3 000 psi (28 day)
-conform to C S A A23 1
-have 1" max. aggregate size
-foundation walls, footings, and interior slabs - h minimum 3% - 4% air entrainment +/- 1%
-exterior slabs - h min 5% - 7% air entrainment +/- 1%
-have maximum 4" slump
4 Consolidate concrete in forms with high frequency internal vibrators - do not over vibrate so as to cause separation of the mix or use vibrators to move concrete
5 All concrete reinforcing to
-be of new deformed stock
-be of minimum grade 400 steel
-be placed in accordance with the latest edition of the A C I. detailing manual no 315,
6. Verify all site conditions in conjunction with the drawings notify the architect and owner of any discrepancies in writing.
7 Footings to bear on undisturbed native material or engineered fill at a depth below the frost line. Where an engineer's soils report is available verify requirements & comply with recommendations contained therein
8 Notify the architect and owner in writing where soil conditions are found to be infirm or potentially unstable
9 Welded wire fabric to conform to C S A G30 6 and to be lapped min. 6" or one full grid whichever greater,
10 Un-detailed lap splices to be 40 bar diameters staggered;
11 Provide damp proofing below grade & approved perimeter footing drainage system
12 Where required step footings and foundation walls at min 24" vertical & horizontal increments
13 Maintain minimum 8" clear from top of foundation walls to finished Grade
14 Exterior concrete slabs/stairs abutting concrete foundation to be doweled using 10m bar @ 2'-0" typical,
15 All bearing columns of girder trusses and support beams are to be posted to foundation

General Framing Notes
1. Framing lumber to be S P F. # 2 or better;
2. All beams/headers to be minimum 3 1/2" "timberstrand" "LSL"
3 Roof/floor truss system design by registered structural engineer.
4. Verify/coordinate design with these plans prior to ordering of material.
5 Truss system supplier to provide all required blocking/bracing for roof system
6 All trusses to be secured to wall plate with "hurricane anchors" or equal
7 All truss ends to be braced with continuous 2x4 stringer
8 All "TJI"/equivalent engineered wood joists rim/edge of wall to suit manufacturer's requirements
9 All lintels in exterior and bearing walls to be 3 - 2x10's unless otherwise specified
10. At exterior walls provide sealed membrane flashings around all openings. Provide box-outs / sleeves for service penetrations. Seal around service penetrations with caulking on rigid foam filler, or fill with water resistant expanding foam insulation.
11 All interior door openings to be framed 6" from corner on hinge side U N O

LEGAL DESCRIPTION:
CIVIC ADDRESS:

Door Schedule

Type Mark	Family	Type	Count
1	Front_Door_w_Glass_9409 (1)	36" x 96" Slumped Waterfall	3
2	Overhead-Sectional with trim	16'-0" x 8'-0"	3
3	4-Pane_Sliding_Glass_Door_4528	192" x 80"	3
4	Single-Glass 1	36" x 96"	3
5	Single-Flush	36" x 80"	3
6	Single-Flush	32" x 80"	12
7	Single-Flush	30" x 80"	18
8	Single-Flush	28" x 80"	9
9	Double-Flush	36" x 80"	3

Grand total: 57

Window Schedule

Type Mark	Family and Type	Count
a	Fixed with Trim: 54" x 54"	3
b	Fixed with Trim: 48" x 54"	6
c	Fixed with Trim: 36" x 60"	3
d	Casement with Trim2: 30" x 54"	3
e1	Casement with Trim2: 24" x 54"	6
e2	Casement with Trim2: 24" x 36"	3

Grand total: 24

925R Design Inc.
250.307.6818 - 925RDesign.com

No	Description	Date
DP	Development Permit	Mar. 2021

KLR Multi Concept

Cover Sheet

Date	Mar. 15, 2021
Drawn by	JH
Project No	925RDi_20042
Scale	1/4" = 1'-0"

A0

1 Front
1/4" = 1'-0"

2 Back
1/4" = 1'-0"

925R Design Inc.

250.307.6818 - 925RDesign.com

No	Description	Date
DP	Development Permit	Mar. 2021

KLR Multi Concept

Front/ Back Elevations

Date	Mar. 15, 2021
Drawn by	JH
Project No.	925RD_20042
Scale	1/4" = 1'-0"

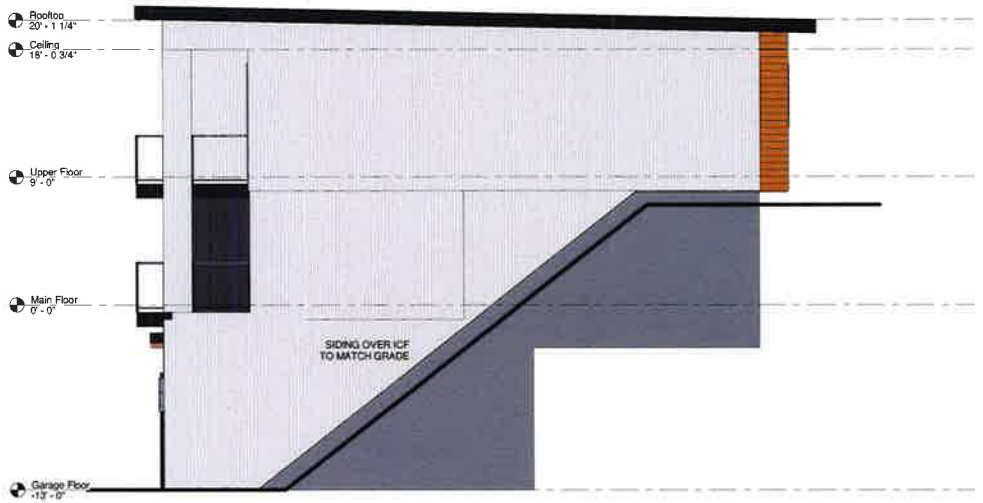
A8

White - Corrugated Metal Siding

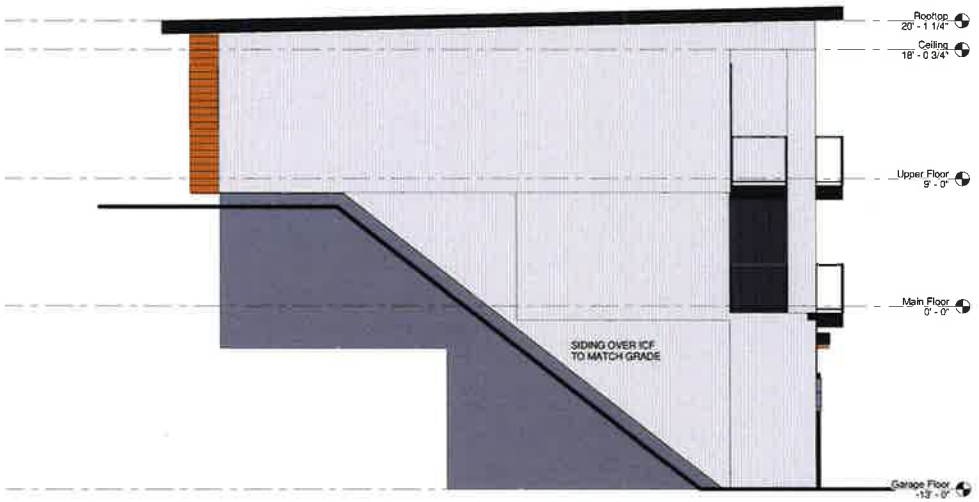
Black - Metal Plank Siding

Fir - Horizontal Lap Siding
Front/Garage Doors to Match

Black - Trim, Window Sash,
Aluminum Railings



② Right
1/4" = 1'-0"



① Left
1/4" = 1'-0"

925R Design Inc.
250.307.6818 - 925RDesign.com

No	Description	Date
DP	Development Permit	Mar. 2021

KLR Multi
Concept

Left/ Right
Elevations

Date	Mar. 15, 2021
Drawn by	JH
Project No.	925RDI. 20042
Scale	1/4" = 1'-0"

A9

9.6 R5 : Four-plex Housing Residential

R5

9.6.1 Purpose

The purpose is to provide a **zone** for the **development** of a maximum of four ground oriented **dwelling** units in the form of **single detached**, **semi-detached**, **duplex**, **three-plex** or **four-plex housing** on urban services. The R5c sub-zoning district allows for **care centre, major** as an additional use. The R5h sub-zoning district allows for **home based business, major** as an additional use. *(Bylaw 5467)*

9.6.2 Primary Uses4

- **care centre, major** *(use is only permitted with the R5c sub-zoning district)*
- **duplex housing**
- **four-plex housing**
- **group home, major**
- **semi-detached housing**
- **single detached housing**
- **three-plex housing**
- **seniors housing**

9.6.3 Secondary Uses

- **boarding rooms**
- **care centres, minor**
- **home based businesses, minor**
- **home based businesses, major** (in single detached housing only) (use is only permitted with the R5h sub-zoning district)
- **secondary suites (in single detached housing only)**
- **seniors assisted housing**
- **seniors supportive housing**

9.6.4 Subdivision Regulations

- Minimum **lot width** is 20.0m, except it is 22.0m for a **corner lot**.
- Minimum **lot depth** is 30.0m.
- Minimum **lot width** for single detached housing is 14.0m, except it is 16.0m for a **corner lot**.
- Minimum **lot area** for single detached housing is 450m^2.
- Minimum **lot area** is 700m^2, except it is 800m^2 for a **corner lot**, or 10,000m^2 if not serviced by a **community sewer system**. *(Bylaw 5339)*

9.6.5 Party Wall Subdivision Regulations

Lot Type	Minimum Lot area		Minimum Lot Width	
	interior	corner	interior	corner
Semi-Detached Housing	350m^2	400m^2	10.0m	12.0m
Three-Plex Housing	235m^2	285m^2	7.0m	9.0m
Four-Plex Housing	175m^2	225m^2	7.0m	9.0m

9.6.6 Development Regulations

- Maximum **site coverage** is 40% and together with driveways, parking areas and **impermeable surfaces** shall not exceed 50%.

- Maximum **floor space ratio** is 0.6.
- Maximum **height** is the lesser of 10.0m or 2.5 **storeys**, except it is 4.5m for **secondary buildings** and **secondary structures**.
- Minimum **front yard** is 4.0m, except it is 6.0m for a garage or **carport** to the back of curb or sidewalk for a front entry garage, or it is 0.6m to the side of the garage and 2.6m to the front building façade for side-entry garage and driveway layouts.
- Minimum **side yard** is 2.0m for a 1 or 1.5 **storey** portion of a **building** or a **secondary building or structure** and 2.5m for a 2 or 2.5 **storey** portion of a **building**, except it is 4.0m from a **flanking street** unless there is a garage accessed from the **flanking street**, it is 4.0m or it is 2.6m to the building for a side-entry garage and driveway from a flanking street and at least 6.0m from the back of curb or sidewalk. Where there is no direct vehicular access to the **rear yard** or to an attached garage or **carport**, one **side yard** shall be at least 3.0m. The minimum **side yard** setback for shared interior **party walls** shall be 0.0m. The minimum **side yard** setback for **single detached housing** is 1.5m, except it is 4.0m from a **flanking street** unless there is a garage accessed from the **flanking street**, it is 4.0m or it is 2.6m to the building for a side-entry garage and driveway from a **flanking street** and at least 6.0m from the back of curb or sidewalk.
- Minimum **rear yard** is 6.0m for a 1 or 1.5 **storey** portion of a **building** and 7.5m for a 2 or 2.5 **storey** portion of a **building**, except it is 1.0m for **secondary buildings**.
- The maximum **height** of any vertical wall element facing a **front, flanking** or **rear yard** (including **walkout basements**) is the lesser of 6.5m or 2.5 **storeys**, above which the **building** must be **set back** at least 1.2m.
- Maximum **density** is 30 units per gross hectare (12 units/gross acre).
- Maximum four **dwelling** units located in a **building**, with each unit having a minimum width of 6.5m. *(Bylaw 5339)*

9.6.7 Other Regulations

- In order for bareland strata **developments** to be consistent with the character of the surrounding neighborhood, the strata plan shall be considered as one **site** for defining the overall use, **density** and **site coverage**.
- The above noted **subdivision** and **development** regulations shall be applied to each strata **lot** within the strata plan.
- A minimum area of $25m^2$ of **private open space** shall be provided per **dwelling**.
- Where **development** has access to a rear **lane**, vehicular access to the **development** is only permitted from the rear **lane**.
- For **seniors assisted housing, seniors housing and seniors supportive housing,** a safe drop-off area for patrons shall be provided on the **site.**
- For strata developments, common recreation buildings, facilities and amenities may be included in the strata plan. Recreational buildings shall be treated as **secondary buildings** for the purpose of determining the **height** and **setbacks** of the **building** as specified in each **zone**.
- For multi-unit residential housing, one **office** may be operated for the soul purpose of the management and operation of the multi-unit residential **development.**
- In addition to the regulations listed above, other regulations may apply. These include the general **development** regulations of Section 4 (secondary **development**, **yards**, projections into **yards**, lighting, agricultural setbacks, etc.); the specific use regulations of Section 5; the **landscaping** and fencing provisions of Section 6; and, the parking and loading regulations of Section 7.
- As per Section 4.10.2 - All **buildings** and **structures, excluding perimeter fencing (garden walls and fences)** on **lots abutting** City Roads as identified on Schedule "B" shall not be sited closer to the City Road than the setback as per the appropriate zone measured from the offset Rights of Way as illustrated on Schedule "B". *(Bylaw 5440)*

4.15 Development Covenants

4.15.1 At the time of rezoning, prior to bylaw adoption, City Council may at its discretion require the property owner to register a covenant on the title of the property limiting the permitted uses and/or densities within the approved land use zones, so as to reflect the specific approved development plan.

4.16 Hillside Development Areas

4.16.1 Vernon's Official Community Plan (OCP) establishes Development Permit Areas (DPAs) for all areas within the City of Vernon. Vernon's Hillside Guidelines and Regulations Policy defines hillsides and provides Goals and Objectives for development of lands on hillsides and slopes under 30%. No construction of a building, structure or swimming pool is permitted on slopes 30% or greater.

4.16.2 No subdivision of land creating lots is permitted where less than 100m^2 of contiguous buildable area which meets all bylaw regulations herein for each lot is provided, with the exception of boundary lot adjustments.
(Bylaw 5433)

to prevent sagging and to minimize rot. Along sloping ground, the top of wood **fences** shall be horizontal with vertical drops at the posts.

6.5.6 Screening **fences** shall be opaque double-sided **construction**. Where screen **fences** are allowed or required by this Bylaw, they shall be of an opaque or a combination of opaque, translucent or lattice design.

6.5.7 No **fence** constructed at the **natural grade** in residential **zones**, shall exceed 2.0m in **height**, except where **abutting** an **agricultural** or **commercial zone** the maximum **height** is 2.4m.

6.5.8 No **fence** in a **commercial** or **industrial zone** shall exceed 2.4m.

6.5.9 **Industrial zones** are to have an opaque 2.4m high **fence** along all **property lines abutting** non-industrial **zones** and around **wrecking yards** that are visible from a **street abutting** the property.

6.5.10 No barbed wire or electrified fencing shall be allowed in any **residential, commercial, public** or **industrial zones** except:

- in RR **zone** for **use** in **livestock** enclosures; and
- in P2 **zone** where the **site** is used for **detention and correctional services**.

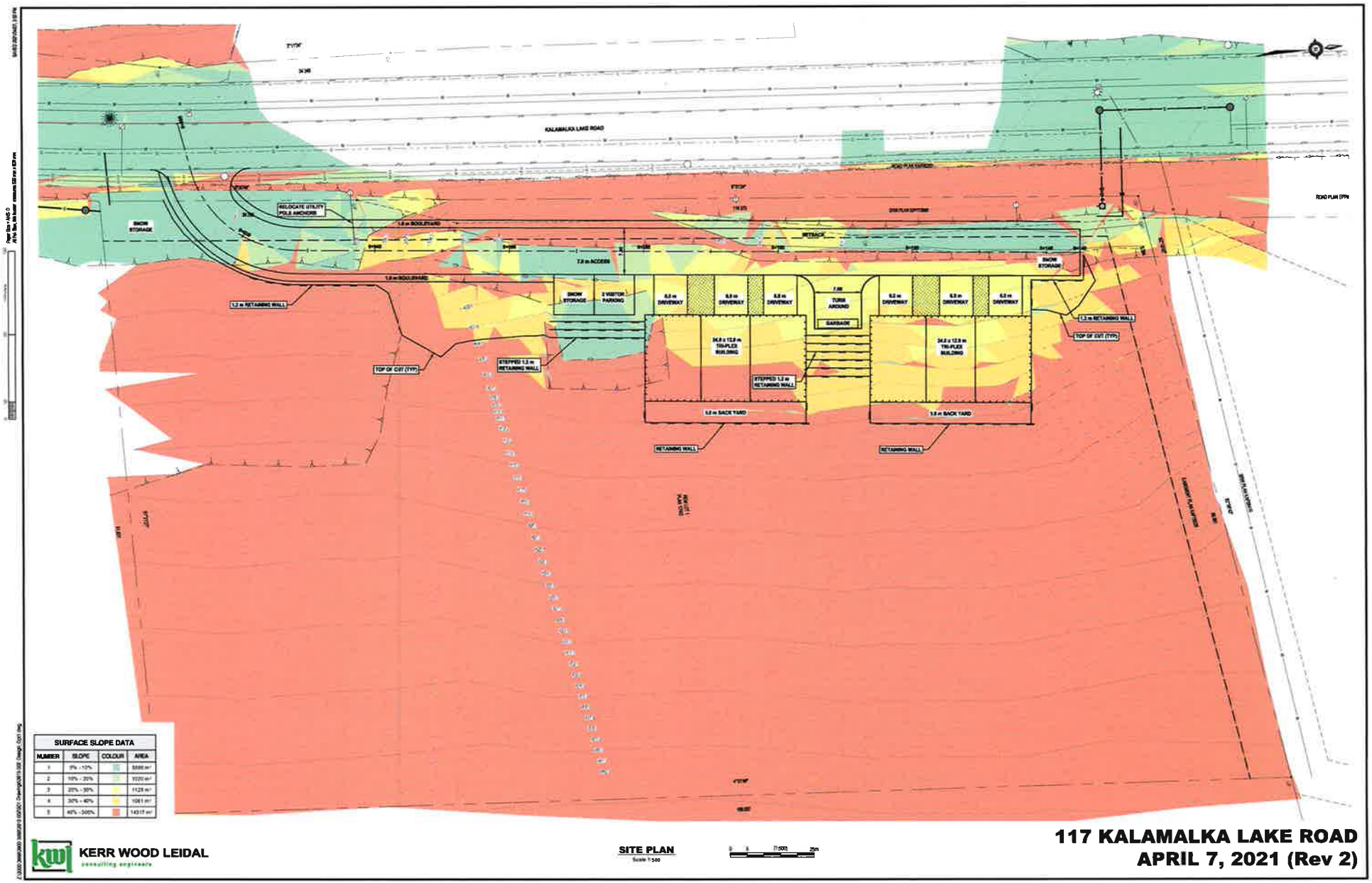
Razor wire fences shall not be permitted in any zone.

6.5.11 **Retaining walls** on all residential **lots**, except those required as a condition of **subdivision** approval, must not exceed a **height** of 1.2m measured from grade on the lower side, and must be constructed so that multiple **retaining walls** are spaced to provide at least a 1.2m horizontal separation between them.

6.5.12 In the case of a **retaining wall** constructed in accordance with Section 6.5.11, the combined **height** of a **fence** on top of a **retaining wall** at the **property line** or within 1.2m of the **property line** shall not exceed 2.0m, measured from **natural grade** at the **property line** (see Diagram 6.1).

6.5.13 Notwithstanding Section 6.5.11, a **retaining wall** may be higher than 1.2m, measured from grade, where the **natural grade** of the subject property is lower than the **abutting** property (see Diagram 6.2).

6.5.14 In the case of a **retaining wall** constructed in accordance with Section 6.5.13, the maximum **height** of a **fence**, or portion of **retaining wall** extending above the **natural grade** of the **abutting** higher property, or combination thereof, shall be 2.0m, measured from the **natural grade** of the **abutting** higher property (see Diagram 6.2).

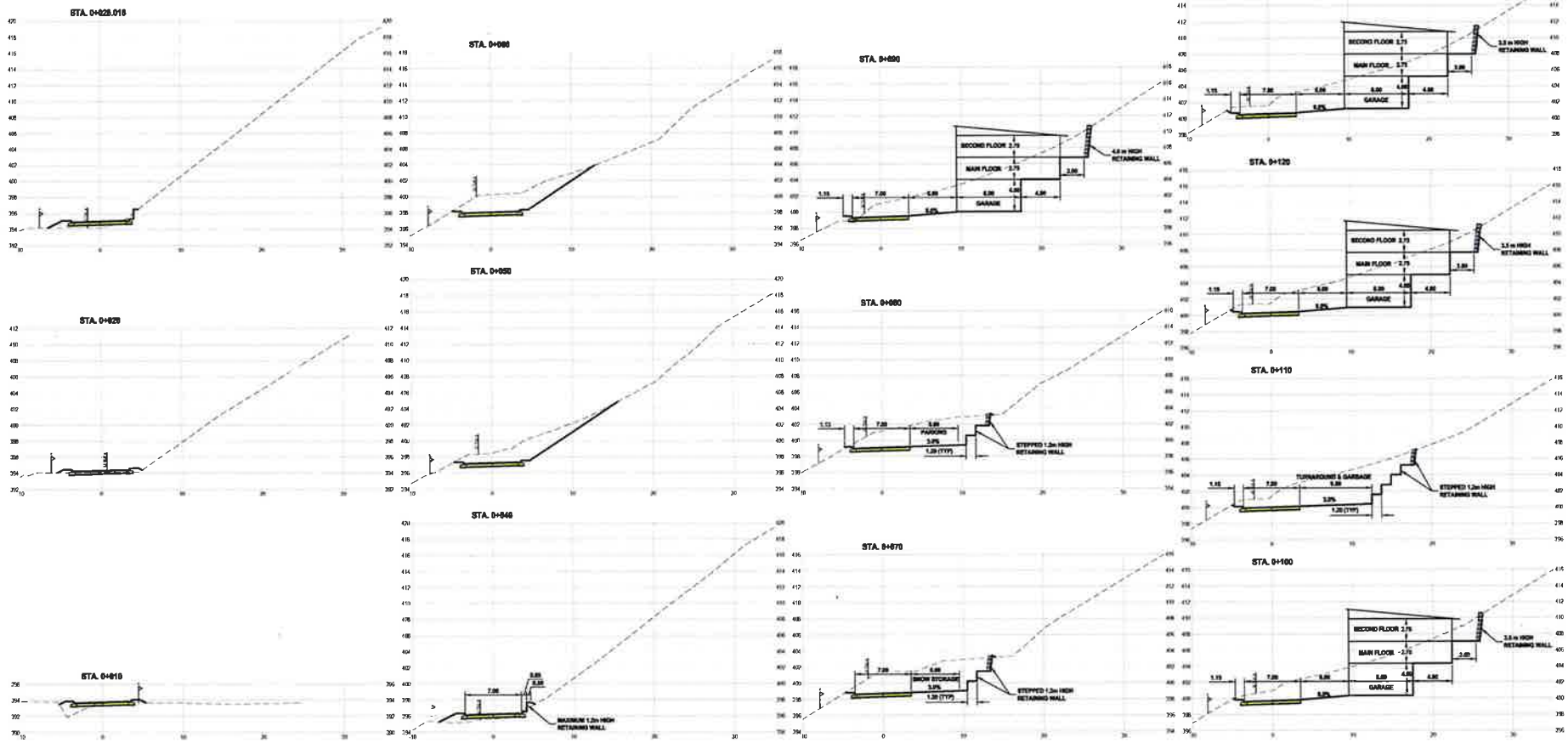


KERR WOOD LEIDAL
consulting engineers

SITE PLAN
Scale 1:500

117 KALAMALKA LAKE ROAD
APRIL 7, 2021 (Rev 2)

Attachment 4



KERR WOOD LEIDAL
consulting engineers

SECTIONS
Scale 1:100

117 KALAMALKA LAKE ROAD
APRIL 7, 2021 (Rev 2)

Attachment 5

- INTERIOR -
TESTING SERVICES
- LTD. -

MATERIALS TESTING • SOILS
CONCRETE • ASPHALT • CORING
GEOTECHNICAL ENGINEERING

#1 – 1965 MOSS COURT
KELOWNA, B.C. V1Y 9L3
250-860-6540
INFO@INTERIORTESTING.COM

Maxton Industries
Box 995, Vernon, BC V1T 6N2

December 10, 2020
Job 20.395

Attention: Mr. Brent Holomis

Dear Sir:

Re: **Preliminary Geotechnical Review**
Proposed Residential Development
117 Kalamalka Lake Road
Kelowna, BC

As requested, Interior Testing Services Ltd. (ITSL) has carried out a geotechnical investigation at the above noted address. Please find attached the following documents:

- 4 pages of site plans and cross sections for the proposed development by Kerr Wood Leidal (KWL),
- Appendix D: Landslide Assurance Assessment Statement (3 pages), and
- A copy of our 'Terms of Engagement' which governs our work and was previously signed and accepted.

1.0 INTRODUCTION

We understand that development of the roughly 3.5 acre parcel is proposed, including construction of an onsite access road, and two triplex townhome buildings. The preliminary proposed site layout is show on the attached site plans by KWL. The property is generally currently undeveloped, with the exception of a roughed-in driveway at the approximate proposed onsite roadway location parallel to Kalamalka Lake Road.

As illustrated by the attached plans prepared by KWL, the proposed three-story, triplex buildings include two stories of walk-out basement foundation walls. Temporary cuts on the order of roughly 6 to 10 m below current site grades are expected to be required for foundation wall construction, but then the bottom roughly 6 m of the cut slope is to be backfilled (retained by the foundation wall), with the upper portion of the cut slope being

either reconstructed to match the current site grading or retained with retaining walls in the upper back yard area of the proposed triplexes and between the triplexes.

Our scope of work on this project was to review the property with respect to slope stability, rockfall hazard, erosion, and drainage to provide preliminary geotechnical comments for development and residential construction. Our report presents our findings and provides general recommendations for site preparation and foundation design.

We understand that this report may form part of your development application, and we identify the City of Vernon as authorized users of this report, also subject to the attached "Terms of Engagement."

2.0 METHODOLOGY

A desk review was carried out which included examination of aerial photographs and topographic maps of the area. The desk review provided information of the physical terrain on and surrounding the site to aid in the identification of potential geotechnical hazards and areas requiring additional review.

On December 3, 2020, a field review of the property was carried out by Ms. Jennifer Anderson, P.Eng. of our office. The property was traversed to view the existing surface soil, bedrock, and general drainage conditions and identify potential hazard areas in relation to the proposed development.

3.0 SITE CONDITIONS

The property is located on the east side of Kalamalka Lake Road below the Middleton Mountain subdivision near the south boundary of Vernon, BC. The site is characterized as a steep slope up from Kalamalka Lake Road, with roughly 50 m of grade separation across the property at inclinations on the order of 30 to 40 degrees. Above the subject site, the terrain slopes up an additional roughly 25 m at similar inclinations, before leveling off at Mt. Griffin Road where subdivision development work is underway. Within the open excavations along Mt. Griffin Road, very shallow bedrock conditions were observed below roughly 0.5 m of surface topsoil/overburden. Similar shallow bedrock conditions are expected at the east roughly half of the subject site. Groundwater is expected to be relatively deep, given the high-lying nature of the property.

The slope on and above the subject property is vegetated with sparse grasses, weeds, and bushes. With the excavation of a very small area of rock above the northeast corner of the site, bedrock outcrops were not observed at the ground surface on or above the slope.

The property is currently undeveloped, with the exception of a roughed-in driveway at the bottom, west side. Along the west side of the property, excavations into the toe of the hillside show generally dry SAND soils with variable silt and gravel content. Beyond the south side of the site, an excavation into the toe of the hillside shows bedrock below the sandy deposit. Similar sandy deposits overlying bedrock are expected at the west roughly half of the subject site.

Figure 1: Street view at northeast corner of site, on Kalamalka Lake Road

Figure 2: Street view of approx. proposed building locations, from Kalamalka Lake Road

Figure 3: Street view at southeast corner of site, on Kalamalka Lake Road

4.0 Natural Hazard Assessment

Geotechnical concerns such as rockfall, landslip and erosion have been considered as potential hazards on the site with respect to suitable safe building sites. Hazards were assessed in the field based on visible soil conditions, topography, historical slope erosion and instabilities in areas with similar soil types, surface drainage patterns, and slope characteristics.

Besides some minor raveling and surface erosion where the toe of the slope had been excavated, our reconnaissance did not encounter evidence of significant, historical or recent slope instability. The overall sloping site generally appears stable in its existing condition, and large-scale/catastrophic slippage and/or failures are not expected as result of the proposed residential development.

Upon completion of site development and foundation preparation subject to geotechnical design and field reviews, the site appears suitable for the proposed residential development and adequate for the intended purpose. In reference to Section 86 of the *Land Title Act and* Sections 488 to 491 of the *Local Government Act* (formerly Sections 919.1 and 920 as referenced on the APEGBC Appendix D form), in our opinion, the land may be used safely for the use intended, conditional to our recommendations provided within this report. At this time, we understand the City of Vernon has not provided a design level of safety for consideration. To that end, we define "safe" based on the levels of safety adopted by several municipalities in the Okanagan, including a 2% probability of failure occurring in a 50 year period (1 in 2475) for slope instability.

In accordance with the EGBC Guidelines (formerly APEGBC) for Legislated Landslide Assessments for Residential Developments, we have included an Appendix D: Landslide Assessment Assurance Statement.

3.0 Discussion of Development Considerations

While there do not appear to be significant geotechnical hazards, the sloping conditions should be expected to govern design considerations with respect to site development and residential construction on the site.

3.1 Temporary Excavations, Site Grading, and Rockfall

Prior to site grading work, the surface vegetation, topsoil and any old fill should be completely removed to expose the underlying natural soils.

For temporary excavations, we recommend conventional Worksafe BC cut slopes of 3 Horizontal to 4 Vertical (0.75H:1V) be allowed for at the east side of the proposed buildings. Bedrock may be encountered at the bottom of the temporary cut slopes, and steeper inclinations may be possible for the temporary cuts. Additional guidance regarding the temporary cut slope stability should be provided during construction, as the cuts are expected to be taller than 6 m. If raveling of the granular soils occurs, construction of a shot-crete and anchor retaining wall, or similar may become necessary.

For the natural fine-grained soils, we recommend finished soil cut and structural FILL slopes be no steeper than 1.5 Horizontal to 1 Vertical (1.5H:1V). Finished soil slopes should be vegetated by means of landscaping, hydro-seeding, or similar to reduce the potential for surface erosion. Reducing disturbance of the natural landscape as much as possible is recommended with respect to slope stability and surface erosion considerations. Engaging a biologist or landscape architect may be prudent to establish restoration planting plans for the disturbed soil slopes.

Given that bedrock outcrops were generally not observed on the uphill slope, provision for rockfall protection do not appear necessary for the site. If future development of the uphill properties results in rockfall hazard, mitigation and protection to maintain the rockfall on the uphill lands should be required as part of safe land-use for the uphill developments, as to not have negative affect on the adjoining lands.

3.2 Foundation Preparation and Road Construction

For site preparation, within the proposed driveway and building areas it is recommended that any existing surface vegetation, topsoil and FILL be completely removed to expose the underlying natural soils. Based on our site review, we anticipate this will typically involve excavation to roughly 0.5 m, although could locally be deeper at the location of the existing roughed-in roadway.

If necessary to establish the foundation levels, road subgrade, and for restoration of temporary cut slopes, placement of backfill in a structural manner is recommended. Well-graded, clean (less than 8% fines) SAND and GRAVEL structural FILL should be placed and compacted in maximum 300 mm (1 foot) lifts to at least 95% Modified Proctor Density (MPD) and within 2% of optimum moisture contents. Periodic field density tests are recommended on every second lift of fill placed to confirm adequate compaction is being achieved.

Additional care will be required to 'key' the horizontal structural FILL lifts into the natural slopes, where fills are planned over sloping grades.

In general, the onsite granular soils are expected to be suitable for re-use as compacted road subgrade fill and for re-construction of the temporary slope excavations. Further laboratory testing should be carried out to confirm suitability of the onsite soils for use as structural fill for foundation support, if required.

3.3 Preliminary Foundation Design

For foundations set on competent natural soils or suitably compacted structural FILL, an allowable bearing pressure of 150 kPa (3000 psf) may be used in design subject to the following conditions:

a) Bearing surfaces be in a clean, dry, and well-compacted condition.
b) Footing width be a minimum of 400 mm (16 Inches).
c) Footings be set 600 mm (24 inches) below final grade, or as per local by-law, for frost protection.
d) Foundations be set below and behind a conventional 2H:1V plane projected up from the toe of downhill slopes.

We anticipate that the foundation retaining walls are likely to be relatively stiff and unyielding. Therefore, at-rest pressure conditions are assumed. An equivalent fluid pressure, Υ_{eq} of 8.8 kN/m^2/m can be used in design. To account for any surcharge

pressures, a uniform lateral pressure K_o, of 0.45 times the estimated surcharge load should also be applied to the wall for at rest conditions. If backfill is to be compacted then compaction induced stresses should be accommodated into design.

For compaction induced stresses, a minimum tabular pressure of 20 kN/m^2 should be applied until it intersects with the lateral pressure with depth. For example, given the at-rest pressure conditions noted above of 8.8 kN/m^2/m, the tabular pressure of 20 kN/m^2 would be applied to a depth of 2.3 m (20/8.8) at which time, the lateral earth pressure distribution would increase at the rate of 8.8 kN/m^2/m.

For any proposed retaining walls where active pressures are expected and the top of the wall is permitted to rotate, the following design parameters can be used. An equivalent fluid pressure, Υ_{eq} of 5.7 kN/m^2/m and a uniform lateral pressure, K_a, of 0.29 can be used by your structural engineer.

The above noted earth pressures are based on an assumed friction angle of 34°, a unit weight of 20.0 kN/m^3 for the onsite gravelly SAND soils anticipated to be used for foundation wall backfill, and assumed drained conditions.

3.4 Groundwater and Drainage

Given the highland nature of the site, groundwater does not appear to be of significant geotechnical design concern for the proposed residential construction. If groundwater seepage is encountered during site excavation and residential construction, it is expected to be adequately addressed/redirected as necessary with conventional drainage measures. This could include a French drain installed along the toe of the excavation.

Where the proposed building slabs are below the exterior finished grades, standard perimeter footing drainage should be installed. Perimeter drainage may be directed to rock pits set within the natural soils downhill and well away from the building for disposal. Finished grades should be sloped away from the building in order to minimize infiltration of water into the backfill zone.

Roof drainage should be provided and directed to a suitable disposal location such as splash pads for gradual dissipation over the ground surface. Alternatively, roof drainage and roadway drainage could be directed to drywells designed by your civil engineer set within the natural, granular soils well-away from the building. In all cases, drainage should be directed away from fills to prevent saturation-induced settlement.

With respect to storm water drainage, for sizing of drywells and other drainage related components, a permeability coefficient of roughly 10^{-4} m/s (R.F. Craig, pg. 39) can be used for the SAND soil mixtures observed. This is based on our visual observations, and if necessary, ITSL could carry out additional testing to provide a more accurate permeability coefficient.

4.0 Conclusions & Recommendations

Based on our review, the site appears adequately suited for residential construction and suitable safe building sites appear possible at the proposed building locations shown on the attached site plan.

Further geotechnical engineering guidance and soils investigations should be provided at the time of site preparation and development with respect to foundation preparation, drainage and surface erosion, and final site grading and landscaping considerations.

We trust this will assist you. Please call if you have any questions.

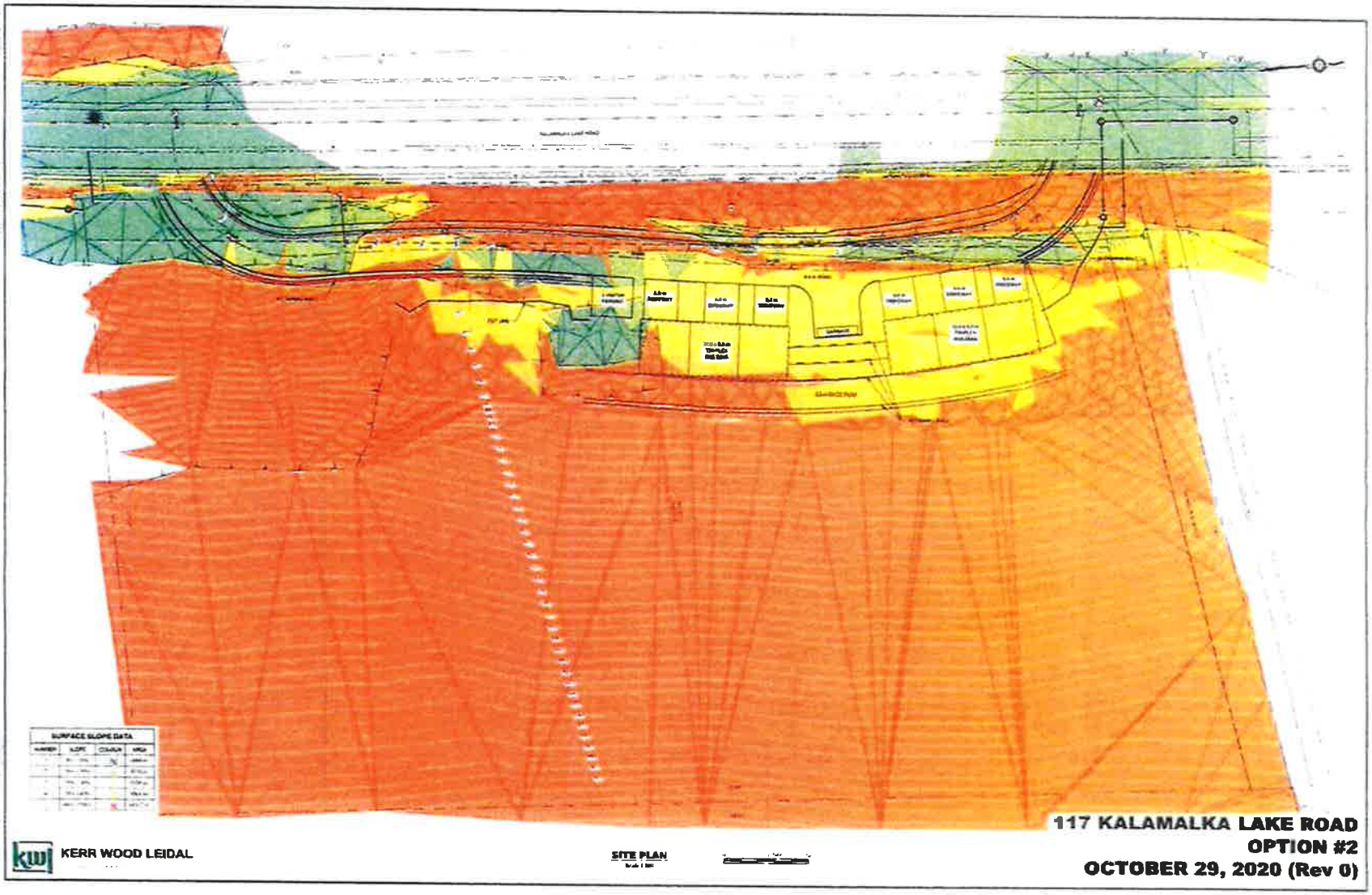
Yours truly,
Interior Testing Services Ltd.

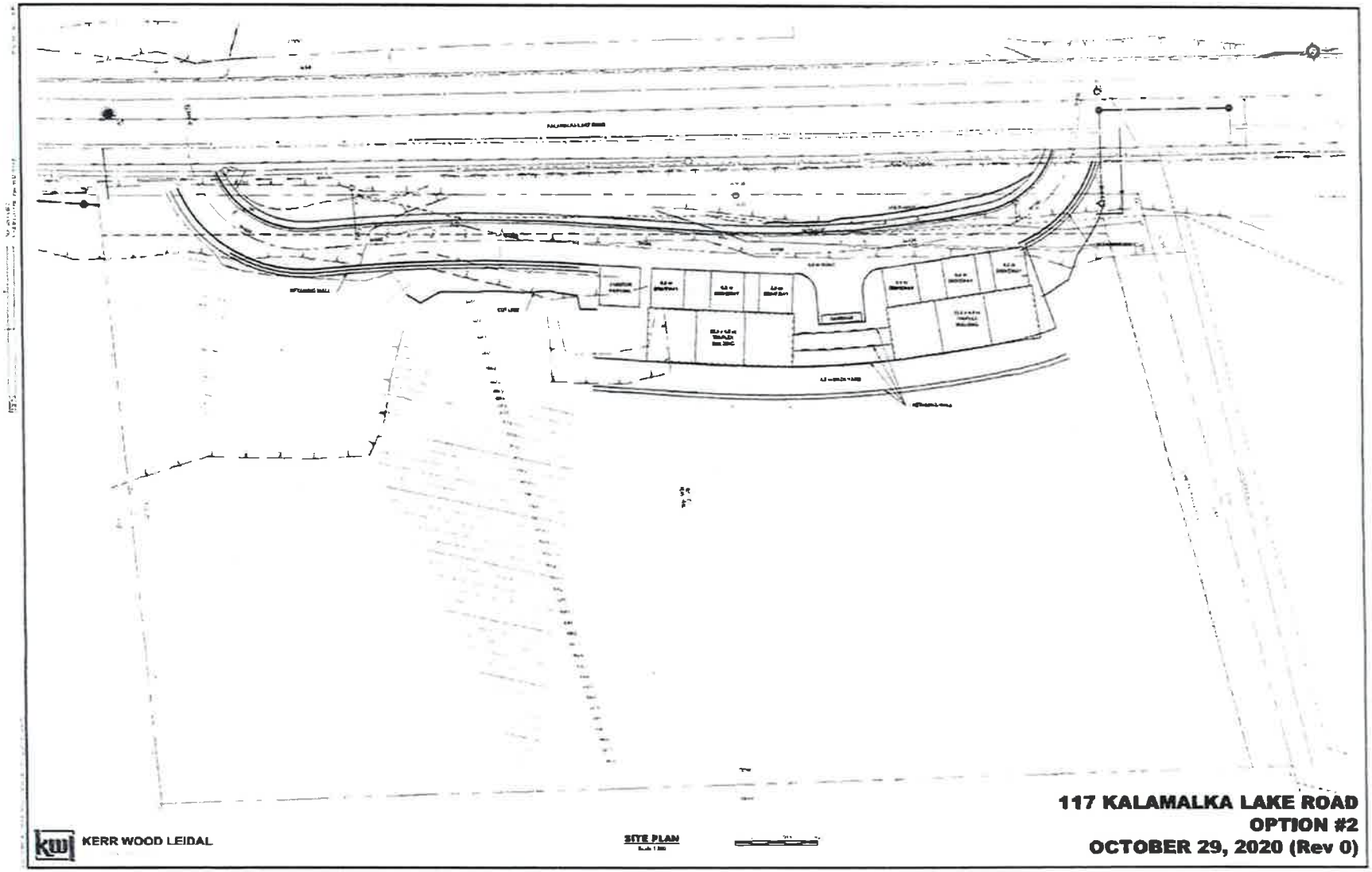
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA J. L. ANDERSON # 39171

Dec 10, 2020

Jennifer Anderson, P.Eng.

Peter Hanenburg, P.Eng.

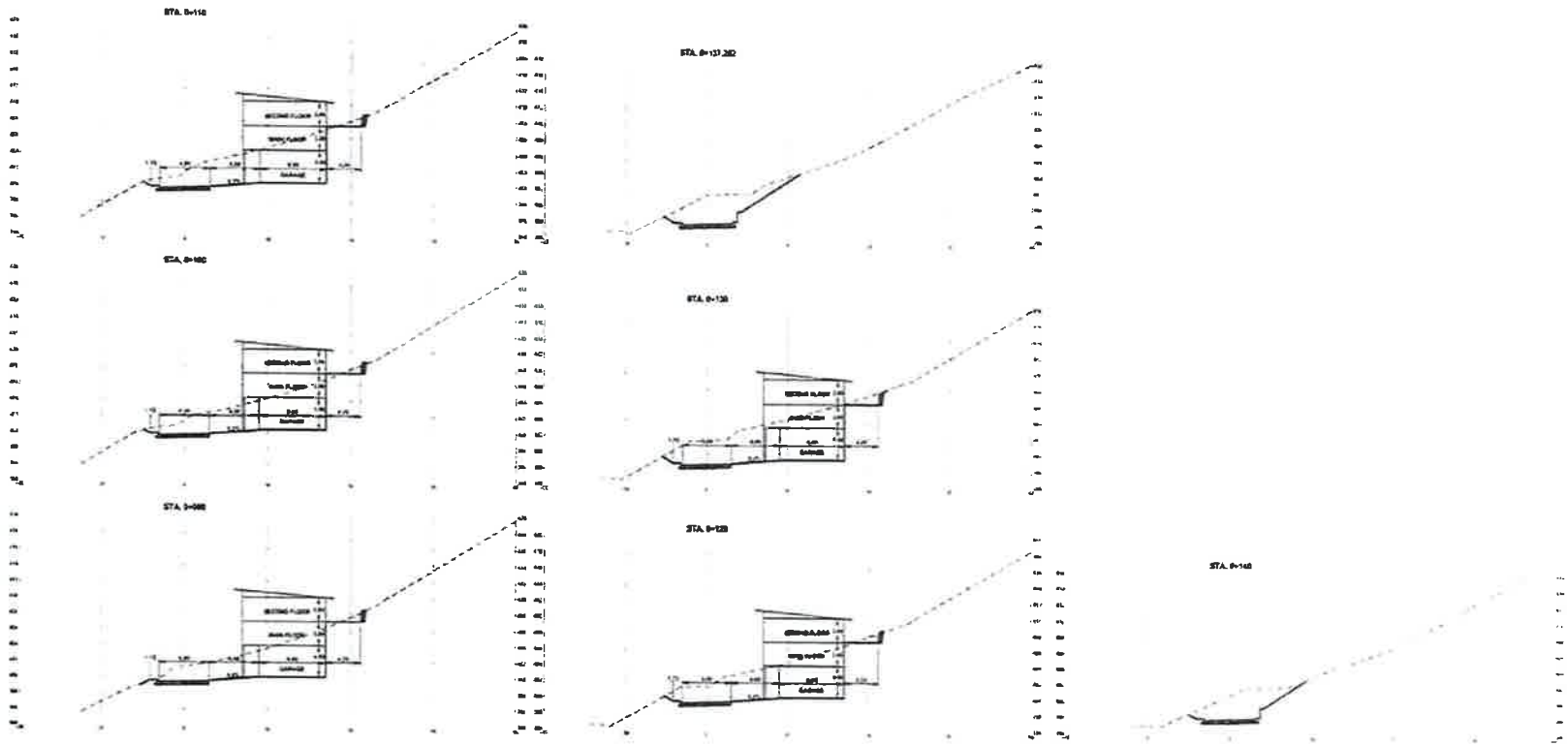

SURFACE SLOPE DATA
KERR WOOD LEIDAL
SITE PLAN
117 KALAMALKA LAKE ROAD
OPTION #2
OCTOBER 29, 2020 (Rev 0)



KERR WOOD LEIDAL

SITE PLAN

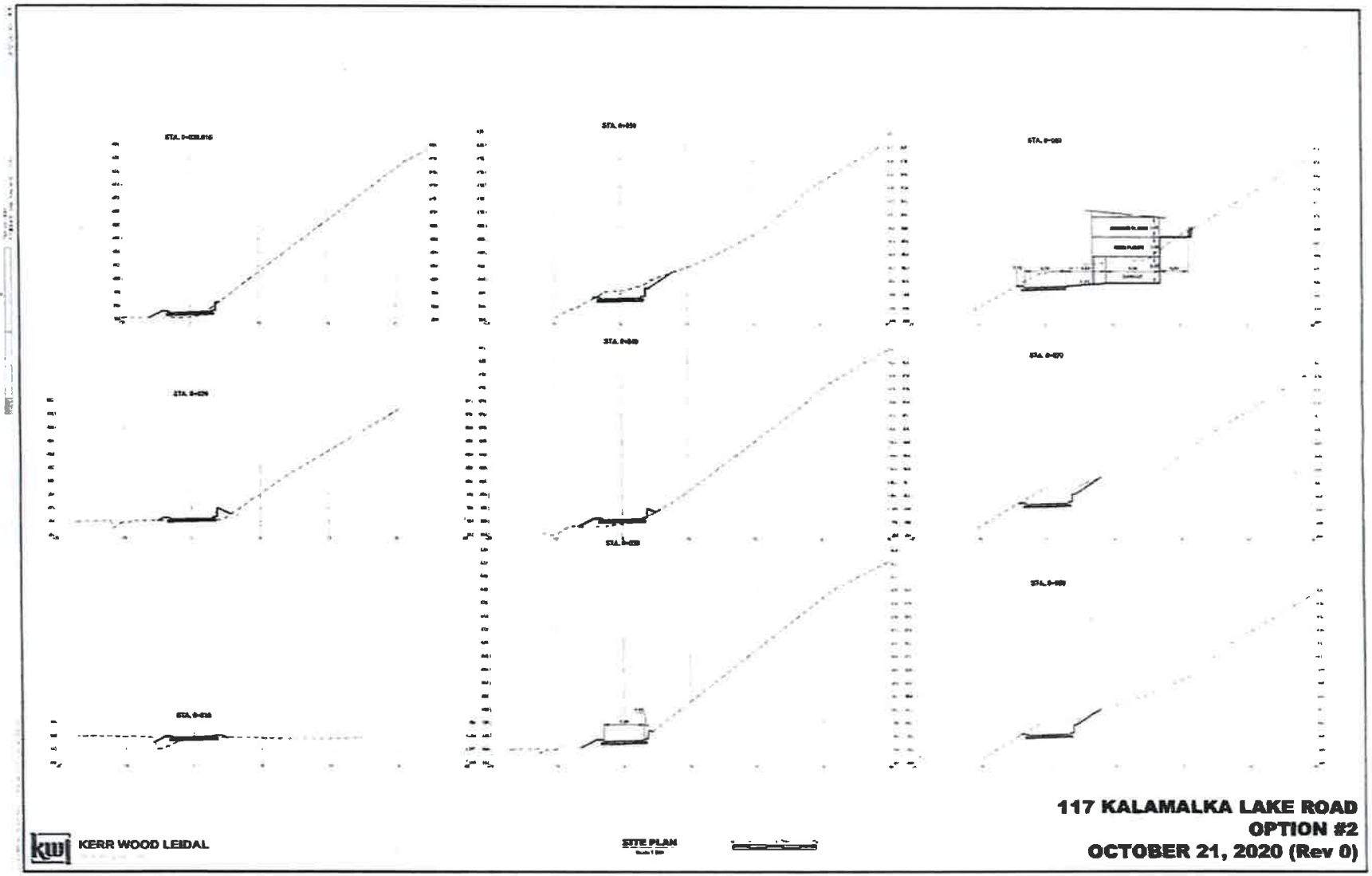
117 KALAMALKA LAKE ROAD
OPTION #2
OCTOBER 29, 2020 (Rev 0)



KERR WOOD LEIDAL

SITE PLAN

117 KALAMALKA LAKE ROAD
OPTION #2
OCTOBER 21, 2020 (Rev 0)



KERR WOOD LEIDAL

SITE PLAN

117 KALAMALKA LAKE ROAD
OPTION #2
OCTOBER 21, 2020 (Rev 0)

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*

CITY OF VERNON

C/O: MAXTON INDUSTRIES

Jurisdiction and address

Date: DECEMBER 10, 2020

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:

117 KALAMALKA LAKE ROAD,

Legal description and civic address of the Property

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*
- 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 conditions[1] 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".

JENNIFER ANDERSON, P.ENG. — Name (print)

DECEMBER 10, 2020 — Date

Signature

[1] 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".

1965 MOSS COURT
Address

KELOWNA, BC V1Y 9L3

250 860-6540
Telephone

DEC. 10, 2020
(Affix Professional seal here)

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

I am a member of the firm INTERIOR TESTING SERVICES LTD.
and I sign this letter on behalf of the firm. (Print name of firm)

TERMS OF ENGAGEMENT

GENERAL
Interior Testing Services Ltd. (ITSL) shall render the Services performed for the Client on this Project in accordance with the following Terms of Engagement. ITSL may, at its discretion and at any stage, engage subconsultants to perform all or any part of the Services. Unless specifically agreed in writing, these Terms of Engagement shall constitute the entire Contract between ITSL and the Client.

COMPENSATION
Charges for the Services rendered will be made in accordance with ITSL's Schedule of Fees and Disbursements in effect from time to time as the Services are rendered. All Charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client within thirty (30) days of the date of the invoice without hold back. Interest on overdue accounts is 12% per annum.

REPRESENTATIVES
Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

TERMINATION
Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay ITSL its Charges for the Services performed, including all expenses and other charges incurred by ITSL for this Project.

If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by ITSL under this paragraph, the Client shall forthwith pay to ITSL its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

ENVIRONMENTAL
ITSL's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. ITSL will co-operate with the Client's environmental consultant during the field work phase of the investigation.

PROFESSIONAL RESPONSIBILITY
In performing the Services, ITSL will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed. ITSL makes no warranty, representation or guarantee, either express or implied as to the professional services rendered under this agreement.

LIMITATION OF LIABILITY
ITSL shall not be responsible for:
(a) the failure of a contractor, retained by the Client, to perform the work required in the Project in accordance with the applicable contract documents;
(b) the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
(c) any cross-contamination resulting from subsurface investigations;
(d) any damage to subsurface structures and utilities;
(e) any Project decisions made by the Client if the decisions were made without the advice of ITSL or contrary to or inconsistent with ITSL's advice;
(f) any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
(g) the unauthorized distribution of any confidential document or report prepared by or on behalf of ITSL for the exclusive use of the Client.

The total amount of all claims the Client may have against ITSL under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the lesser of our fees or $50,000.00.

No claim may be brought against ITSL in contract or tort more than two (2) years after the Services were completed or terminated under this engagement.

PERSONAL LIABILITY
For the purposes of the limitation of liability provisions contained in the Agreement of the parties herein, the Client expressly agrees that it has entered into this Agreement with ITSL, both on its own behalf and as agent on behalf of its employees and principals.

The Client expressly agrees that ITSL's employees and principals shall have no personal liability to the Client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the Client expressly agrees that it will bring no proceedings and take no action in any court of law against any of ITSL's employees or principals in their personal capacity.

THIRD PARTY LIABILITY
This report was prepared by ITSL for the account of the Client. The material in it reflects the judgement and opinion of ITSL in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ITSL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report may not be used or relied upon by any other person unless that person is specifically named by us as a beneficiary of the Report. The Client agrees to maintain the confidentiality of the Report and reasonably protect the report from distribution to any other person.

INDEMNITY
The client shall indemnify and hold harmless ITSL from and against any costs, damages, expenses, legal fees and disbursements, expert and investigation costs, claims, liabilities, actions, causes of action and any taxes thereon arising from or related to any claim or threatened claim by any party arising from or related to the performance of the Services.

DOCUMENTS
All of the documents prepared by ITSL or on behalf of ITSL in connection with the Project are instruments of service for the execution of the Project. ITSL retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of ITSL.

FIELD SERVICES
Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of ITSL, to observe whether the work of a contractor retained by the Client is being carried out in general conformity with the intent of the Services.

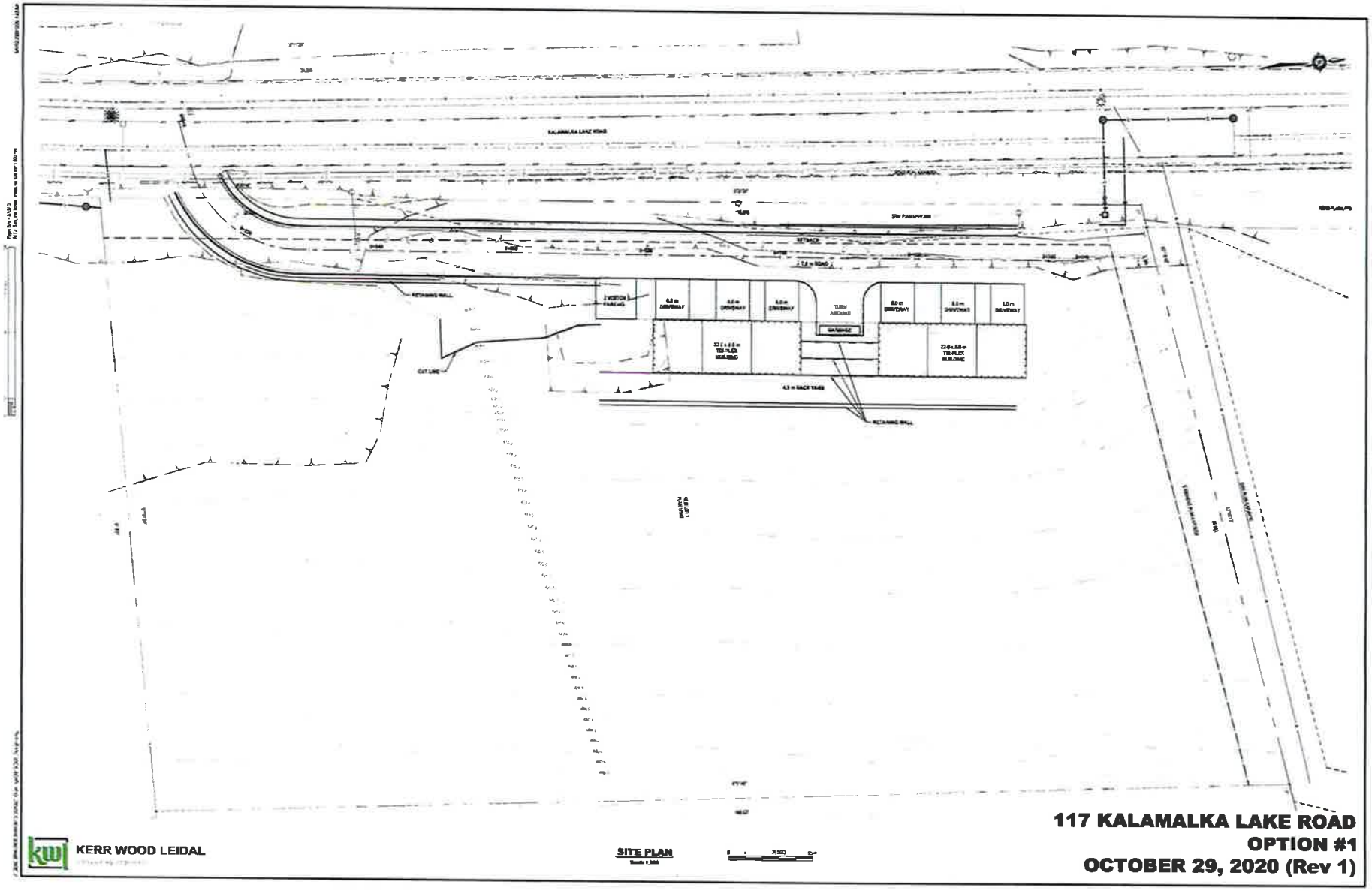
DISPUTE RESOLUTION
If requested in writing by either the Client or ITSL, the Client and ITSL shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by an arbitrator appointed by agreement of the parties.

CONFIRMATION OF PROFESSIONAL LIABILITY INSURANCE
As required by by-laws of the Association of Professional Engineers and Geoscientists of British Columbia, it is required that our firm advises whether or not Professional Liability Insurance is held. It is also required that a space for you to acknowledge this information be provided.

Our professional liability insurance is not project specific for the project and should not be regarded as such. If you require insurance for your project you should purchase a project specific insurance policy directly.

Accordingly, this notice serves to advise you that ITSL carries professional liability insurance. Please sign and return a copy of this form as an indication of acceptance and agreement to the contractual force of these Terms of Engagement.

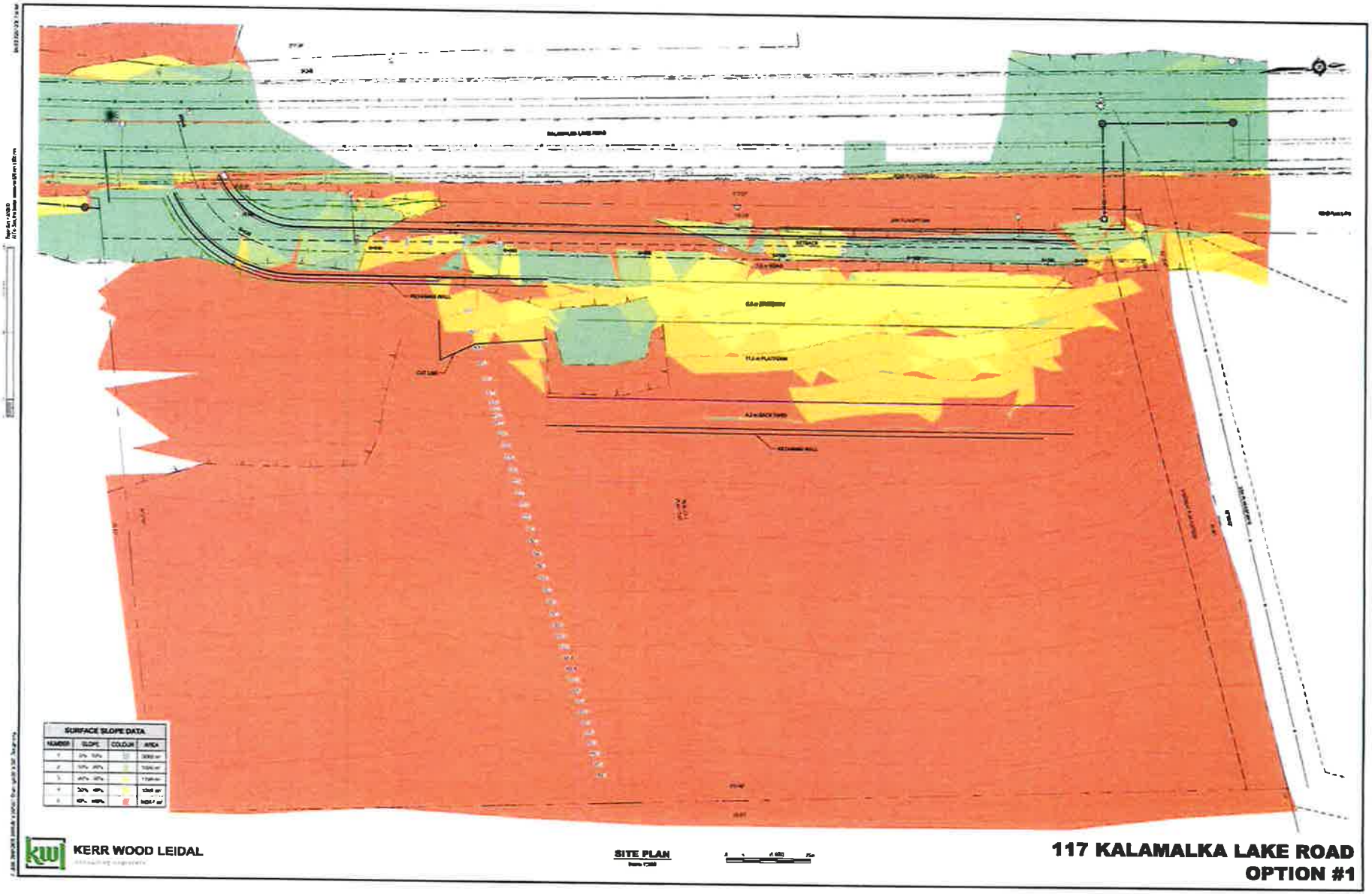
ACKNOWLEDGEMENT:_____



KERR WOOD LEIDAL

SITE PLAN

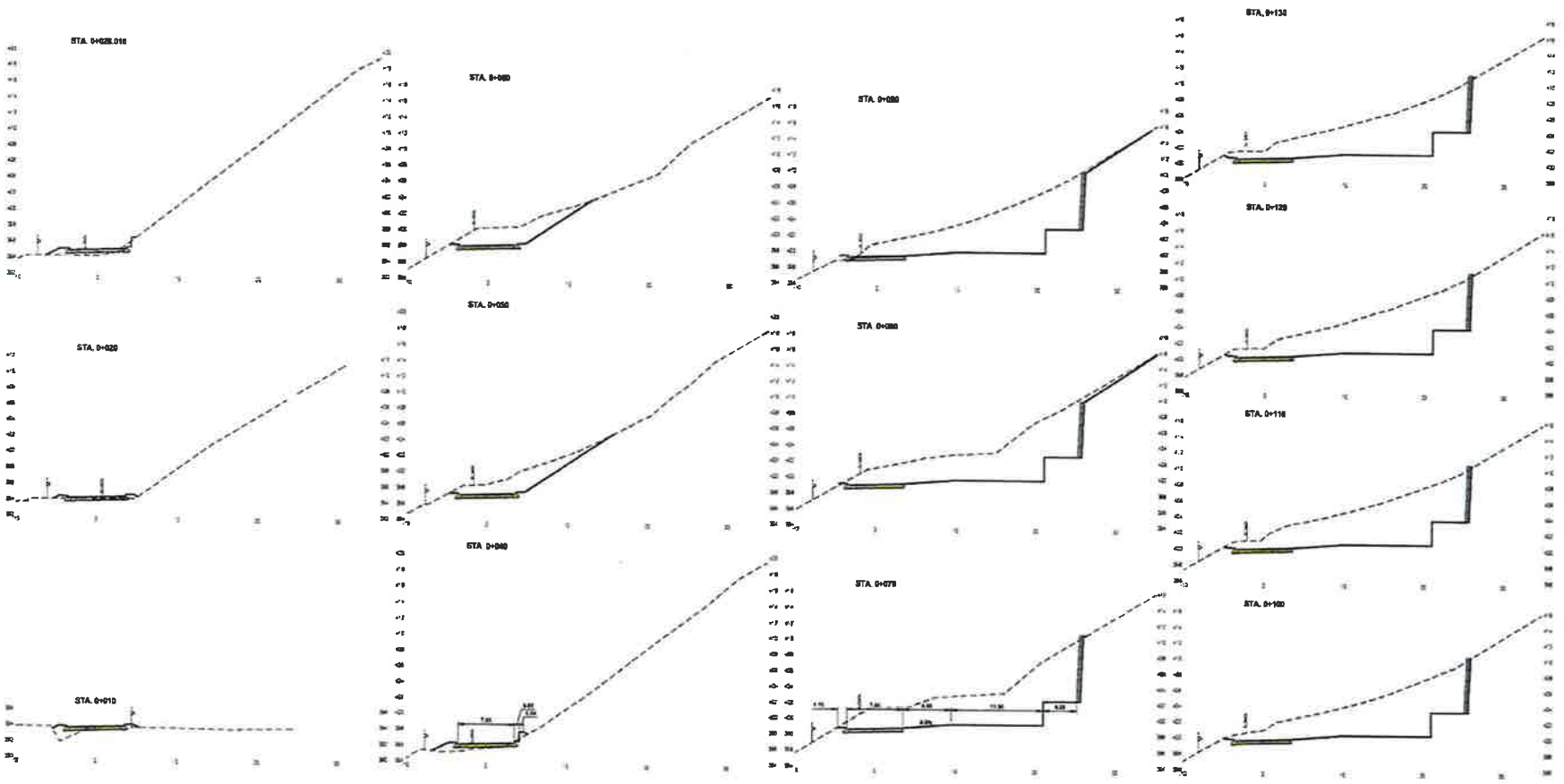
117 KALAMALKA LAKE ROAD
OPTION #1
OCTOBER 29, 2020 (Rev 1)



KERR WOOD LEIDAL

SITE PLAN

117 KALAMALKA LAKE ROAD
OPTION #1



KERR WOOD LEIDAL

SITE PLAN

117 KALAMALKA LAKE ROAD
OPTION #1

- INTERIOR -
TESTING SERVICES
- LTD. -

MATERIALS TESTING • SOILS
CONCRETE • ASPHALT • CORING
GEOTECHNICAL ENGINEERING

#1 – 1965 MOSS COURT
KELOWNA, B.C. V1Y 9L3
250-860-6540
INFO@INTERIORTESTING.COM

Maxton Industries
Box 995, Vernon, BC V1T 6N2

February 4, 2022
Job 20.395

Attention: Mr. Brent Holomis

Dear Sir:

Re: **Additional Geotechnical Comments**
Proposed Residential Development
117 Kalamalka Lake Road
Kelowna, BC

Further to our report of December 10, 2020, Interior Testing Services Ltd. (ITSL) provides the following additional comments regarding the proposed residential development. As before, our work is governed by our attached 'Terms of Engagement' which was previously signed and accepted.

We understand that development of the roughly 3.5 acre parcel is proposed, including construction of an onsite access road, and two triplex townhome buildings. The proposed three-story, triplex buildings include two stories of walk-out basement foundation walls. Temporary cuts on the order of roughly 6 to 10 m below current site grades are expected to be required for foundation wall construction, but then the bottom roughly 6 m of the cut slope is to be backfilled (retained by the foundation wall), with the upper portion of the cut slope being either reconstructed to match the current site grading or retained with retaining walls in the upper back yard area of the proposed triplexes and between the triplexes.

In order to establish a "limit of disturbance" area, we understand additional comments are required with respect to temporary excavation cut slopes. Preliminarily, we suggest 1H:1V (45 degree) cut slopes should be practical for the temporary excavations for construction of the building foundations and retaining walls, especially considering bedrock is anticipated to be encountered within the deeper excavations. However, to allow for some conservatism when establishing the "limit of disturbance" boundary, we recommend considering a 1.25H:1V plane (38.5 degrees) for the temporary excavations.

For the proposed retaining walls within the backyard areas and between the proposed triplex buildings, additional detailed design guidance can be provided by ITSL for proposed Mechanically Stabilized Earth (MSE) or geogrid tie-back walls. Preliminarily, we recommend allowing for geogrid tie-back lengths equal to 100% of the wall height, which will aid in establishing the required excavation limits and "limits of disturbance" behind the proposed retaining walls. Alternatively, cast-in place concrete walls (designed by your structural engineer) could be constructed, which may require less depth of excavation for construction.

We trust this meets your current needs. Further geotechnical engineering guidance and soils investigations should be provided at the time of site preparation and foundation design.

We trust this will assist you. Please call if you have any questions.

Yours truly,
Interior Testing Services Ltd.
Permit to Practice No. 1001971

Jennifer Anderson, P.Eng.

Peter Hanenburg, P.Eng.

TERMS OF ENGAGEMENT

GENERAL
Interior Testing Services Ltd. (ITSL) shall render the Services performed for the Client on this Project in accordance with the following Terms of Engagement. ITSL may, at its discretion and at any stage, engage subconsultants to perform all or any part of the Services. Unless specifically agreed in writing, these Terms of Engagement shall constitute the entire Contract between ITSL and the Client.

COMPENSATION
Charges for the Services rendered will be made in accordance with ITSL's Schedule of Fees and Disbursements in effect from time to time as the Services are rendered. All Charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client within thirty (30) days of the date of the invoice without hold back. Interest on overdue accounts is 18% per annum, compounded monthly (19.6%)

REPRESENTATIVES
Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

TERMINATION
Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay ITSL its Charges for the Services performed, including all expenses and other charges incurred by ITSL for this Project.

If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by ITSL under this paragraph, the Client shall forthwith pay to ITSL its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

ENVIRONMENTAL
ITSL's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. ITSL will co-operate with the Client's environmental consultant during the field work phase of the investigation.

PROFESSIONAL RESPONSIBILITY
In performing the Services, ITSL will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed. ITSL makes no warranty, representation or guarantee, either express or implied as to the professional services rendered under this agreement.

LIMITATION OF LIABILITY
ITSL shall not be responsible for:
(a) the failure of a contractor, retained by the Client, to perform the work required in the Project in accordance with the applicable contract documents;
(b) the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
(c) any cross-contamination resulting from subsurface investigations;
(d) any damage to subsurface structures and utilities;
(e) any Project decisions made by the Client if the decisions were made without the advice of ITSL or contrary to or inconsistent with ITSL's advice;
(f) any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
(g) the unauthorized distribution of any confidential document or report prepared by or on behalf of ITSL for the exclusive use of the Client.

The total amount of all claims the Client may have against ITSL under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the lesser of our fees or $50,000.00.

No claim may be brought against ITSL in contract or tort more than two (2) years after the Services were completed or terminated under this engagement.

PERSONAL LIABILITY
For the purposes of the limitation of liability provisions contained in the Agreement of the parties herein, the Client expressly agrees that it has entered into this Agreement with ITSL, both on its own behalf and as agent on behalf of its employees and principals.

The Client expressly agrees that ITSL's employees and principals shall have no personal liability to the Client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the Client expressly agrees that it will bring no proceedings and take no action in any court of law against any of ITSL's employees or principals in their personal capacity.

THIRD PARTY LIABILITY
This report was prepared by ITSL for the account of the Client. The material in it reflects the judgement and opinion of ITSL in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ITSL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report may not be used or relied upon by any other person unless that person is specifically named by us as a beneficiary of the Report. The Client agrees to maintain the confidentiality of the Report and reasonably protect the report from distribution to any other person.

INDEMNITY
The client shall indemnify and hold harmless ITSL from and against any costs, damages, expenses, legal fees and disbursements, expert and investigation costs, claims, liabilities, actions, causes of action and any taxes thereon arising from or related to any claim or threatened claim by any party arising from or related to the performance of the Services.

DOCUMENTS
All of the documents prepared by ITSL or on behalf of ITSL in connection with the Project are instruments of service for the execution of the Project. ITSL retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of ITSL.

FIELD SERVICES
Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of ITSL, to observe whether the work of a contractor retained by the Client is being carried out in general conformity with the intent of the Services.

DISPUTE RESOLUTION
If requested in writing by either the Client or ITSL, the Client and ITSL shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by an arbitrator appointed by agreement of the parties.

CONFIRMATION OF PROFESSIONAL LIABILITY INSURANCE
As required by by-laws of Engineers & Geoscientists British Columbia (EGBC), it is required that our firm advises whether or not Professional Liability Insurance is held. It is also required that a space for you to acknowledge this information be provided.

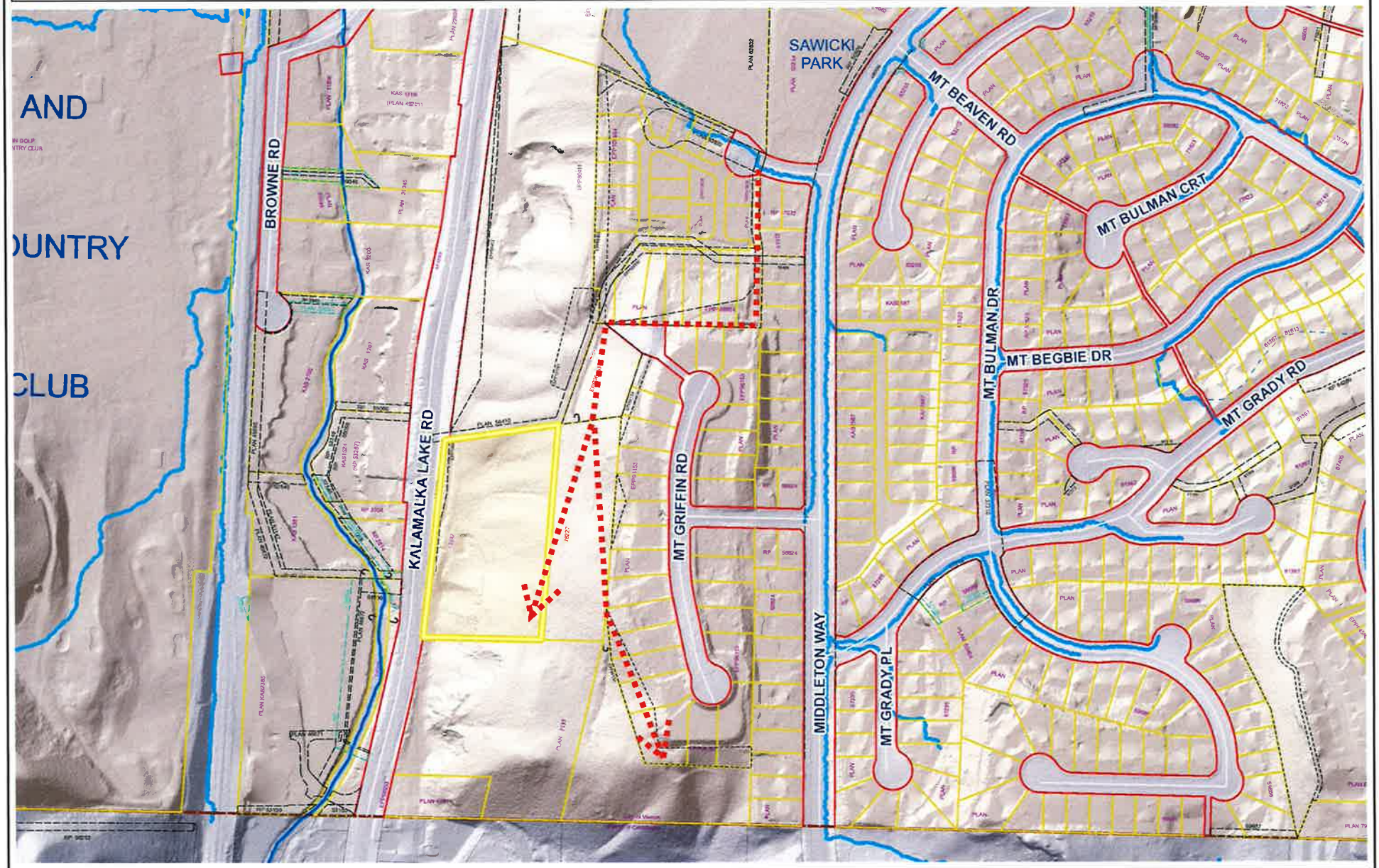
Our professional liability insurance is not project specific for the project and should not be regarded as such. If you require insurance for your project you should purchase a project specific insurance policy directly.

Accordingly, this notice serves to advise you that ITSL carries professional liability insurance. Please sign and return a copy of this form as an indication of acceptance and agreement to the contractual force of these Terms of Engagement.

PRINT NAME:_____ DATE:_____

ACKNOWLEDGEMENT:_____

Vernon Essentials Site



203 0 102 203 Meters

1: 4,000

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Attachment 7