PROPOSED DEVELOPMENT

EXECUTIVE SUMMARY

Proposed Development consist of 2 Residential buildings - one five storey and the other four storey.

The Development site is located on Shornecliffe Ave near its intersection with Cowrie st and termination in a cul de sac. There is an existing vehicular access to the site from Shornecliffe Ave.

1. The proposed five storey residential building, located towards the rear portion of the site, includes the following:

- Residential Units at ground level and four levels above it ie. from Levels 1-5, totalling 49 units
- Access to residential units is through the main lobby at its ground level.

2. The proposed four storey multi-family residential building located towards the front portion of the site, includes the following:

- Residential Units at ground level and three levels above it ie. from Level 1-4, totalling 60 units

PROJECT INFORMATION

- Civic Address: 5535 SHORNCLIFFE AVE, SECHELT
- Plan: VAP6223
- Zoning:
  OCP Deisgnation: Multiple Family Residential
- Overall Site Area: 1.82 Acres (79279 sft)
- Proposed Density: 60 UPA = 109 Units

AERIAL VIEW: URBAN CONTEXT

NORTH

FLAT ARCHITECTURE INC
Unit 209- 6321 King George Blvd
Surrey BC, V3X 1G1
www.flatarchitecture.ca
contact@flatarchitecture.ca

Ph: 604-503-4484

PROJECT INFO:
APARTMENT BUILDING AT 5535
SHORNCLIFFE AVE
SECHELT BC
CLIENT:
GENARIS

DATE
13-May-22
PROJECT NO:
21-217
SCALE: As Noted
DRAWN BY: VK

REV	DESCRIPTION	BY	DATE
01	ISSUED FOR REVIEW	V.K	11-05-22

PROPOSED DEVELOPMENT SUMMARY

A 0.0

AERIAL VIEW: REGIONALCONTEXT

CONTEXT ANALYSIS:
REGIONAL CONTEXT

The Site is situated in the primary growth area within the UCB (Urban containment boundary) of the District of Sechelt
The Site is in close proximity to the downtown core, home to growing economic activities and varying scale of mixed-use service.

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REGIONAL ANALYSIS

A 0.2A

CONTEXT ANALYSIS:
NEIGHBOURHOOD CONTEXT

The Site is adjacent to Rockwood center grounds to the South and an intermediate care home to the North
The site, situated along Shorncliffe Ave, is in close proximity to the downtown core.
Major shopping centres, schools, parks, variety of businesses including banks, retail and restaurants, public transit stops etc. are conveniently located near the subject site.

LEGEND:

PROPOSED DEVELOPMENT

A. **BLDG 1 - 4 STOREY RESIDENTIAL DEVELOPMENT**

B. **BLDG 2 - 5 STOREY RESIDENTIAL DEVELOPMENT**

1. Shorncliffe intermediate care home
2. Rockwood Center grounds
3. Ecole Chatelech secondary school
4. Sechelt public library
5. Trail bay centre - Shopping mall
6. Single family residential development
7. Hackett park
8. Sechelt seniors activity centre
9. Secehelt visitors centre
10. Ecole du pacifique
11. Restaurant
12. Multi family residential development

AERIAL VIEW: NEIGHBOURHOOD CONTEXT

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Neighbourhood context

A 0.2B

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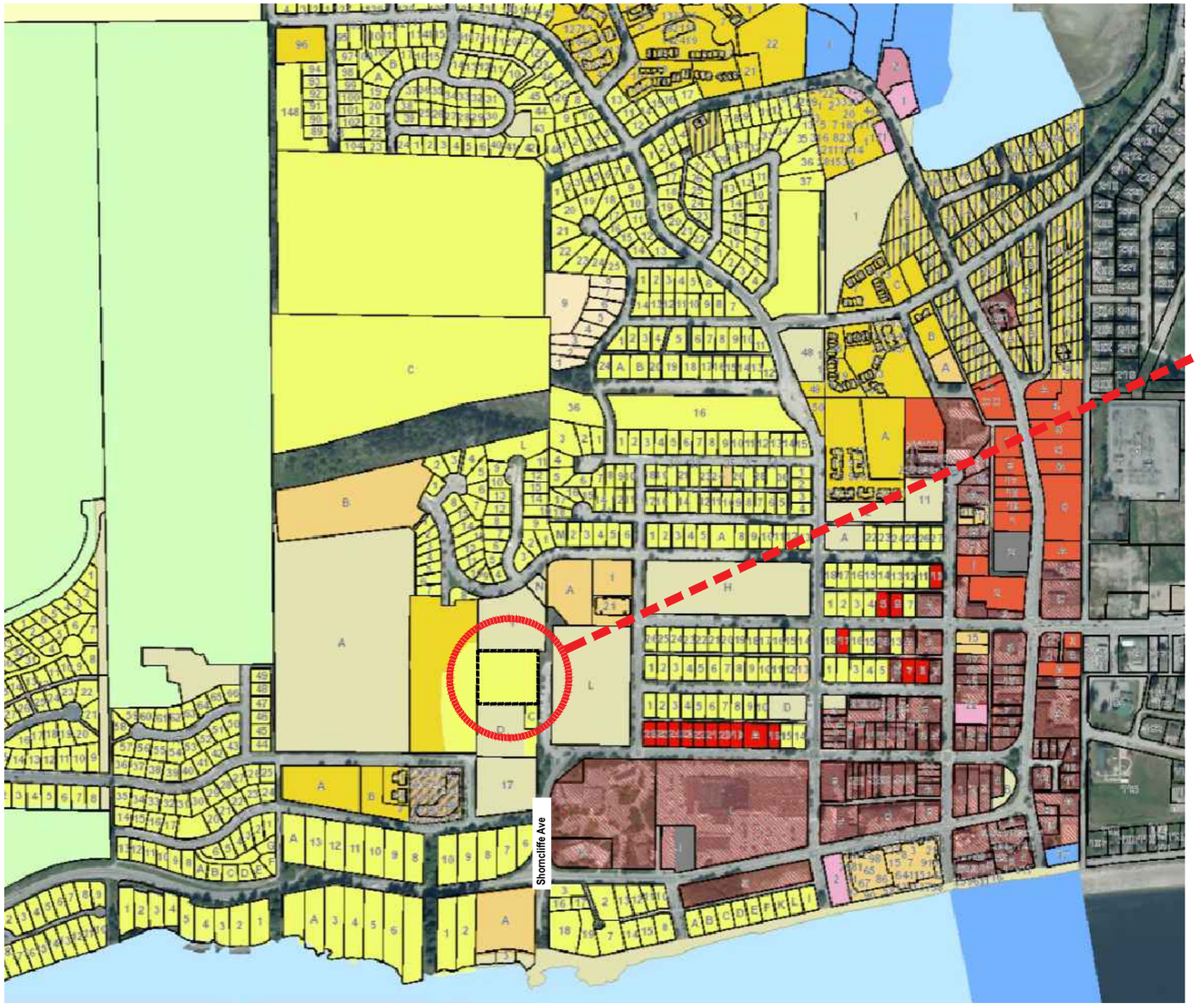
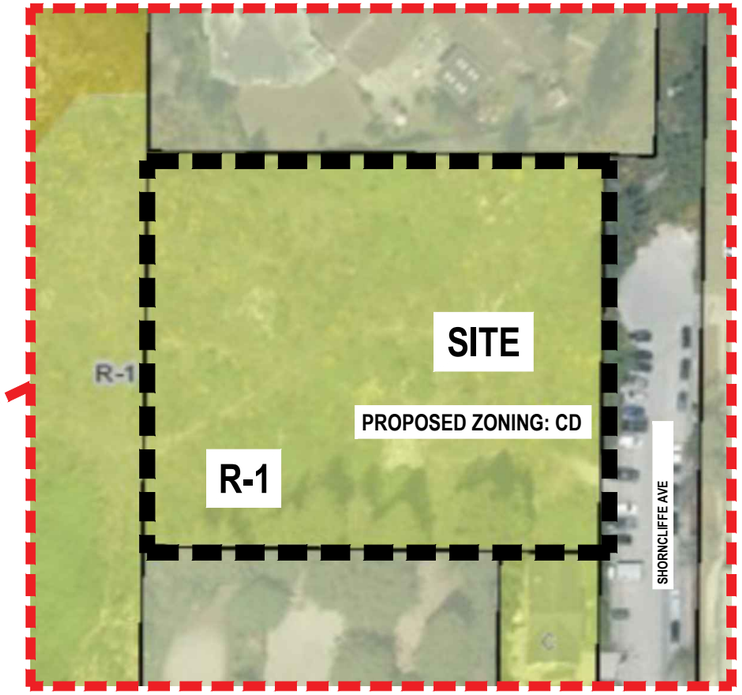
CONTEXT PLAN

A 0.2C





LEGEND:

ZONING DESIGNATIONS

C-1	I-3	R-1B
C-2	I-4	R-2
C-3	I-5	R-3
C-4	I-6	R-4
C-5	I-7	R-4A
C-5A	M-1; M-3; M-4	R-4B
C-6	M-3A	Mobile Home Park (R-5)
C-7	Public Assembly (PA-1)	R-7
Comprehensive Development	Public Assembly (PA-2)	Rural (RR-1)
I-1	R-1	Rural (RR-2)
I-2	R-1A	Water (W-1)

NORTH

ZONING - SECHELT

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ZONING REFERENCE

A 0.3

SITE DESCRIPTION

The proposed site is an existing residential lot located at Shorncliffe Ave, adjacent to the Rockwood centre grounds. The Site is part of the primary growth areas within the Urban containment boundary. It is squarish, with an approximate dimension of 92.90m x 80.60m. The area of the site is 7365 sq.m (79279 sf). It has a distinct slope similar to many sites in its immediate vicinity. The site slopes down diagonally from north-west to south-west. However the slope of the site is quite steep, with the fall from north-west corner to south-west being approximately 23.0m, making it fairly challenging to develop the site .

CONTOUR MAP

NORTH

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SITE DESCRIPTION

A 0.4

1 PROPOSED DENSITY ANALYSIS

SCALE: N.T.S.

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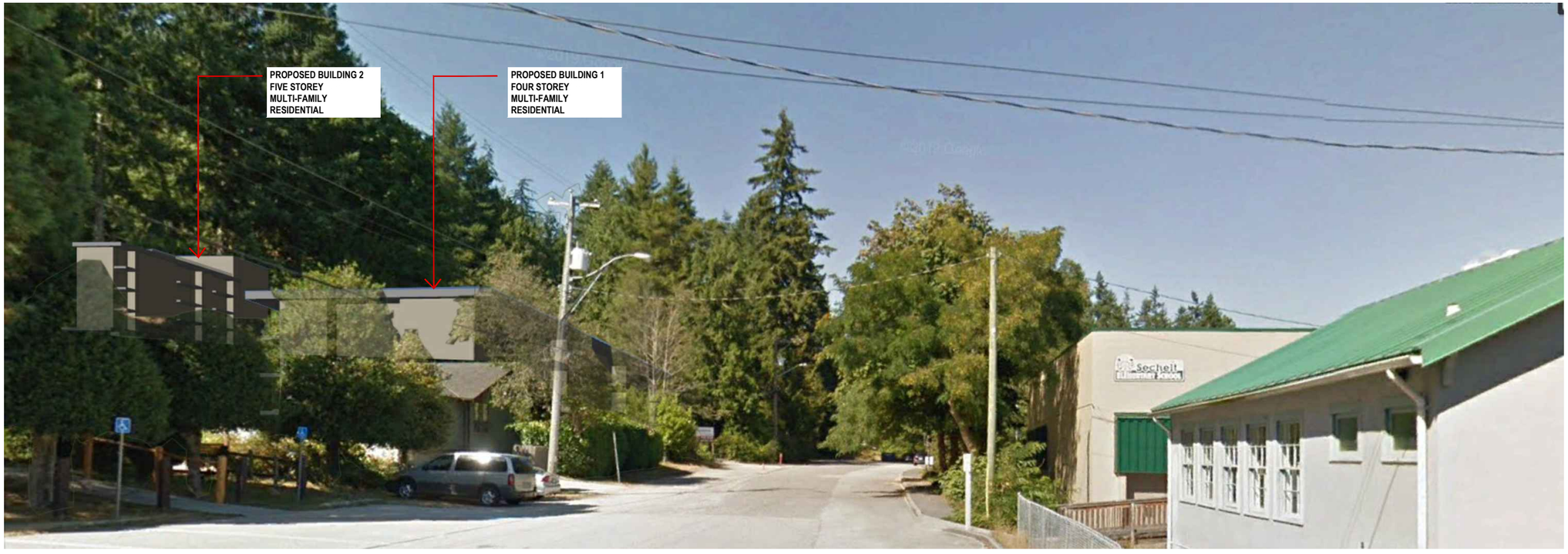
DENSITY ANALYSIS

A 0.5

1 EAST VIEW FROM OCEAN AVE

SCALE: N.T.S.



2 SOUTH-EAST VIEW ALONG SHORNCLIFFE AVE

SCALE: N.T.S.

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SCALE: As Noted

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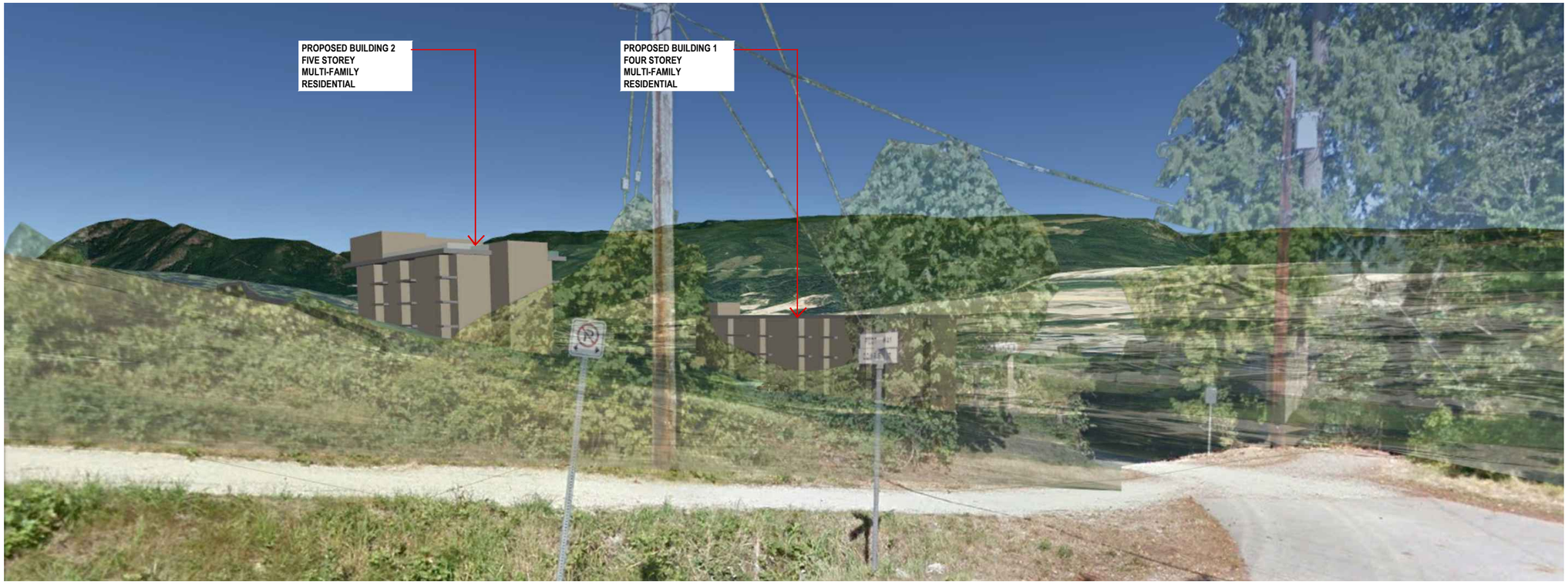
CONCEPTUAL VIEW

A 0.6



1 SOUTH-WEST VIEW FROM COWRIE ST

SCALE: N.T.S.

2 AERAL VIEW FROM SOUTH-EAST

SCALE: N.T.S.

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SCALE:
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DRAWN BY:
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REV	DESCRIPTION	BY	DATE
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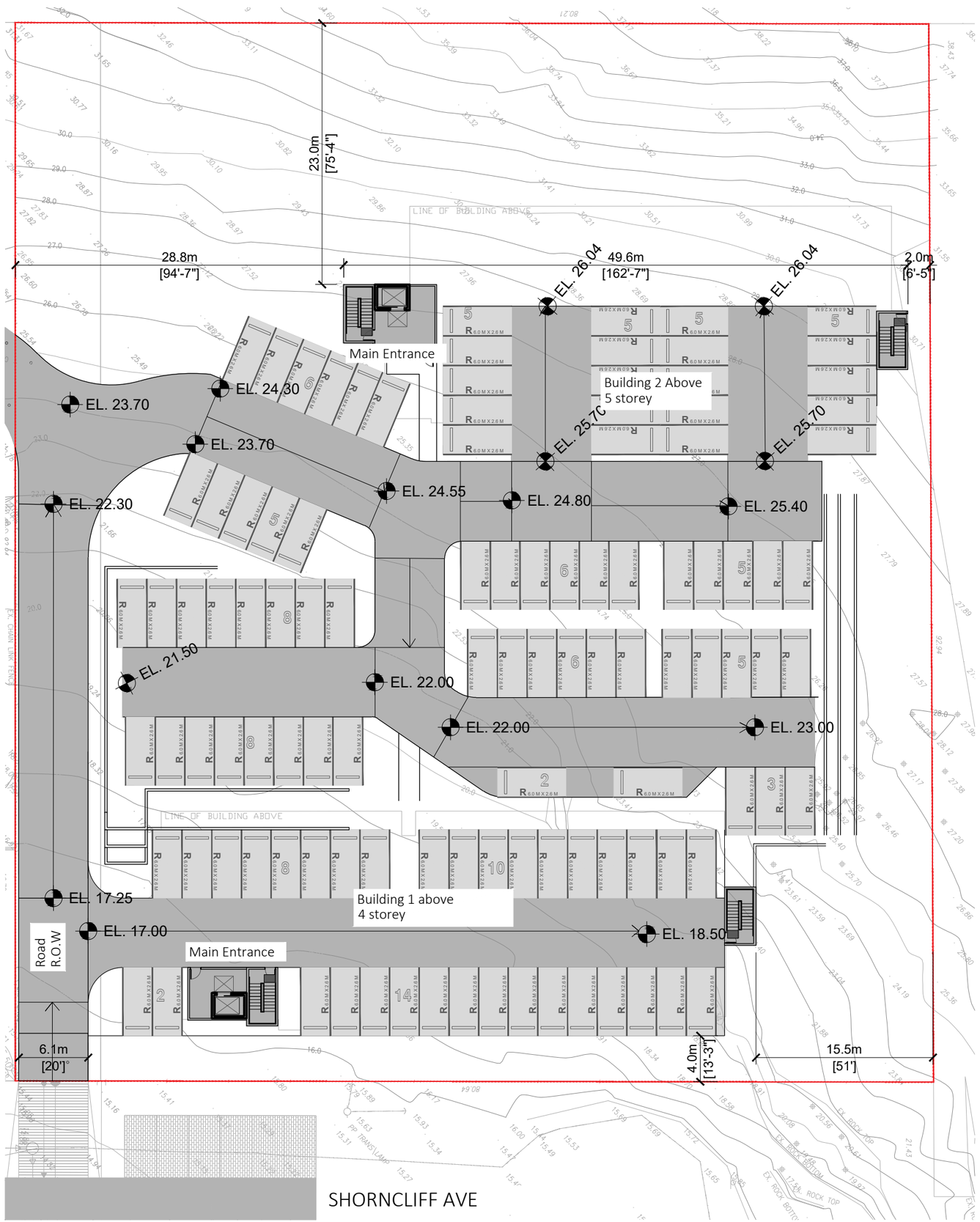
CONCEPTUAL VIEW

A 0.7



1 LEVEL 1
Scale: 1/32"=1'

SITE STATISTICS

CIVIC ADDRESS:		5535 SHORNCLIFF AVENUE SECHELT BC		
LEGAL DISCRIPTION				
OCP DESIGNATION		MULTIPLE FAMILY RESIDENTIAL		
GROSS SITE AREA:	79279 ft2	1.82 Acre		
ZONING				
	BUILDING HEIGHT			
		20.0 m		
	SETBACKS	PROVIDED		
	NORTH	2.0 m		
	SOUTH	11.6 m		
	EAST:	4.0 m		
	WEST:	16.0 m		
LOT COVERAGE				
	PROPOSED	33%		
DENISTY				
	PROPOSED 60 UPA = 60 X 1.82 Acre	109 units	PROPOSED	VARIANCE REQUESTED
			109 UNITS	
OFF STREET PARKING				
	PARKING FOR 109 UNITS	109 X 1.00 (including Visitor)	109 PROVIDED	

UNIT MIX SCHEDULE

Floor Level	1 Bed	2 Bed	Studio	Penthouse	Total Units per Floor
Building 1					
LVL 1	9	4	2		15
LVL 2	9	4	2		15
LVL 3	9	4	2		15
LVL 4	9	4	2		15
Building 2					
LVL 1	4	8			12
LVL 2	4	8			12
LVL 3	4	8			12
LVL 4	4	8			12
LVL 5				1	1
TOTAL	52 UNITS	48 UNITS	8 UNITS	1 UNITS	109 UNITS

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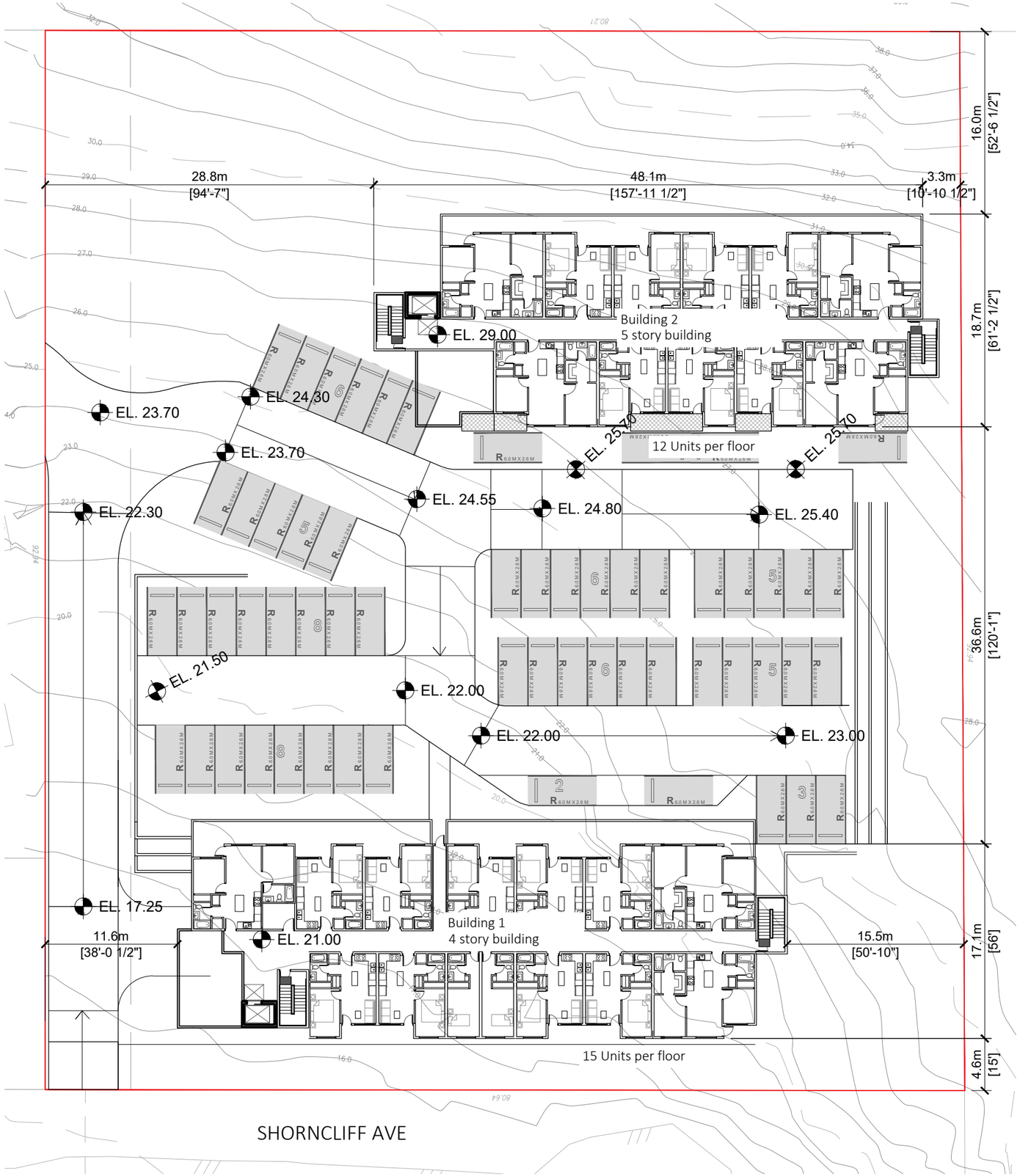
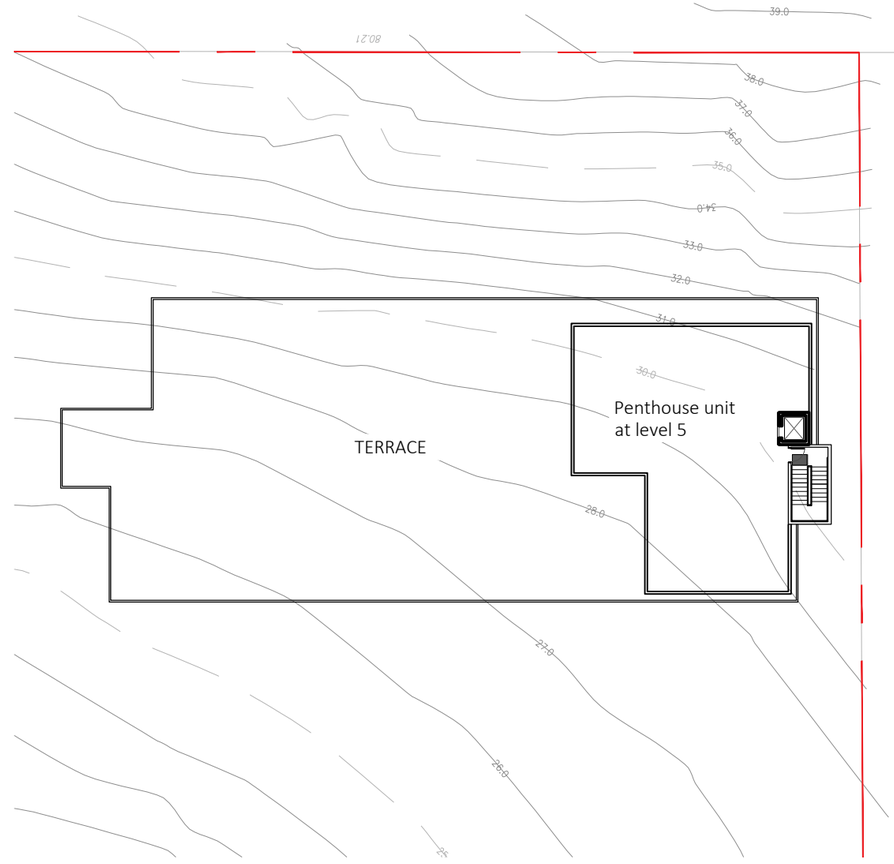
REV	DESCRIPTION	BY	DATE

LEVEL 1

A 1.1



1 LEVEL 2-4
Scale: 1/32"=1'



2 LEVEL 5
Scale: 1/32"=1'

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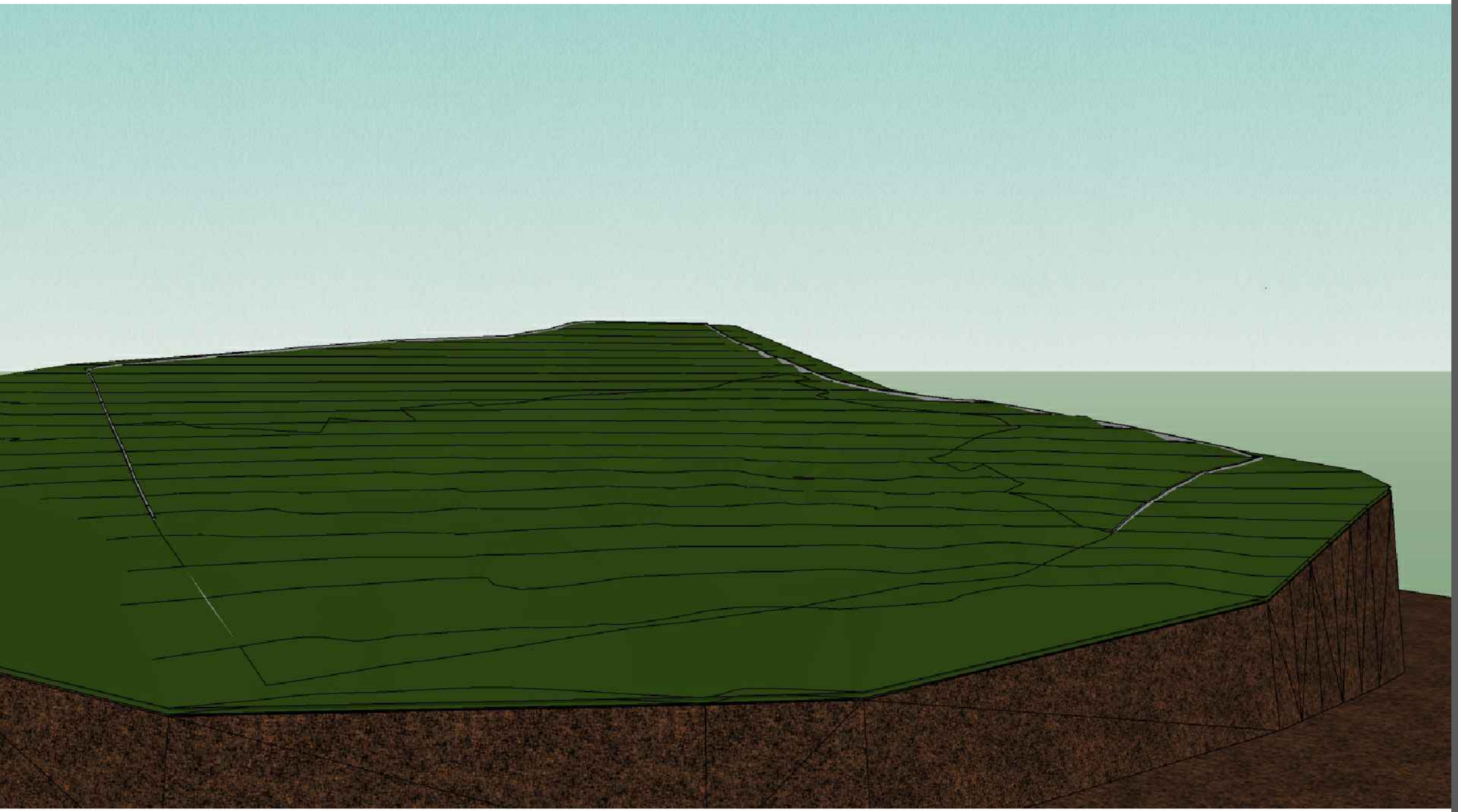
REV	DESCRIPTION	BY	DATE

LEVEL 2-4

A 1.2



SITE BOUNDARY WITH
BASIC CONTOURS

1 VIEW FROM SOUTH-EAST

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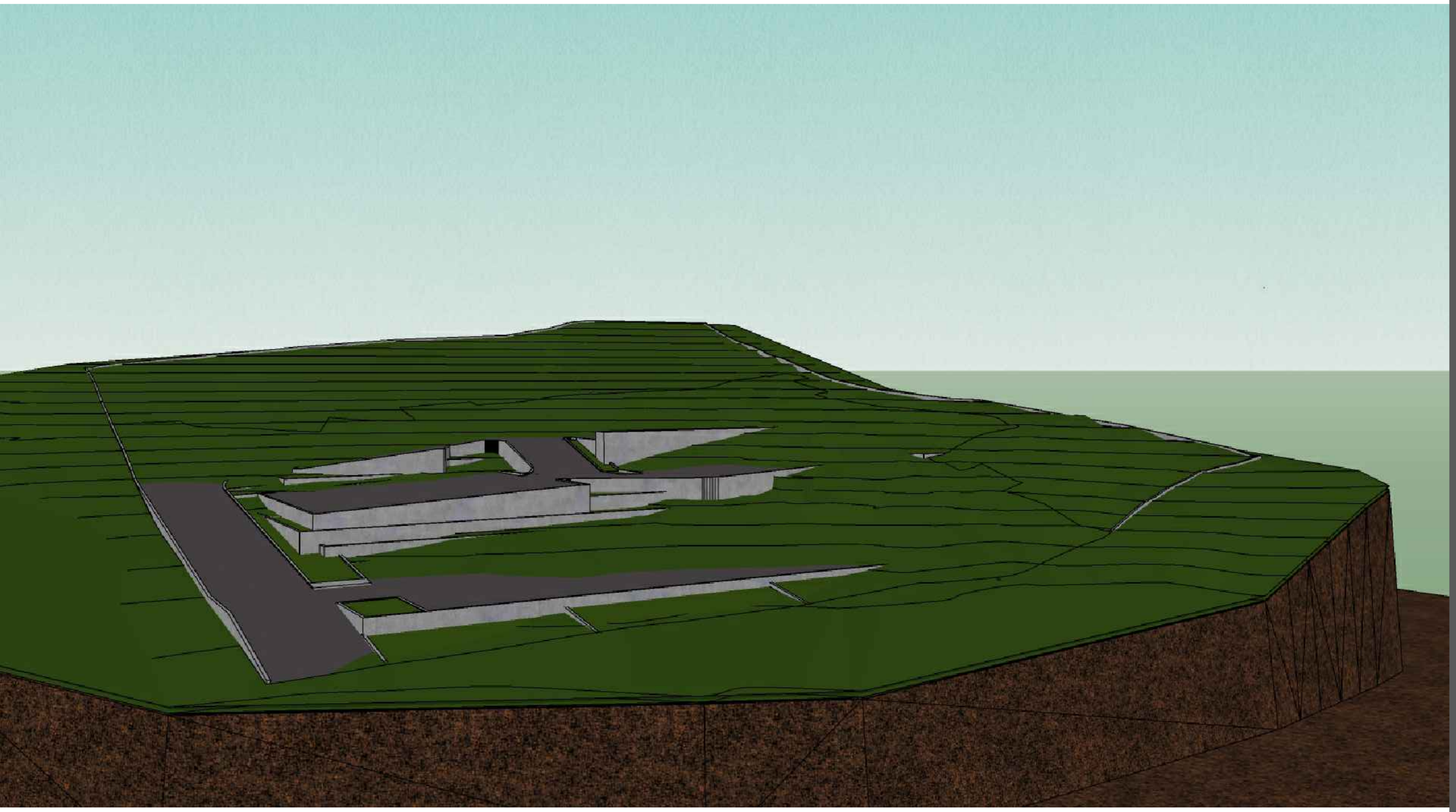
REV	DESCRIPTION	BY	DATE

VIEW

A 6.1



SITE WITH FILL

2 VIEW FROM SOUTH-EAST

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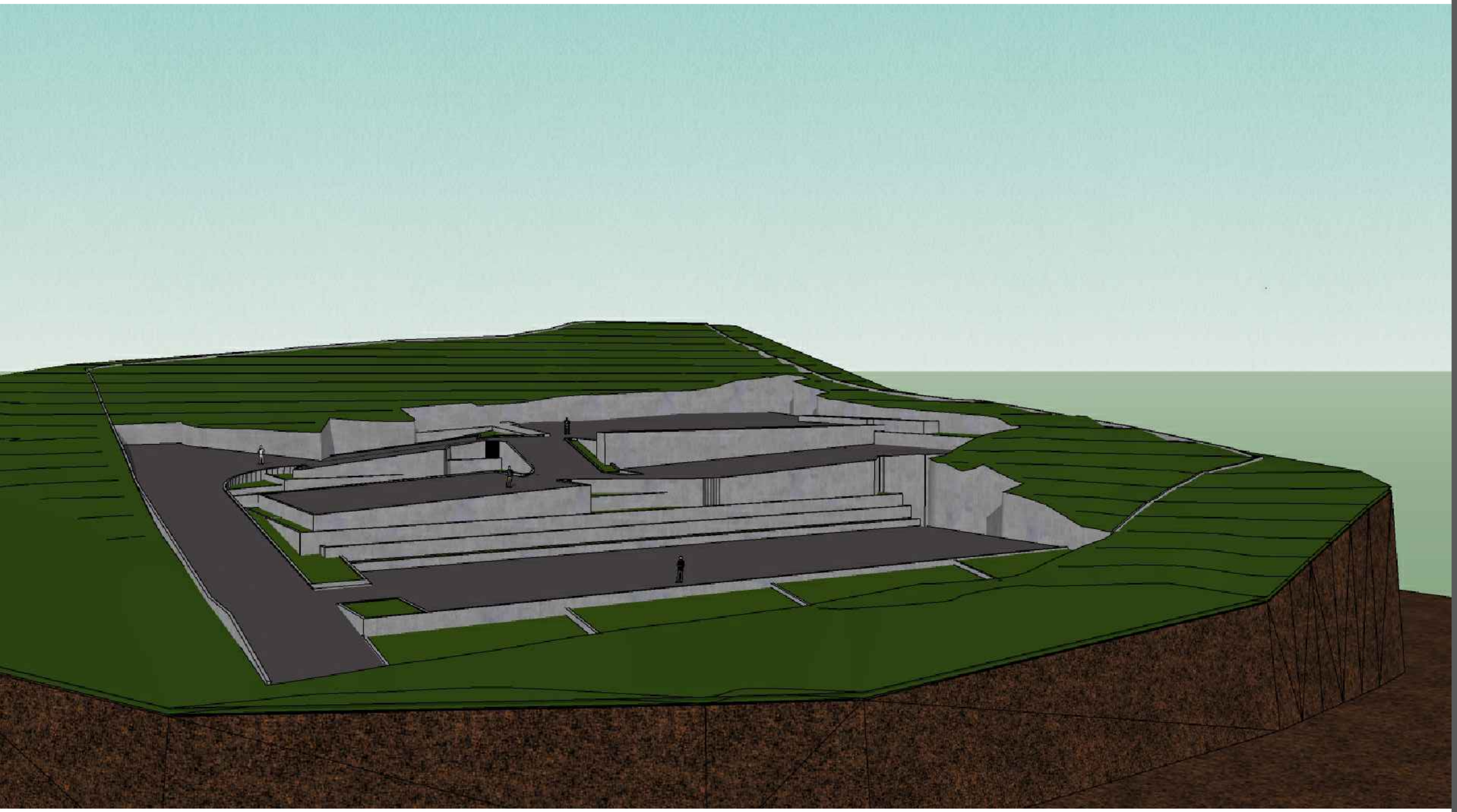
REV	DESCRIPTION	BY	DATE

VIEW

A 6.2



SITE WITH CUT AND FILL

3 VIEW FROM SOUTH-EAST

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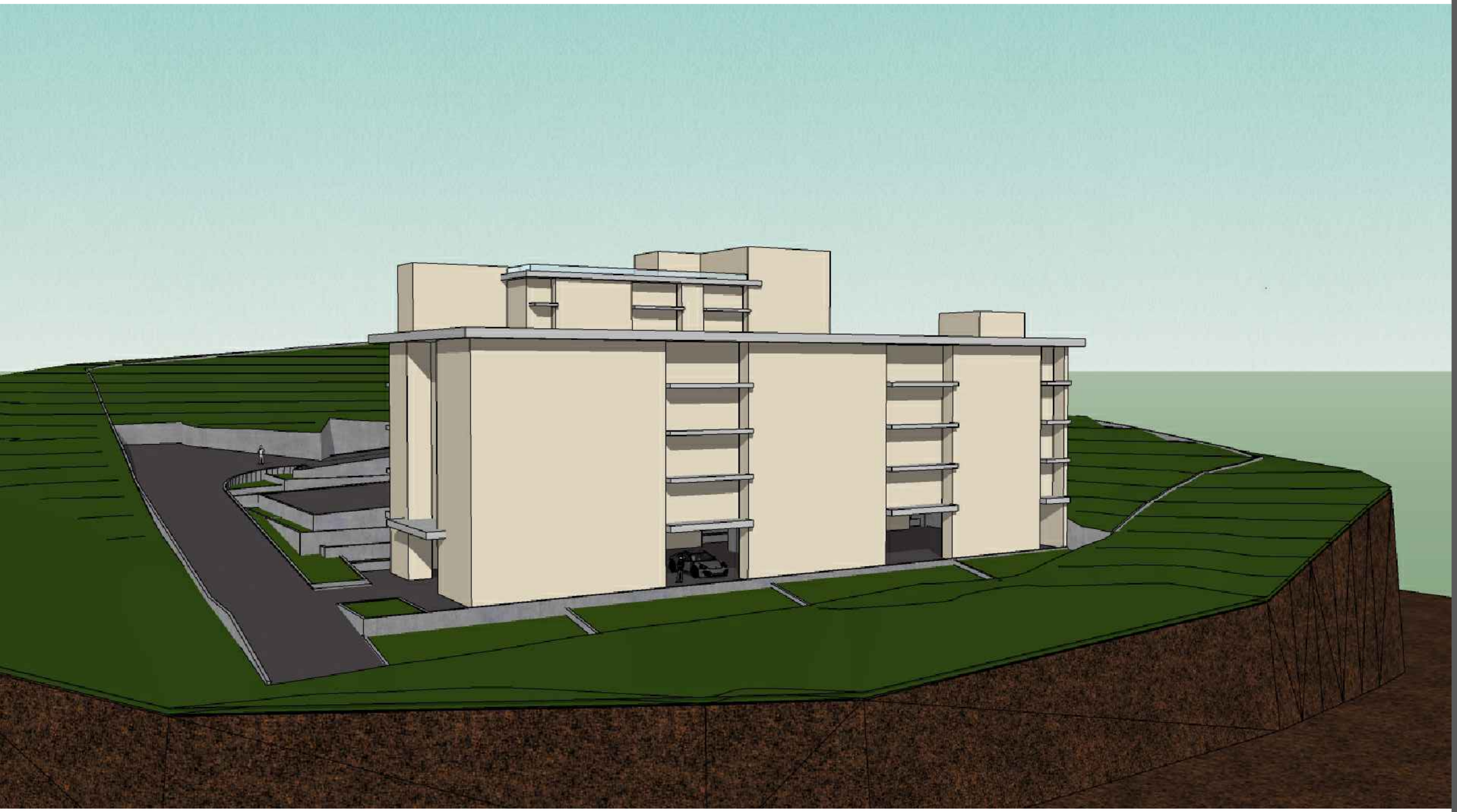
REV	DESCRIPTION	BY	DATE

VIEW

A 6.3



SITE WITH BUILDING BLOCK

4 VIEW FROM SOUTH-EAST

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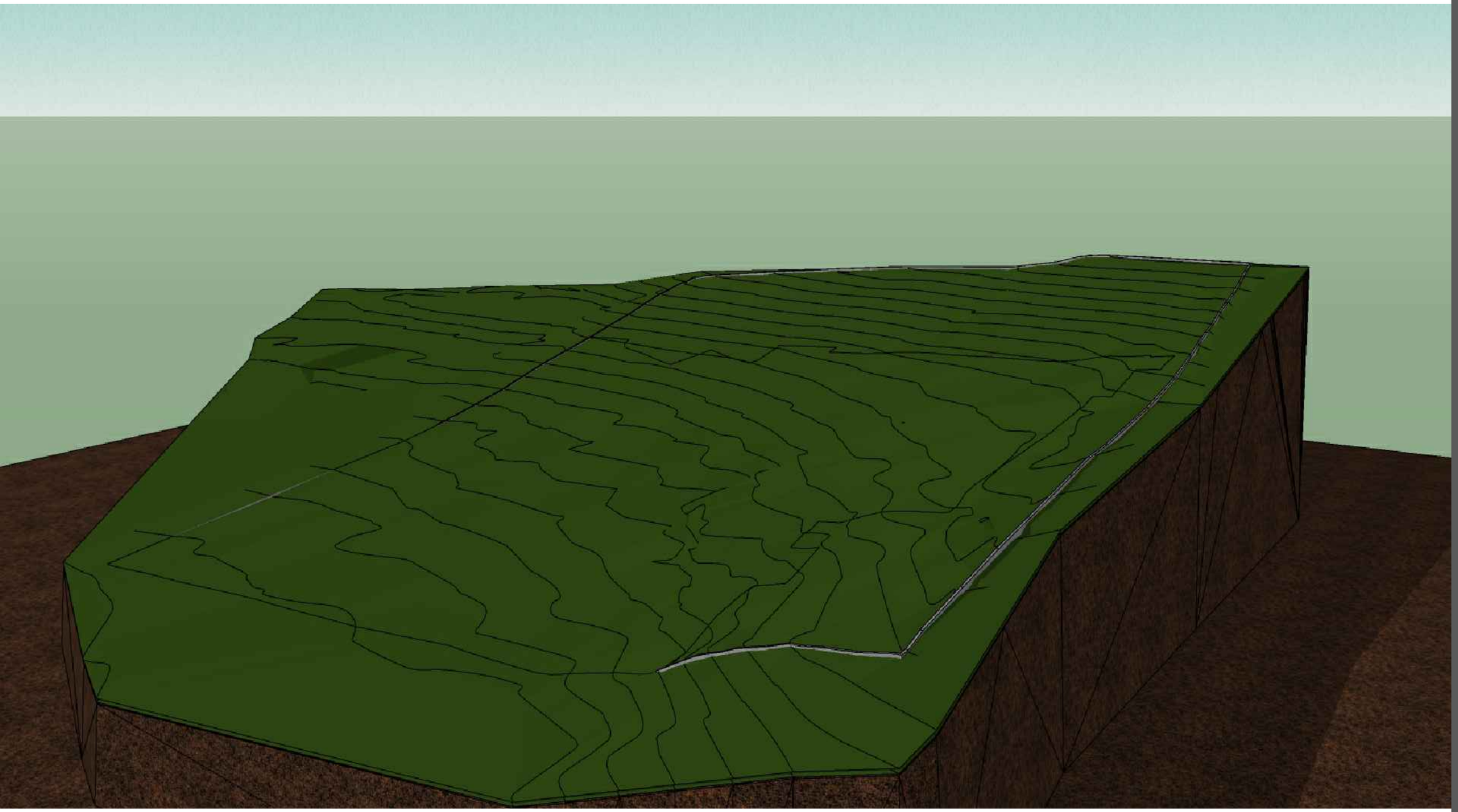
VIEW

A 6.4



SITE BOUNDARY WITH
BASIC CONTOURS

1 VIEW FROM NORTH-EAST

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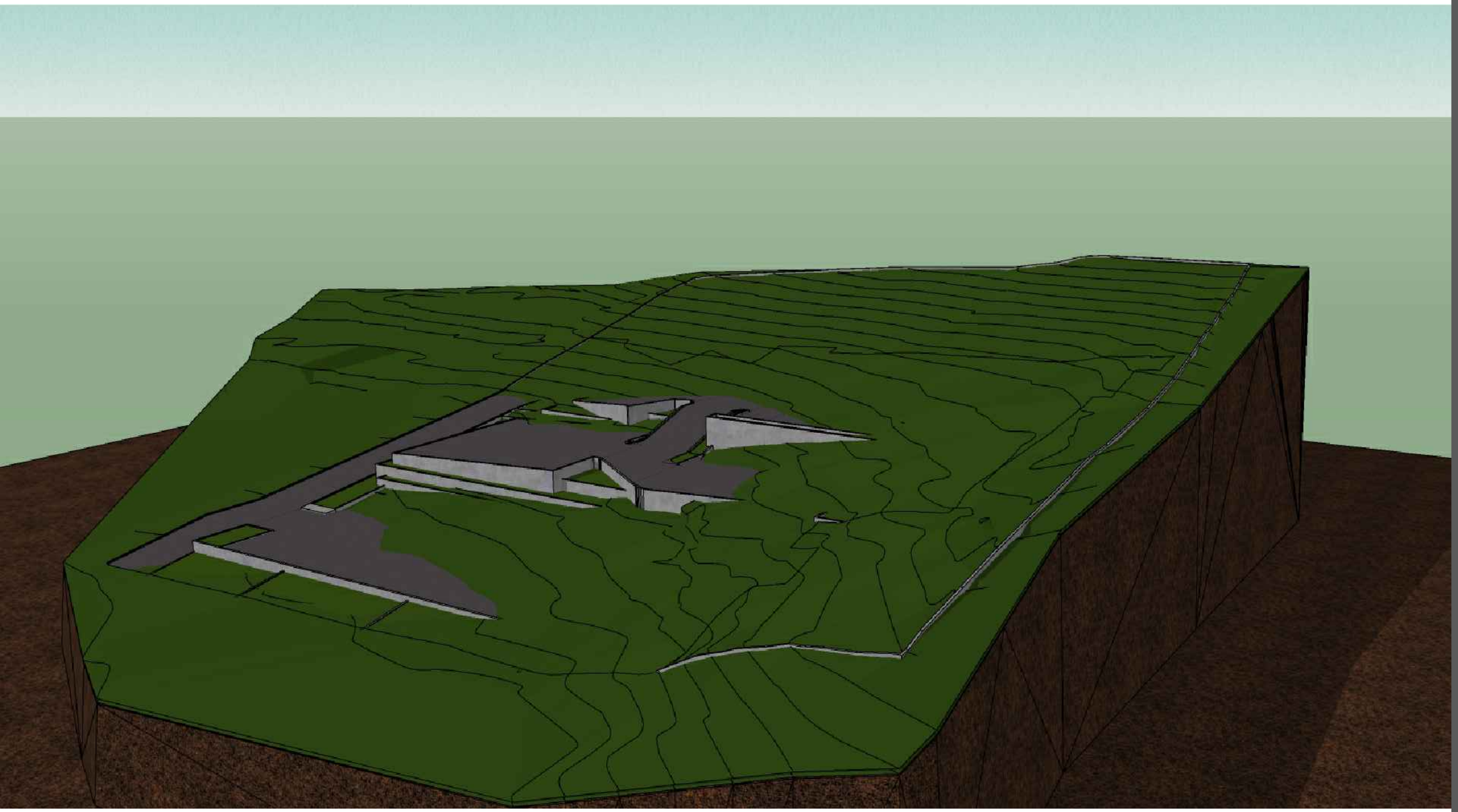
VIEW

A 6.5



SITE WITH FILL

2 VIEW FROM NORTH-EAST

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REV	DESCRIPTION	BY	DATE

VIEW

A 6.6

SITE WITH CUT AND FILL

3 VIEW FROM NORTH-EAST

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REV	DESCRIPTION	BY	DATE

VIEW

A 6.7

SITE WITH BUILDING BLOCK

4 VIEW FROM NORTH-EAST

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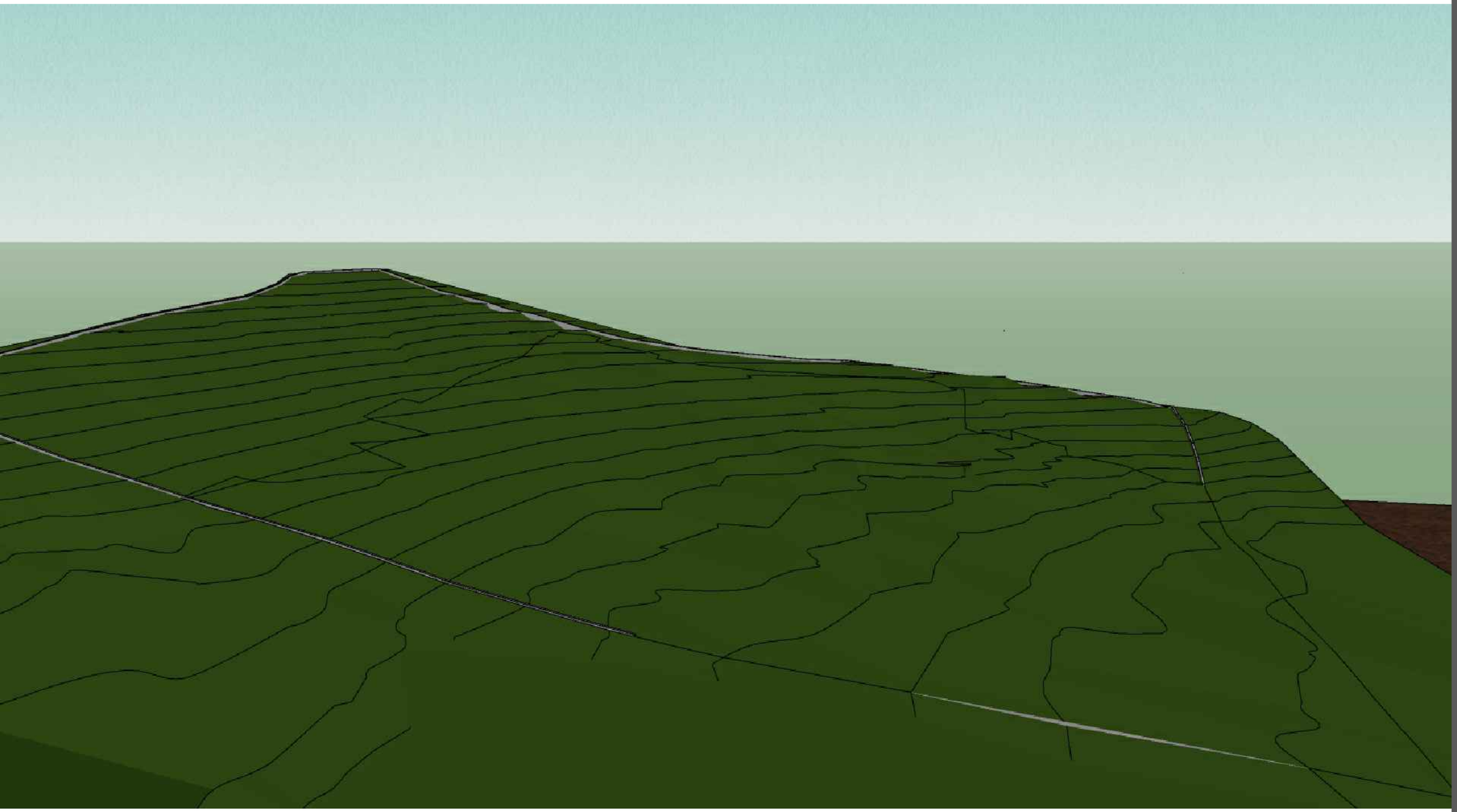
REV	DESCRIPTION	BY	DATE

VIEW

A 6.8



SITE BOUNDARY WITH
BASIC CONTOURS

1 VIEW FROM SOUTH

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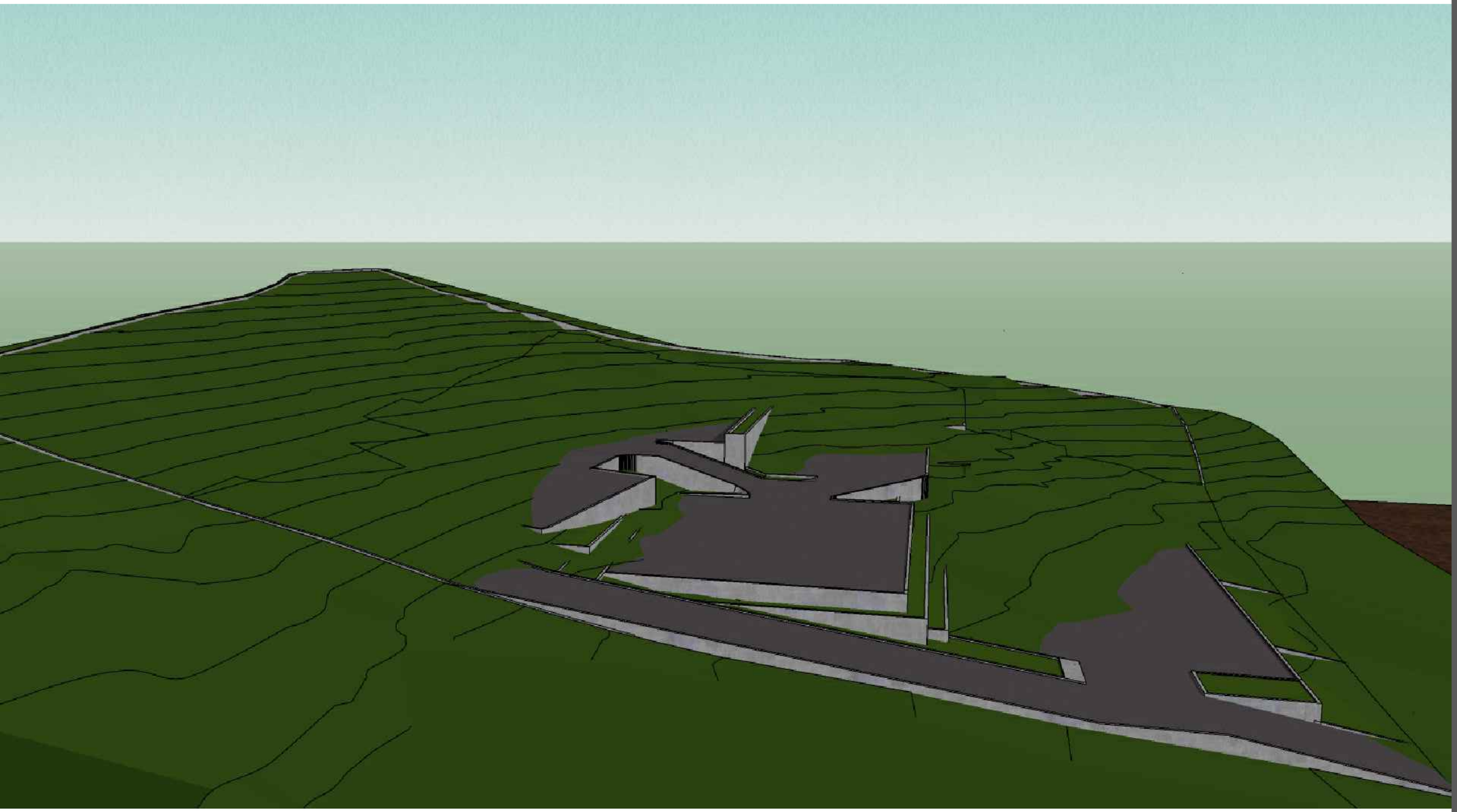
REV	DESCRIPTION	BY	DATE

VIEW

A 6.9



SITE WITH FILL

2 VIEW FROM SOUTH

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REV	DESCRIPTION	BY	DATE

VIEW

A 6.10

SITE WITH CUT AND FILL

3 VIEW FROM SOUTH

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REV	DESCRIPTION	BY	DATE

VIEW

A 6.11

SITE WITH BUILDING BLOCK

4 VIEW FROM SOUTH

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VIEW

A 6.12

Topographical Plan of Block 6, D.L. 1331, Gp. 1, N.W.D., Plan 6223.

10 0 10 20 30

Scale – 1:500 (metres)

NORTH

D.L. 1 Plan

D.L. 1 Plan 18108

D.L. L Plan 12541

Blk. 6 Plan 6223

1331

Blk. 17 Plan 6223

C Plan 21019

D Plan 21568

2 LMP 16375

303

Shorncliffe Avenue

Cowrie Street

Cowrie Street

Top of Solid Rock

Base of Solid Rock

House

Garage

Gravel Driveway

Shoulder

Edge of Pavement

Edge of Gravel

Fence

Retaining Wall

Sidewalk

Building

Gravel Parking

Parking

Retaining Walls

Stairs

Gravel Driveway

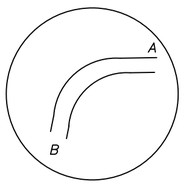
Sidewalk

Asphalt Driveway

Sanitary Man Hole (see detail)
Rim Elev.= 14.84
20 cm Diam. Invert In Elev. (A)= 12.08
20 cm Diam. Invert Out Elev. (B)= 12.04

Sanitary Man Hole
Rim Elev.= 14.32

Sanitary Manhole Detail



Note:

This plan is for preliminary design purposes only and final building locations should be verified in the field prior to construction.

Elevations are in metres derived from control monument 82HA812 and are referred to the provincial datum.

Contour interval is 1 metre.

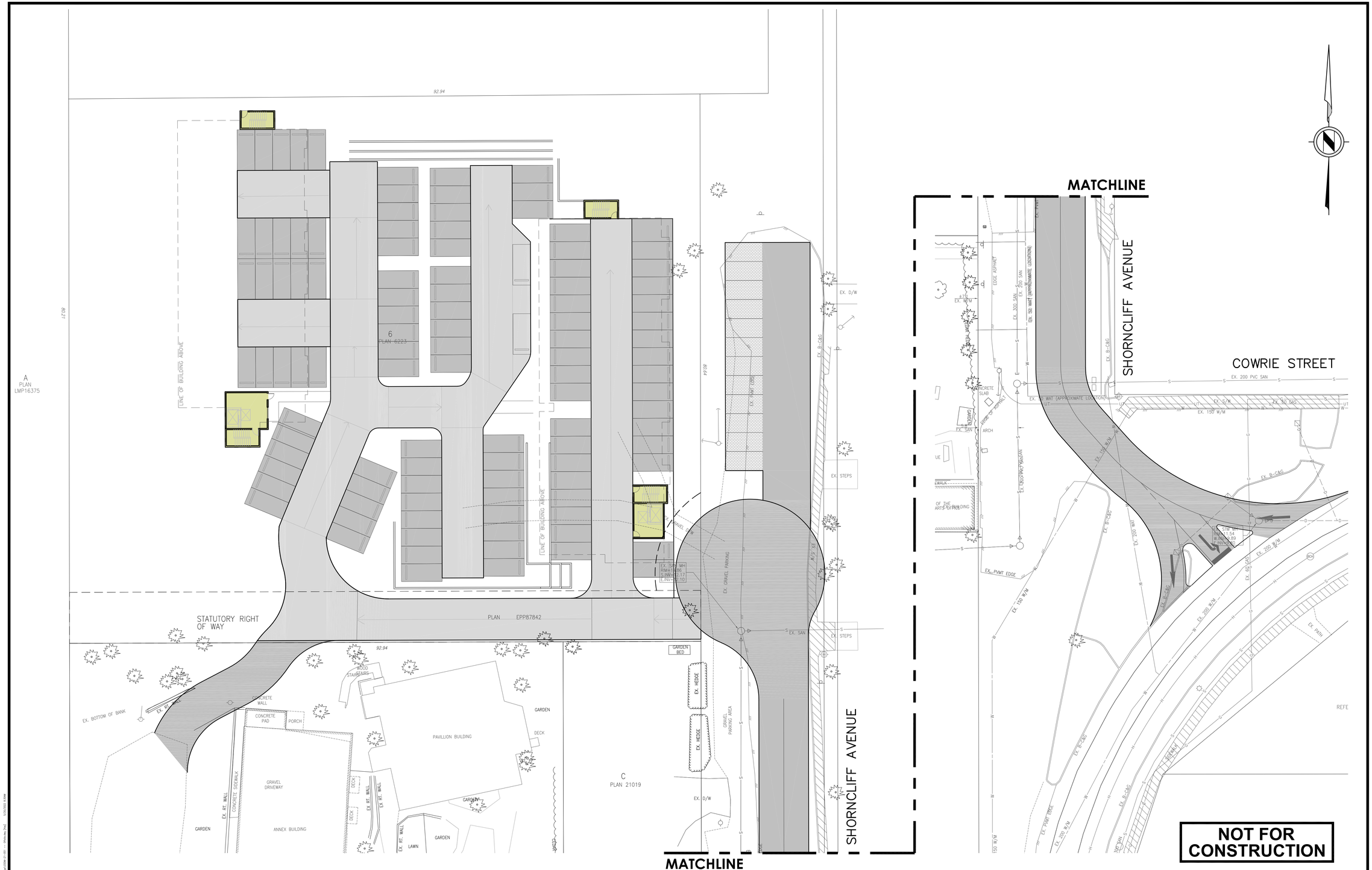
- denotes a standard iron post found.
- denotes a standard lead plug found.
- denotes a standard capped post found.
- 26.38 denotes spot elevation.
- 21.42 denotes spot elevation of solid rock.

John C. Theed
B.C. Land Surveyor
Box 2070 (5689 Dolphin St)
Sechelt, B.C. V0N 3A0
TEL 604-885-3237
FAX 604-885-3238

Revised: November 15, 2007

Date: November 8, 2006

280-06/1006



NOT FOR CONSTRUCTION

LEGAL DESCRIPTION
BLOCK 6 DISTRICT LOT 1331 PLAN 6223

SURVEY BENCHMARK
MON:

SCALE FACTOR:
ELEV.

REV.	DATE	DESCRIPTION	BY
5			
4			
3			
2			
1			

"BY SEALING AND SIGNING THIS DRAWING, I CERTIFY THAT THE INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN, ADDENDA, CHANGE ORDERS AND MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION AND FIELD REVIEWED BY ME, OR MY REPRESENTATIVE, AND THAT THE AS-CONSTRUCTED WORKS SUBSTANTIALLY COMPLY WITH THE ORIGINAL DESIGN INTENT, HOWEVER, I DO NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE AS-CONSTRUCTED INFORMATION SUPPLIED BY OTHERS CONTAINED IN THESE DRAWINGS."

CONSULTANT
GurSimer Design and Management Inc.
Tel: 778-895-658 | Email: nirvair@gs-gm.com

District of SECHELT

CLIENT **CITY/DEVELOPER NAME**
ADDRESS 1
ADDRESS 2
TEL:

TITLE **KEY PLAN**
5535 – SHORNCLIFFE AVENUE

SEAL

May 20, 2022

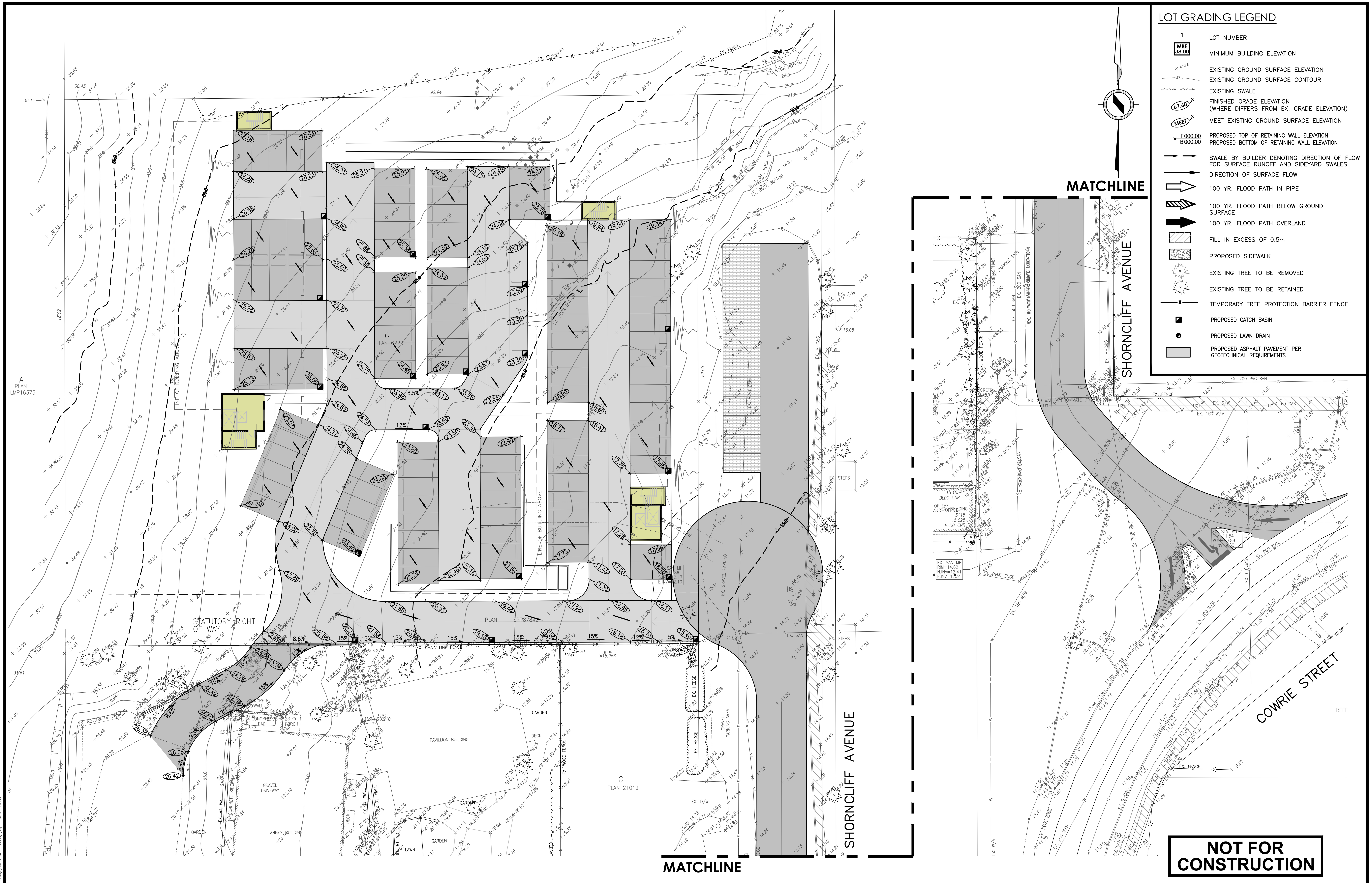
SCALE: HOR. 1:250 VERT. –

DESIGNED NS
DRAWN NS
REVIEWED NS

DATE (YYYY.MM.DD) 2022.02.16
CONSULTANT PROJ. NO. 21–051
DWG. NO. 03
REV. –

MUNICIPAL PROJECT NUMBER –
DRAWING TYPE **KEY PLAN**

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER



LOT GRADING LEGEND

- 1 — LOT NUMBER
- MBE 38.00 — MINIMUM BUILDING ELEVATION
- × 67.76 — EXISTING GROUND SURFACE ELEVATION
- 67.5 — EXISTING GROUND SURFACE CONTOUR
- EXISTING SWALE
- 67.60 — FINISHED GRADE ELEVATION (WHERE DIFFERS FROM EX. GRADE ELEVATION)
- MEET — MEET EXISTING GROUND SURFACE ELEVATION
- T000.00 / B000.00 — PROPOSED TOP OF RETAINING WALL ELEVATION / PROPOSED BOTTOM OF RETAINING WALL ELEVATION
- SWALE BY BUILDER DENOTING DIRECTION OF FLOW FOR SURFACE RUNOFF AND SIDEYARD SWALES
- DIRECTION OF SURFACE FLOW
- 100 YR. FLOOD PATH IN PIPE
- 100 YR. FLOOD PATH BELOW GROUND SURFACE
- 100 YR. FLOOD PATH OVERLAND
- FILL IN EXCESS OF 0.5m
- PROPOSED SIDEWALK
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE RETAINED
- TEMPORARY TREE PROTECTION BARRIER FENCE
- PROPOSED CATCH BASIN
- PROPOSED LAWN DRAIN
- PROPOSED ASPHALT PAVEMENT PER GEOTECHNICAL REQUIREMENTS

NOT FOR CONSTRUCTION

LEGAL DESCRIPTION: BLOCK 6 DISTRICT LOT 1331 PLAN 6223

SURVEY BENCHMARK MON: | SCALE FACTOR: ELEV.

REV.	DATE	DESCRIPTION	BY
5			
4			
3			
2			
1			

"BY SEALING AND SIGNING THIS DRAWING, I CERTIFY THAT THE INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN, ADDENDA, CHANGE ORDERS AND MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION AND FIELD REVIEWED BY ME, OR MY REPRESENTATIVE, AND THAT THE AS-CONSTRUCTED WORKS SUBSTANTIALLY COMPLY WITH THE ORIGINAL DESIGN INTENT, HOWEVER, I DO NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE AS-CONSTRUCTED INFORMATION SUPPLIED BY OTHERS CONTAINED IN THESE DRAWINGS."

CONSULTANT

GurSimer Design and Management Inc.

Tel: 778-895-658 | Email: nirvair@gs-gm.com

District of SECHELT

CLIENT: **CITY/DEVELOPER NAME**
ADDRESS 1
ADDRESS 2
TEL:

TITLE: **SITE GRADING PLAN**
5535 – SHORNCLIFFE AVENUE

SEAL
May 20, 2022

SCALE: HOR. 1:250 VERT. –

DESIGNED NS
DRAWN NS
REVIEWED NS

DATE (YYYY.MM.DD) 2022.02.16
CONSULTANT PROJ. NO. 21–051
DWG. NO. 04
REV. –

MUNICIPAL PROJECT NUMBER -

DRAWING TYPE **SITE GRADING**

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER

Sustainability Checklist for Development Applications 2019

Purpose of the Checklist:

The checklist has been developed to assist in the assessment of development applications with respect to the District's overall future vision, strategic priorities and policies. The checklist is intended to assist developers/applicants to plan projects that further the sustainability objectives of the OCP and the ICSP.

How is The Checklist Used?

The checklist will be provided to a development applicant at the pre-application meeting and should be submitted as part of a complete application.

Staff will consider the input received from the applicant and the preliminary checklist will form part of the evaluation of the development application. The finalized checklist is prepared by staff, not the applicant, and will be included in the report(s) to Council for their consideration.

Who Needs To Submit A Sustainability Checklist?

This is required for the following types of applications and proposals:

1. OCP Amendment applications
2. Rezoning applications
3. Development Permit applications (Major DPs)
4. Subdivision Applications

Things to Note:

1. Not all elements may be applicable to all applications. If you think a particular element is not applicable, please explain.
2. Statements such as "will consider" and "attempt to be" do not constitute a proposed outcome and are not acceptable. The statements must be realistic and propose attainable results.
3. All applicants shall have regard for the policies of the OCP and planning principles of the District of Sechelt Vision Plan

PLANNING ELEMENT	SUSTAINABILITY CONSIDERATION	Y	N	N/A	COMMENTS/EXPLAIN
Growth Management					
1	Is the development located within a priority growth area and/or sewer service area?	✓			
2	Is there adequate capacity to support the development? (e.g. water, liquid waste, transportation, geotechnical conditions)	✓			
3	Is the development adjacent to existing development and services to ensure cost-effective extension of services?	✓			
4	Does the development make efficient use of land?	✓			
Sustainable Community Development					
5	asdDoes the development include measures to minimize site disturbance and changes to the existing topography and landscape features?	✓			
6	Does the development balance the scale and massing of buildings in relation to adjoining properties?	✓			
7	Does the development provide opportunities for aging in place or for people with disabilities?		✗		
8	Does the development provide for a diversity of housing types, forms and price levels?		✗		
9	Does the development include seniors housing or supportive housing?		✗		
10	Will the housing units incorporate adaptable features and high levels of accessibility?	✓			
Economic Prosperity					
12	Does the development include a non-residential				

PLANNING ELEMENT	SUSTAINABILITY CONSIDERATION	Y	N	N/A	COMMENTS/EXPLAIN
	component?		X		
13	Does the development provide opportunities for affordable space for small business?		X		
14	Does the development add to the diversity of the local economy?		X		
Environmental					
15	Is the development sited to preserve sensitive ecosystems on the site and areas adjacent to the site?		X		
16	If a waterfront development: is it compliant with the 15m foreshore setback?			X	Not a waterfront development
17	Does the development preserve significant trees?		X		
18	Does the development retain or enhance the urban forest?		X		
19	Does the development incorporate Dark Sky Principles? (environmentally responsible outdoor lighting)	✓			
Sustainable Transportation					
20	Is the development accessible by multiple modes of transport, emphasizing walking and transit accessibility?		X		
21	Does the development include an interconnected road system? E.g. modified grid, multiple street connections, short block lengths, limited cul-de-sacs.		X		
22	Are the streets connected with sidewalks and pathways?		X		
23	Can shops and services be accessed safely and				

PLANNING ELEMENT	SUSTAINABILITY CONSIDERATION	Y	N	N/A	COMMENTS/EXPLAIN
	within easy walking distance?			X	
24	Is the development accessible to transit services? E.g. within 400m of an existing or planned route?	✓			
25	Does the development incorporate alternative road standards and/or slope-sensitive road standards?		X		
Resource Efficiency					
26	Does the development incorporate best management practices in the management of stormwater?		X		
27	Does the development include efficient on-site stormwater management options? E.g. rain barrels, pervious parking pads, absorbent landscaping?		X		
28	Does the development employ other water conserving measures that would promote the reuse of captured rainwater and water storage for irrigation?		X		
29	Does the landscape plan use drought-tolerant plants and non-water dependant materials in the landscape design?	✓			
Climate Adaptation					
30	Does the development include climate-sensitive design features to minimize the impact of flooding, wildfire, wave action and erosion?		X		
31	Does the development utilize green-shore principles?		X		
32	Does the development buffer the effects of extreme water flows by retaining adequate riparian zones?		X		

PLANNING ELEMENT	SUSTAINABILITY CONSIDERATION	Y	N	N/A	COMMENTS/EXPLAIN
33	Does the development include any renewable energy generation such as solar electricity, wind power, heat recover or district heating?		X		
Engagement					
34	Is a public information meeting planned for this development?		X		
35	Was the development modified as a result of public input?			X	

TITLE SEARCH PRINT 2022-05-16, 16:16:50

File Reference: Sechelt (dd) Requestor: Dharam Dhillon

Declared Value $2600000

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Land Title District	VANCOUVER
Land Title Office	VANCOUVER
Title Number	CA9607259
From Title Number	CA3768760
Application Received	2021-12-23
Application Entered	2022-01-12

Registered Owner in Fee Simple

Registered Owner/Mailing Address: 1335711 B.C. LTD., INC.NO. BC1335711
106-15272 CROYDON DRIVE
SURREY, BC
V3S 0Z5

Taxation Authority North Shore - Squamish Valley Assessment Area
Sechelt Fire Protection District
Sechelt, District of

Description of Land

Parcel Identifier: 010-945-091

Legal Description:

BLOCK 6 DISTRICT LOT 1331 PLAN 6223

Legal Notations

NOTICE OF INTEREST, BUILDERS LIEN ACT (S.3(2)), SEE CA9612339
FILED 2021-12-29

Charges, Liens and Interests

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	CA7383928
Registration Date and Time:	2019-03-07 16:23
Registered Owner:	SUNSHINE COAST REGIONAL DISTRICT DISTRICT OF SECHELT
Remarks:	PART IN PLAN EPP87842

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	CA7383929
Registration Date and Time:	2019-03-07 16:23
Registered Owner:	SUNSHINE COAST REGIONAL DISTRICT DISTRICT OF SECHELT
Remarks:	PART IN PLAN EPP87842

Nature:	MORTGAGE
Registration Number:	CA9607584
Registration Date and Time:	2021-12-23 10:33
Registered Owner:	FIRST WEST CREDIT UNION INCORPORATION NO. F156

Nature:	ASSIGNMENT OF RENTS
Registration Number:	CA9607585
Registration Date and Time:	2021-12-23 10:33
Registered Owner:	FIRST WEST CREDIT UNION INCORPORATION NO. F156

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers NONE

Pending Applications NONE

PTP# 1002594

BRAUN GEOTECHNICAL LTD.

Foundations, Excavation & Shoring Specialists

November 12, 2021

Our File: 21-9115

Via email: harman@genaris.ca

Genaris Properties Inc.
206 - 15272 Croydon Drive
Surrey, BC V3S 0Z5

Attn: Harman Dhillon, Principal

Re: Geotechnical Exploration and Assessment Report
Proposed Apartment Buildings
5535 Shorncliffe Avenue, Sechelt, BC

Braun Geotechnical
102 – 19049 95A Ave.
Surrey, BC
V4N 4P3
Tel: 604-513-4190
Fax: 604-513-4195
info@braungeo.com

www.braungeo.com

Foundations

Excavation & Shoring

Slope Stability

Natural Hazards

Pavement Design and Management

Reinforced Soil Walls and Slopes

1.0 INTRODUCTION

As requested, Braun Geotechnical Ltd. (BGL) has carried out a geotechnical exploration for the above-referenced project. The geotechnical work has been performed in general accordance with the terms and conditions of the BGL Fee Estimate dated June 21, 2021 (our Ref. no. 21-9115). The scope of work included subsurface exploration and provision of geotechnical recommendations for the proposed development. No consideration has been given to any environmental aspects.

Architectural drawings prepared by Flat Architecture Inc. and dated October 12, 2021 were forwarded to BGL for review. BGL should be provided the opportunity to update this Geotechnical report based on finalized development concepts.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located at 5535 Shorncliffe Avenue, in the District of Sechelt, BC. The site is approximately rectangular in shape, with overall dimensions of 80 m x 93 m. The majority of the site is sloped to the southeast with approximate gradients of 3H:1V (Horizontal to Vertical) or flatter (i.e., 33 percent or flatter), while the northwest area of the site has an approximately 8 m high slope with an overall slope gradient of 1.5H:1V (~67 percent), or flatter.

Based on preliminary drawings provided by the client, it is understood that the proposed development concept will include a two 4 to 5-storey wood framed multi-family residential apartments with associated at-grade parking areas and driveways.

At the time of field exploration, the site was generally covered with small trees and low underbrush type vegetation. Bedrock outcrop exposures were observed in the northeast area of the site.

3.0 BACKGROUND INFORMATION

The subject site is located within Development Permit Area 5 (District of Sechelt OCP) that is considered to contain natural steep slope hazards. A review of Schedule E1 observed that the subject site and immediate vicinity was highlighted as containing slopes ranging 20 to 30 percent with isolated slope areas greater than 30 percent. This is consistent with site walkover observations.

The following documents were reviewed as part of the desk study:

- Topographical survey of Block 6 DL 1331 Gp 1 Plan 6223 by John C. Theed, BC Land Surveyor dated November 15, 2007
- Report on Geotechnical and Environmental Reconnaissance Study of the District of Sechelt OCP Area by Golder Associates dated May, 1993
- Historical aerial photos from The Geographic Information Center at UBC for various years between 1940 to 2016
- The BC Energy Mines and Petroleum Resources Open File 1996-06 (1996). Geology of the Mineral Hill – Wormy Lake area, Sechelt, BC
- The BC Mines and Petroleum Resources Bulletin 65 (1977). Surficial geology and sand and gravel deposits of the Sunshine Coast, Powell River, and Campbell River area
- Seismic information obtained from the National Resources Canada website
- Geotechnical Hazards Report: Roberts Creek by Kerr Wood Leidal dated May 2013
- District of Sechelt Bylaw 492-2010 (2010). Environmental and Natural Hazard DPA Guidelines including Schedule E-1 dated June 2011.
- Available in-house geotechnical reports for the Sechelt area.

4.0 AIR PHOTO INFORMATION

Historical government air photos available for most decades dating back to 1940 were reviewed. The air photos review noted the following:

- Cowrie Street and Shorncliffe Avenue adjacent to the site were developed prior to 1940. The existing residential building on the project site was observed on the 1969 air photos.
- Obvious visible features and/or tones to indicate past or incipient slope movements or in the vicinity of the site were not observed on available reviewed air photos.

5.0 SITE RECONNAISSANCE AND EXPLORATION

A site walkover was carried out at the property and vicinity on June 28, 2021. The purpose of the site walkover was to review baseline conditions of the property and to review the area for potential onsite and offsite geotechnical hazards.

Sixteen test pits (TP21-01 to TP21-16) were excavated on June 28, 2021, using a tracked excavator under subcontract to Braun Geotechnical, to depths of 0.2 m to 2.7 m. The soil conditions were logged in the field and representative disturbed grab samples were collected for further visual classification. The approximate test pit locations are shown on the attached location plan (Dwg. No. 21-9115-01).

6.0 SOIL AND GROUNDWATER CONDITIONS

Based on available published geological information, the site area is underlain by igneous bedrock outcrops, with occasional thin veneers of overburden, usually consisting of till-like soils or marine sediments. Observations of bedrock type at exposures were consistent with regional geological mapping information.

Potential onsite and offsite sources for rockfall hazard were not observed during the site walkover.

The findings of the test pit exploration were generally consistent with the regional geological information. The findings of the test pit exploration are provided on the attached test pit logs and should be referred to for detailed subsurface conditions at test pit locations.

A generalized subsoil profile based on the test pits is provided below.

FILL/ORGANICS

FILL, including grey, damp, loose to compact SAND with some gravel, trace silt, and occasional rootlets was encountered within TP21-02 to a depth of 0.6 m.

ORGANICS, including brown, damp, loose silty SAND to firm SILT with some sand, some organics, trace gravel, trace cobbles, occasional boulders and occasional rootlets was encountered within all test pits to depths of 0.1 m to 0.8 m.

Loose to Compact SAND

Brown to grey-brown, damp, loose to compact SAND with trace to some silt, trace gravel, trace cobbles, and occasional boulders was encountered below within all test pits except TP21-13 to depths of 0.9 m to 2.7 m. TP21-02 terminated within this zone. Within test pits TP21-02, -04, -07, -15 and -16, the sand was noted to become dense below 1.1 m to 2.1 m.

Dense to Very Dense SAND

Grey-brown, damp, dense to very dense SAND with some silt to silty, trace to some gravel, and occasional cobbles (Till-like) was encountered below to the depths of test pit exploration.

BEDROCK

Test pits TP21-13, -14, and -16 encountered refusal on bedrock at approximately 0.2 m to 1.7 m. Bedrock outcrop exposures were reviewed at the northeast portion of the site. The bedrock exposures were observed to comprise granitic igneous rock. Field estimates of rock strength determined that the intrusive igneous rock exposed is Very Strong (Grade R5 or better). The enclosed location plan provides the recorded bedrock exposures.

GROUNDWATER

Groundwater seepage was not encountered within the test pits at the time of exploration. Depending on the season and/or weather conditions, near-surface seepage flows should be anticipated within soil layers overlying the relatively impervious dense to very dense soils and/or bedrock. In general, groundwater levels and near-surface run-off flows are expected to fluctuate seasonally, and with drainage conditions.

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

7.0 DPA 5 STEEP SLOPE ASSESSMENT

7.1 General

The site walkover did not reveal features of potential geotechnical or geological concern. In view of these findings, it is expected that development of the site for an apartment building complex should be feasible with respect to geotechnical considerations.

The subsurface exploration results presented above indicate that the site is generally underlain by a thin layer of native loose to compact SAND soils over very dense SAND (Till-like) soils or intact BEDROCK. The subsurface conditions encountered are favourable for support of geotechnical structures and conventional shallow strip and spread footings for the proposed residential development.

The anticipated soil conditions are not considered susceptible to seismically induced liquefaction and long-term settlements are expected to be within tolerable limits for typical residential buildings.

The following sections discuss the geotechnical hazard assessment and comments and recommendations for geotechnical slope requirements, site preparation and foundation design.

7.2 Geotechnical Hazard Assessment

7.2.1 Hazard Acceptability Criteria

In accordance with the Municipal Act, the desk study and site reconnaissance efforts were carried out with a view to evaluate "safe" site use with respect to geotechnical hazards at the proposed residential subdivision development. Assessment of safe site use has been carried out with reference to hazard acceptability criteria developed for Fraser Valley Regional District by Cave (1993) and adopted as reasonable criteria by the APEGBC Landslide Task Force (2010).

Geotechnical hazards listed in the Municipal Act and Cave documents, and that were considered applicable to the study site include rockfall and small localized Landslip. Assessment findings for these hazards are discussed below.

7.3.2 Applicable Hazard Discussion

Open slope debris slides (small localized landslip)

Previous work by Rollerson (2005) and Barrow (2009) in coastal areas of BC determined potential for open slope soil slides increases substantially for slope gradients exceeding about 60-70% and where sufficient overburden (mineral or organic) overlies bedrock.

Soil slopes observed at the study site and vicinity did not reveal areas sufficient in slope that could be considered potential source areas for natural open slope shallow soil slide initiation.

Rockfall

Site reconnaissance review of the study site and vicnity did not observe exposed bedrock source areas with potential for rockfall hazard.

8.0 DEVELOPMENT DISCUSSION AND RECOMMENDATIONS

8.1 General

The test pit exploration generally encountered existing fill/organics over loose to compact sand soils, underlain by natural dense to very dense sand soils and/or bedrock. Site conditions are considered appropriate for direct support of foundations and infrastructure associated with the proposed development. Subject to suitable re-compaction, natural mineral soils free of substantial organics would be considered suitable for subgrade support of any asphalt pavement areas.

Based on the findings of the site exploration and field observations, bedrock and/or large boulders may be encountered during site preparation activity which could require blasting and splitting for removal. Near-surface bedrock was observed within the northeast area of the site to indicate steep slopes are generally bedrock-controlled.

The following sections provide our geotechnical recommendations for site preparation and foundation design.

8.2 Site Preparation

Site preparation below the proposed structures, pavement, and areas proposed for site grading fill should include removal of all vegetation, organic soils, soft disturbed soils, existing fill and other deleterious material down to natural, undisturbed soil layers or intact bedrock.

The natural upper loose to compact sand free of significant organics is considered suitable subgrade for support of pavements. The subgrade should typically be re-compacted to 95% Modified Proctor Maximum Dry Density (MPD).

For site preparation below the proposed residential structure, stripping should extend to the underlying dense to very dense natural soils. Where shallow bedrock is encountered during excavation, blasting will likely be required to excavate down to design footing grades, pavement structure grades, and utility services grades.

Bedrock that is only partly exposed at design footing subgrade elevation should be over-excavated by at least 500 mm and re-compacted to prepare a reasonably uniform subgrade. The over-excavation is recommended in order to avoid potential for hinge-point cracking of footings where subgrade areas transition from soil to intact bedrock. Alternatively, the foundation may be entirely founded on intact bedrock.

Note that blasting may cause vibration to the structures in the vicinity of the site. Vibration monitoring for blasting activities is recommended. Pre-construction condition surveys for neighbouring developments should be completed prior to the start of blasting. Blast plans should be prepared by a qualified blast consultant prior to blasting.

Note that large boulders may be encountered during site preparation activities. Large boulders encountered during site excavation could require additional excavation measures such as blasting or rock splitting.

8.3 Structural Fill & Trench Backfill

Subgrade restoration fills & general trench backfills below pavement areas should comprise import granular material or crushed rock generated from blasting; material specification is provided below.

For confined areas, structural fill placed under building and roadway pavements should extend horizontally beyond by a distance equal to at least the thickness of structural fill. Unconfined fills should typically extend horizontally by a distance equal to 2 times the thickness of structural fill.

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

8.3.1 Conventional Fill

Granular fill should comprise well graded, free draining sand and gravel such as Master Municipal Construction Documents (MMCD) Select Granular Subbase (or alternative reviewed and approved by Braun). Structural fill should be placed and compacted in maximum 300 mm thick loose layers with each layer compacted to at least 95% MPD.

Potential re-use of excavated site soils as structural fill would be subject to review and acceptance of the material and site conditions by Braun. In general, fill material should be free of organics and debris, and contain less than 30% fines. All structural fill material should be compactable to at least 95% MPD.

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8.3.2 Shotrock Fill

It should be feasible to use excavated bedrock as structural fill. However, crushing of oversized rock fragments may be required to produce a 150 mm minus material.

Shot rock fill for subgrade support of building and pavement areas should be placed in maximum 500 mm loose lifts. Oversize fragments in the order of 300 mm in diameter or greater should be graded out to fill edges. The surface of each lift should be bladed back and forth by a large bulldozer to work the rock fragments into a tight-fitting arrangement. The shot rock fill should then be compacted with at least 6 passes of a heavy steel drum vibratory compactor. Adequacy of compaction of rock fill will be visually assessed by compactor performance.

Shot rock fill used in the down-slope side or beneath soil fill should have adequate separation/filtration to prevent migration of the soil particles into the void spaces in the rock fill. Separation may be achieved with an approved heavy grade non-woven geotextile. There should be no high projecting angular rocks on the surface prepared for the separation geotextile. The geotextile should be placed very loosely and overlap joints between adjacent pieces of geotextile should be a minimum of 0.5 m.

As an alternative to geotextile, filtration may be achieved with a minimum 500 mm thick layer of 150 mm minus, well-graded gravel or blast rock. The filtration material should be washed into place with a fire hose, to promote development of a properly graded filter on the surface of the shot rock, and then thoroughly compacted with a large vibratory drum compacter. Care should be taken that use of the fire hose does not promote erosion or sedimentation.

Braun Geotechnical should review separation or filtration layer requirements on a site-specific basis.

8.4 Slopes

8.4.1 Temporary Cut Slopes and Utility Trenches

Temporary excavation for manned entry may be slope cut, or alternatively suitable support systems should be provided. It is anticipated that the proposed utility excavations could be achieved using conventional excavation and/or trench box methods. It is anticipated that any excavations could be kept free of standing water using localized sumps and pumping.

For preliminary planning purposes, relatively deep unsupported excavation cuts should be sloped at 1H:1V in fill and overburden organic-rich materials, loose to compact/dense soils, 3H:4V in dense to very dense soils (6 m max), and 1H:4V in bedrock. Shallow excavations extending to a maximum depth of 1.2 m may be cut near vertical. All cut slopes should be covered with poly plastic sheeting held securely in place at the crest and toe of slopes.

These recommended cut slopes should be reviewed by Braun Geotechnical during excavation and may require modification based on actual site conditions. Flatter slopes may be required if poor soil conditions or significant seepage is encountered.

Braun Geotechnical should be provided the opportunity to provide additional excavation recommendations once the development concept has been finalized.

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BRAUN GEOTECHNICAL LTD.

8.4.2 Permanent Slopes

The recommended maximum permanent cut slope angle is 2.5H:1V. Fill slopes consisting of suitably compacted native mineral or import granular soils should be constructed at gradients no steeper than 2H:1V. For preliminary design purposes, permanent cut-slopes within bedrock should be no steeper than 1H:4V and should be cleaned to expose bedrock a minimum of 1.5 m back from the crest. Permanent fill slopes consisting of shot rock fill may be constructed at gradients no steeper than 1.5H:1V.

Any deterioration of slopes should be immediately reported to Braun Geotechnical. Based on Braun's review, recommendations for stabilization will be provided which may include flattening of the slopes in addition to other possible mitigative measures.

All slopes should be planted or otherwise protected from erosion as soon as practical.

8.5 Foundation Design

Based on the anticipated subsoil conditions, it is recommended that the proposed structures be supported on strip and pad footings founded on dense native undisturbed subgrade, intact bedrock, or on compacted structural fill as described in Section 8.2 "Site Preparation".

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

Foundation Subgrade	**Limit States Design**		**Working Stress Design**
	Factored Ultimate Bearing Resistance (ULS)	**Serviceability Limit State (SLS)**	**Allowable Bearing Pressure DL + LL**
Natural Dense / Very Dense Soils or Compacted Structural Fill	225 kPa (4700 psf)	150 kPa (3100 psf)	150 kPa (3100 psf)
Intact Igneous Bedrock	750 kPa (15,600 psf)	500 kPa (10,000 psf)	500 kPa (10,000 psf)

Note: Larger bearing values may be feasible for specific foundation configurations, and can be reviewed upon request.

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

- Strip and pad footings have minimum widths of 450mm (18") and 600mm (24"), respectively. Note that footing widening is typically not required for foundations founded directly on intact bedrock subgrade.
- Footings are founded at least 450mm (18") below final finished adjacent grade for frost protection. Note, frost protection embedment is not considered a requirement for footings founded on intact bedrock.
- Site preparation is completed as indicated above and load-bearing surfaces are reviewed and approved by Braun Geotechnical.
- Foundation bearing surfaces are no higher than 2H:1V (Horizontal to Vertical) from the base or toe of adjacent walls, retaining structures, etc.
- Footings are placed below a 1H:1V line projected up from lower footings or buried structures such as utility lines, sumps, etc.

PTP# 1002594
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8.6 Seismic Considerations

The 2018 BC Building Code classifies a site as Site Class C where the subgrade soils in the upper 30 m consist of "very dense soil and soft rock" with average SPT N values greater than 50 and average undrained shear strength (s_u) greater than 100 kPa.

Available subsurface information indicates that very dense/very stiff soils are present below a relatively shallow depth, corresponding to Site Class C. The subgrade soil conditions are not considered susceptible to seismically induced liquefaction.

Note, although shallow depth to bedrock may be encountered during site preparation activities (corresponding to Site Class B), Site Class C is considered appropriate for the site based on the subsurface conditions encountered during the site exploration.

8.7 Slab on Grade

The slab on grade can be supported on a suitably prepared subgrade as described in "Site Preparation". The slab on grade should be underlain by a drainage layer comprising a minimum 100 mm (4") thick layer of well-compacted clean sand (less than 5% passing No. 200 sieve). This drainage layer should have a suitable discharge to the permanent storm system. Polyethylene sheeting should be provided beneath the floor slab to reduce potential slab dampness.

In areas of shot rock fill, care should be taken to ensure that the finished shot rock surface is suitably tight or has adequate separation/filtration to prevent migration of this material into the void spaces in the underlying shot rock fill.

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

8.8 Drainage and Backfill

Perimeter drainage should consist of perforated 150 mm (6") PVC pipe, placed around the building perimeter, with the invert elevation at footing level. Through wall drains (i.e. weep holes) should be provided at maximum 3 m spacing to provide a hydraulic connection to the drain pipes placed within the interior side of foundations. Perimeter drains should also be provided adjacent to any steps in the foundation walls.

The perimeter drain should be surrounded by at least 150 mm (6") of 19mm (¾") clear crushed gravel. A 150 mm (6") thick layer of birdseye gravel should be placed over the clear crushed gravel to act as a filter layer. A layer of non-woven geotextile (such as Nilex 4551 or alternate approved by Braun Geotechnical) may be substituted for the birdseye gravel.

Backfill placed around perimeter foundation walls should consist of free-draining granular material such as sand or sand and gravel with less than 5% fines. The material should be compacted to at least 95% of MPD for its full depth. Where space is limited adjacent to the foundation wall, birdseye gravel placed in maximum 900 mm (3') thick layers, with each layer compacted using a concrete vibrator while flushing with water, may be used as backfill material.

Material placed immediately above or adjacent to any clear crushed gravel zones should be provided with a suitable granular or geosynthetic separator to reduce potential for migration of the fine material into the coarse material.

8.9 Onsite Stormwater Disposal

The study site comprises steep slopes and is underlain by low permeable intact bedrock or dense till-like soils based on test hole information and is therefore not considered suitable for onsite infiltration of stormwater.

8.10 Horizontal Wall Pressures

Foundation walls retaining backfill may be designed for lateral pressures as indicated on the attached Horizontal Wall Loading Diagram (Dwg. 21-9115-02). The lateral earth pressures provided assume active soil conditions and horizontal drained backfill behind the foundation walls.

8.11 Onsite Pavement

With subgrade preparation completed in the manner recommended above, the minimum recommended pavement structure for the proposed onsite pavements is outlined below;

Parking Areas	**Travel + Fire Access Pavements (Areas subjected to Truck traffic)**	**Material**
65mm	75mm[1]	Hot Mix Asphalt Surface (MMCD Hot Mix Asphalt, HMA)
100mm	100mm	19mm minus Granular Base (MMCD)
200mm	200mm	Granular Subbase (SGSB) (MMCD)

The gradation of the above materials should comply with appropriate Master Municipal Specifications. The road construction materials should be placed and compacted in compliance with the current MMCD specifications. Adequate drainage and/or cross falls should be provided to ensure that the base and subbase materials will not become saturated.

9.0 GEOTECHNICAL FIELD REVIEWS

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

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

- Removal of unsuitable materials below building footprint and asphalt pavement areas;
- Review of soil excavation slopes;
- Review and mapping of excavated rock slopes for potentially unfavourable structure
- Review of exposed footing subgrade;
- Review and density testing of structural fill and perimeter fill;
- Review of perimeter drain installation with respect to geotechnical considerations;
- Review placement and compaction of underslab gravel drainage layer; and
- Review and density testing of pavement structure fills.

10.0 GEOTECHNICAL HAZARD STATEMENT

It is our opinion that the "land may be used safely for the use intended." Safe site use is defined as development of the property as a residential apartment building complex on land that is not considered subject to landslide hazards as described in the EGBC document, *"Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia, May, 2010"*. Safe use is in reference to hazard acceptability criteria presented in the government document, "*Hazard Acceptability Thresholds for Development Approvals by Local Government,*

1993." Geotechnical hazards with potential to impact the project area were considered and included mountain stream erosion, avulsion, flooding, debris flows, debris floods, small-scale rock fall and property/regional-scale landslides.

In accordance with Section 86 of the Land Title Act, and Section 56 of the Community Charter this report has been signed and sealed by a Professional Engineer and as such is considered a "certified report" (EGBC, 2010).

11.0 CLOSURE

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

This report is prepared for the exclusive use of Genaris Properties Inc. and their designated representatives and may not be used by other parties without the written permission of Braun Geotechnical Ltd. The District of Sechelt may also rely on the findings of this report.

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

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

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

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

Yours truly,

Braun Geotechnical Ltd.

Silas Neels, EIT.
Geotechnical Engineer

Braun Geotechnical Ltd.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. F. WETHERILL
19963
NOV 12/21

James Wetherill, P.Eng.
Geotechnical Engineer

Encl: Report Interpretation and Limitations
Appendix D Statement
Location Plan
Test Pit Logs (16)
Horizontal Wall Loading Diagram

X:\2021 Projects\21-9115 Proposed Development - 5535 Shorncliffe Avenue, Sechelt, BC\Report\21-9115 Geotechnical Report 2021-11-12.docx

REPORT INTERPRETATION AND LIMITATIONS

1. STANDARD OF CARE

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

2. COMPLETENESS OF THIS REPORT

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

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

3. BASIS OF THIS REPORT

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

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

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

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

4. USE OF THIS REPORT

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

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

5. INTERPRETATION OF THIS REPORT

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

Further, all documents or records summarizing such exploration will be based on assumptions of what exists between the actual points sampled at the time of the site exploration. Actual conditions may vary

significantly between the points investigated and all persons making use of such documents or records should be aware of and accept this risk.
The Client and "Approved Users" accept that subsurface conditions may change with time and this report only represents the soil conditions encountered at the time of exploration and/or review. Soil and ground water conditions may change due to construction activity on the site or on adjacent sites, and also from other causes, including climactic conditions.
The exploration and review provided in this report were for geotechnical purposes only. Environmental aspects of soil and groundwater have not been included in the exploration or review, or addressed in any other way.
The exploration and Report is based on information provided by the Client or the Client's Consultants, and conditions observed at the time of our site reconnaissance or exploration. Braun has relied in good faith upon all information provided. Accordingly, Braun cannot accept responsibility for inaccuracies, misstatements, omissions, or deficiencies in this Report resulting from misstatements, omissions, misrepresentations or fraudulent acts of persons or sources providing this information.

6. DESIGN AND CONSTRUCTION REVIEW

This report assumes that Braun will be retained to work and coordinate design and construction with other Design Professionals and the Contractor. Further, it is assumed that Braun will be retained to provide field reviews during construction to confirm adherence to building code guidelines and generally accepted engineering practices, and the recommendations provided in this report. Field services recommended for the project represent the minimum necessary to confirm that the work is being carried out in general conformance with Braun's recommendations and generally accepted engineering standards. It is the Client's or the Client's Contractor's responsibility to provide timely notice to Braun to carry out site reviews. The Client acknowledges that unsatisfactory or unsafe conditions may be missed by intermittent site reviews by Braun. Accordingly, it is the Client's or Client's Contractor's responsibility to inform Braun of any such conditions.
Work that is covered prior to review by Braun may have to be re-exposed at considerable cost to the Client. Review of all Geotechnical aspects of the project are required for submittal of unconditional Letters of Assurance to regulatory authorities. The site reviews are not carried out for the benefit of the Contractor(s) and therefore do not in any way effect the Contractor(s) obligations to perform under the terms of his/her Contract.

7. SAMPLE DISPOSAL

Braun will dispose of all samples 3 months after issuance of this report, or after a longer period of time at the Client's expense if requested by the Client. All contaminated samples remain the property of the Client and it will be the Client's responsibility to dispose of them properly.

8. SUBCONSULTANTS AND CONTRACTORS

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

9. SITE SAFETY

Braun Geotechnical Ltd. assumes responsibility for site safety solely for the activities of our employees on the jobsite. The Client or any Contractors on the site will be responsible for their own personnel. The Client or his representatives, Contractors or others retain control of the site. It is the Client's or the Client's Contractors responsibility to inform Braun of conditions pertaining to the safety and security of the site – hazardous or otherwise – of which the Client or Contractor is aware.
Exploration or construction activities could uncover previously unknown hazardous conditions, materials, or substances that may result in the necessity to undertake emergency procedures to protect workers, the public or the environment. Additional work may be required that is outside of any previously established budget(s). The Client agrees to reimburse Braun for fees and expenses resulting from such discoveries. The Client acknowledges that some discoveries require that certain regulatory bodies be informed. The Client agrees that notification to such bodies by Braun Geotechnical Ltd. will not be a cause for either action or dispute.

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 May 2010 ("APEGBC Guidelines") and the "2012 BC Building Code (BCBC 2012)" 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: November 12, 2021

District of Sechelt
2nd floor, 5797 Cowrie Street
PO box 129, Sechelt, BC V0N 3A0
Jurisdiction and address

With reference to (check one):

- ☐ Land title (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:

5535 Shorncliffe Avenue, Sechelt, BC
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 my 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 comparision 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 based on conditions[1] contained in the attached *landslide assessment* report

Check one or more where appropriate

☐ 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."

James Wetherill, P.Eng
Name (print)

Signature

102 19049 95A Avenue
Address (Print)

Surrey, BC V4N 4P3

604-513-4190
Phone

November 12, 2021
Date

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. F. WETHERILL
19963
NOV 12/21

(Affix Professional seal here)

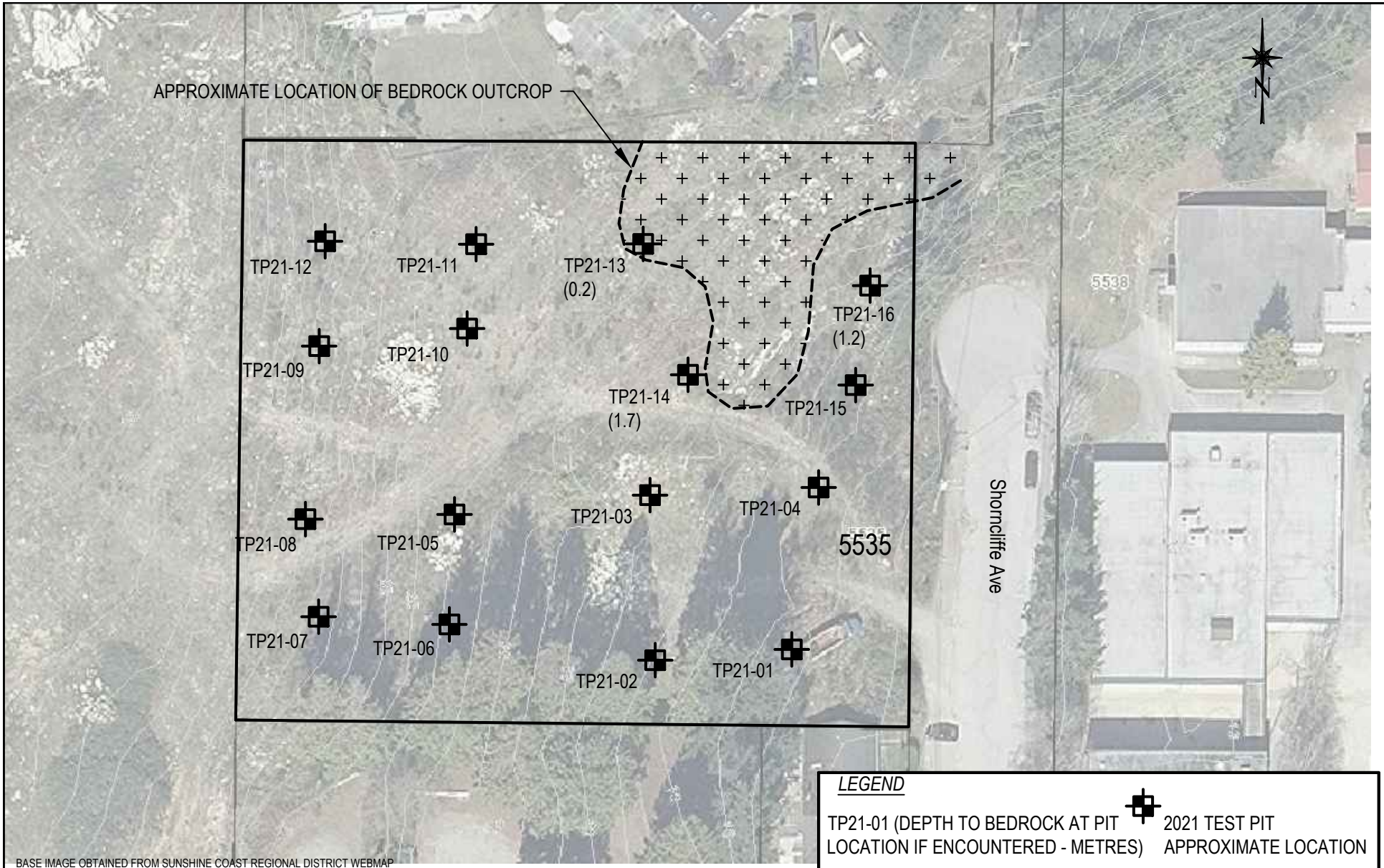
If the Qualified Professional is a member of a firm, complete the following.

I am a member of the firm and I sign this letter on behalf of the firm.

Braun Geotechnical Ltd. PTP# 1002594
(Print name of firm)

[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 fallon 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".



BRAUN GEOTECHNICAL LTD.

PTP# 1002594

Client: Genaris Properties				Title: LOCATION PLAN			
Project: Proposed Development 5535 Shorncliffe Avenue, Sechelt, BC							
Project no.: 21-9115	Drawn: AP	Design: SN	Checked: SH	Date: June 21, 2021	Scale: 1:750	Drawing no.: 21-9115-01	

Test Pit Log: TP21-01

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose silty SAND, some organics, occasional rootlets (ORGANICS)			
1				brown, damp, loose to compact SAND, some silt, trace gravel, trace cobbles, occasional boulders			
2			○		S1	7%	
3	1		○○	grey-brown, damp, dense to very dense silty fine SAND, trace gravel	S2 S3	7% 7%	
				End of Test Pit, Practical Refusal @ 1.1m			
4							
5							
6							
7	2						
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP01
Page: 1 of 1

Test Pit Log: TP21-02

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				grey, damp, loose to compact SAND, some gravel, trace silt, occasional rootlets (FILL)			
1			○		S1	4%	
2				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, moist, compact SAND, some gravel, trace to some silt			
3	1		○		S2	6%	
4							
5							
6							
	2						
7				brown-grey, dense below 2.1m			
8							
			○		S3	5%	
9				End of Test Pit @ 2.7m			
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP02
Page: 1 of 1

Test Pit Log: TP21-03

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown, damp, loose to compact SAND, some silt, some gravel, trace cobbles			
1			○		S1	8%	
2							
3	1		○	grey-brown, occasionally rust-mottled, damp, very dense silty SAND, trace gravel	S2	7%	
				End of Test Pit, Practical Refusal @ 1.0m			
4							
5							
6	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP03
Page: 1 of 1

Test Pit Log: TP21-04

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose silty SAND, some organics, occasional rootlets (ORGANICS)			
				rust-brown, damp, loose to compact SAND, some gravel, trace to some silt, trace cobbles			
1							
2				-grey-brown below 0.6m			
3	1						
			○		S1	5%	
4				-dense below 1.2m			
5				grey, damp, very dense silty SAND, some gravel			
			○		S2	9%	
6	2			End of Test Pit, Practical Refusal @ 1.8m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP04
Page: 1 of 1

Test Pit Log: TP21-05

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
			○	brown, damp, firm sandy SILT, some organics, occasional rootlets (ORGANICS)	S1	13%	
1				rust-brown, damp, compact SAND, some gravel, some silt, trace cobbles			
2							
3	1		○		S2	10%	
4				grey-brown, occasionally rust-mottled, damp, dense to very dense SAND, some silt, trace gravel			
			○		S3	14%	
5							
6				End of Test Pit @ 1.8m			
	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP05
Page: 1 of 1

Test Pit Log: TP21-06

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose SAND, some silt, some organics, trace gravel, occasional rootlets (ORGANICS)			
1				grey-brown, occasionally rust-mottled, damp, compact SAND, some gravel, trace to some silt			
2			○		S1	7%	
3	1			grey-brown, occasionally rust-mottled, dense to very dense SAND, trace silt, trace gravel			
4			○		S2	12%	
5							
6				-dense, some silt below 1.8m			
	2						
7			○		S3	13%	
8				End of Test Pit @ 2.4m			
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP06
Page: 1 of 1

Test Pit Log: TP21-07

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown to rust-brown, damp, compact SAND, some gravel, trace to some silt			
2			○		S1	4%	
	1						
5				-dense below 1.5m			
	2			grey, damp, dense to very dense SAND, trace to some silt, trace gravel, occasional cobbles			
7			○		S2	5%	
				-trace silt, no gravel below 2.3m			
9				End of Test Pit @ 2.7m			
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP07
Page: 1 of 1

Test Pit Log: TP21-08

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
1				grey to rust-brown, damp, compact SAND, some gravel, trace to some silt, occasional rootlets			
2							
3	1			grey, damp, dense to very dense SAND, trace silt			
			○		S1	3%	
4							
5							
6							
			○		S2	7%	
	2			End of Test Pit @ 2.0m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP08
Page: 1 of 1

Test Pit Log: TP21-09

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles, occasional boulder			
5			○		S1	5%	
6				grey, moist, dense to very dense SAND, trace to some silt, trace gravel			
8			○		S2	13%	
9				End of Test Pit @ 2.7m			

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP09
Page: 1 of 1

Test Pit Log: TP21-10

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
			○	brown, damp, firm SILT, some organics, some sand, trace gravel, trace cobbles, occasional rootlets (ORGANICS)	S1	12%	
1				rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles			
2							
3	1						
4				grey, damp to moist, dense to very dense SAND, trace gravel, trace to some silt			
5							
6			○		S2	15%	
	2			End of Test Pit @ 2.0m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP10
Page: 1 of 1

Test Pit Log: TP21-11

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
1				brown to rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles, occasional boulders			
2			○		S1	11%	
3	1			grey-brown, occasionally rust-mottled, damp, dense to very dense SAND, trace gravel, trace silt			
4							
5							
6							
	2						
7			○		S2	13%	
8				End of Test Pit @ 2.4m			
9							
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP11
Page: 1 of 1

Test Pit Log: TP21-12

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown to rust-brown, damp to moist, compact SAND, trace to some silt			
1							
2							
3	1						
4							
5							
				grey-brown, dense to very dense SAND, trace silt			
6							
	2						
7				-grey below 2.1m			
			O		S1	9%	
8							
				End of Test Pit @ 2.6m			
9							
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP12
Page: 1 of 1

Test Pit Log: TP21-13

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				End of Test Pit, Bedrock Refusal @ 0.2m			
1							
2							
3	1						
4							
5							
6	2						
7							
8							
9	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP13
Page: 1 of 1

Test Pit Log: TP21-14

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, trace to some silt			
				grey, moist, dense to very dense SAND, trace silt, trace gravel			
			○		S1	12%	
				End of Test Pit, Bedrock Refusal @ 1.7m			
1							
2							
3	1						
4							
5							
6	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP14
Page: 1 of 1

Test Pit Log: TP21-15

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, some cobbles, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, trace gravel, trace silt			
			○	-dense below 0.8m	S1	5%	
				grey, damp, dense to very dense SAND, trace to some silt, trace gravel, occasional cobbles			
			○		S2	7%	
				End of Test Pit @ 2.3m			

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP15
Page: 1 of 1

Test Pit Log: TP21-16

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, trace cobbles, trace boulders, occasional rootlets (ORGANICS)			
1				grey, damp, compact SAND, trace to some silt, trace gravel, occasional rootlets			
2							
3	1			-rust-brown, dense below 1.1m			
4			○	grey-brown, damp, dense to very dense SAND, trace silt	S1	12%	
				End of Test Pit, Bedrock Refusal @ 1.2m			
5							
6	2						
7							
8							
9	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP16
Page: 1 of 1

NOTES:

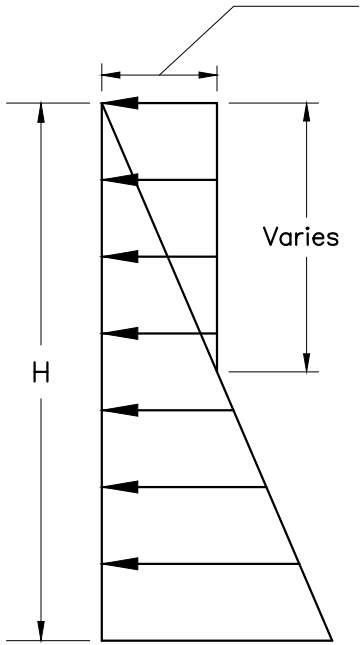
- Granular backfill adjacent to foundation walls as per city requirements and/or the Geotechnical Report.
- Lateral loads indicated are subject to review of actual soil conditions exposed at time of excavation.
- Wall pressures are approximate, actual pressures will depend on wall stiffness, groundwater conditions, backfill slope, type of backfill, compaction equipment, and surcharge pressures.

ASSUMPTIONS:

- Horizontal ground surface.
- Active loading conditions (i.e. top of wall is free to rotate 0.1% of wall height). Other conditions subject to review by Braun Geotechnical.
- Fully drained backfill.
- Seismic peak ground acceleration of 0.357g.
- All surcharge loads to be reviewed by Braun Geotechnical.

ALL LOADS ARE UNFACTORED

Metric Units m & kPa Imperial Units ft & psf

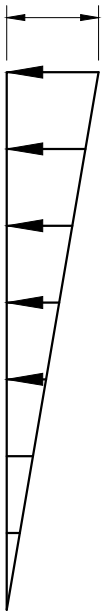


- Compaction Induced Pressure of 20kPa (400psf).
- A lower value may be feasible based on review of compaction equipment and procedure
- Compaction pressure need only be used for structural design not overall stability

5.2H kPa
(33.1H psf)

STATIC

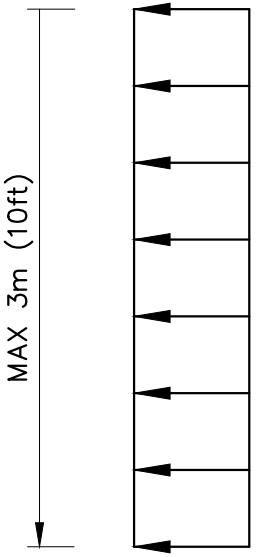
See Table for Wall Pressure Based on Tolerable Displacement of Wall away from Soil Backfill



Tolerable Displacement	Wall Pressure
0.1%	7.2H kPa (46H psf)
13mm (0.5")	4.3H kPa (27H psf)
25mm (1")	3.4H kPa (22H psf)
50mm (2")	2.7H kPa (17H psf)

(Based on Richard & Elms Procedure)

SEISMIC



0.4 x Surcharge Press.

SURCHARGE

PTP# 1002594

BRAUN GEOTECHNICAL LTD.

Client: Genaris Properties Inc.				Title: Horizontal Wall Loading Diagram		
Project: Proposed Development 5535 Shorncliffe Avenue, Sechelt, BC						
Project no. 21-9115	Drawn RG	Design SN	Approved SH	Date July 6, 2021	Scale NTS	Drawing no. 21-9115-02

KLIMO & ASSOCIATES

CERTIFIED ARBORIST REPORT

PROJECT LOCATION:
5535 Shorncliffe Ave, Sechelt

PREPARED FOR:
Genaris Properties

PREPARED BY:
Klimo & Associates Ltd.
5565 15B Ave
Delta BC, V4M 2H2

Metro West IMBL **#20020981**
Fraser Valley IMBL **#20020982**

June 17, 2022

Francis Klimo
ISA Certified Arborist
ISA Certified Tree Risk Assessor
BC Wildlife Danger Tree Assessor

1.0 SCOPE OF WORK

Klimo & Associates Ltd. was contracted by Genaris Properties to prepare an Arborist report along with a Tree assessment, and Tree management plan in order to support a development permit application for the construction of new apartment building located at 5535 Shorncliffe Ave, Sechelt.

The objective of this assessment and report is to identify all on/off-site trees that could be impacted by the development project and to ensure that the management of trees are in compliance with the *"District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009"* and "*Best Management Practices".* We conducted our field inspections on June 15, 2022 at around 11:30am. Our scope of work was to identify all key trees located within the proposed working limits and off-site areas of the subdivision project, assess & document their condition, and recommend measures to either protect the retained trees or to prescribe their removals.

1.1 Limits of assignment

- Our investigation is based solely on visual inspection of the trees on June 17, 2022 and the analysis of photos taken and tree diagnosis gathered during the inspection.
- Our inspection was conducted from ground level. We did not conduct soil tests or below grade root examination to assess the condition of the root system of the trees.
- We conducted a level 2 assessment.
- Overcast, no adverse weather conditions.

1.2 Purpose and use of the report

- Meet municipal criteria for Arborist report submissions and to provide documentation pertaining to the management of on/off-site trees in order to supplement the proposed development permit application for the construction of a new apartment building being submitted to the District of Sechelt located at 5535 Shorncliffe Ave.

2.0 SITE ANALYSIS / PROPOSAL

The project site was measured to have an overall area of over 1.5 acres and had been previously cleared in preparation for the new development proposal. Observing within the limits of the development site, the subject property was examined to be bounded by other recently cleared properties spanning along its northern and western lengths, and along with Shorncliffe Ave observed to be fronting the site. A proposal has been set forward to the District of Sechelt to develop the property in order for a new apartment building to be constructed within its site limits.

Located within the limits of the property, the growth of the subject trees had primarily populated towards the southern length of the lot and had consisted of both, mature coniferous as well as other deciduous species developing as part of the neighboring group of trees. Spanning within the remaining areas of the property, the northern section of the lot was observed to have open and clear topography without having any other significant sized trees or other off-site trees to be populating within its site limits.

Figure 1 - Location of subject site - 5535 Shorncliffe Ave, Sechelt

3.0 TREE ASSESMENT PROCESS

Our tree inspection process is a systematic procedure for accurately identifying and cataloging trees. Using the site survey as a reference to their locations and the proposed site plans provided by the project planners detailing the proposed development, the specifications to our Tree Protection Requirements were able to be accurately completed. In using the information of the proposed construction requirements, we have produced accurate findings to our recommendations to ensure the use of proper tree protection during the construction phase and as applicable, prescribing tree removal recommendations.

Our assessment of the on-site and off-site trees consists of gathering and documenting sizes (*DBH, Height, and Crown spread*), condition, species, location, growth form, and other site factors. The data collected has been documented into the inventory in order to convey the identified trees into a simple format. In addition, accurate tree preservation measures could be implemented for the optimal retention and protection of trees throughout the duration and up to the completion of the construction project.

3.1 Health and structure rating

Basic definitions of the general tree health in regards to the documented trees within the report have been separated based upon the total amount of trees broken up into five (5) defined categories as outlined in the table below:

Table 1 - Health and structure rating summary table

Rating	Retention Suitability	Definition	Total Trees
Good	Suitable	A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.	**11**
Fair / Good	Suitable	Tree is growing well for its species. No overt or identifiable significant defects, and is well suited for retention.	
Fair	Marginal	Subject tree that has an average vigour for its species. Small amount of twig dieback, minor structural defects that could be corrected.	**5**
Fair / Poor	Marginal/ Unsuitable	A tree with moderate to poor vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that may affect its survival considering construction impacts.	
Poor	Unsuitable	A tree in decline, epicormics growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated. And a tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.	

4.0 SUMMARY OF FINDINGS

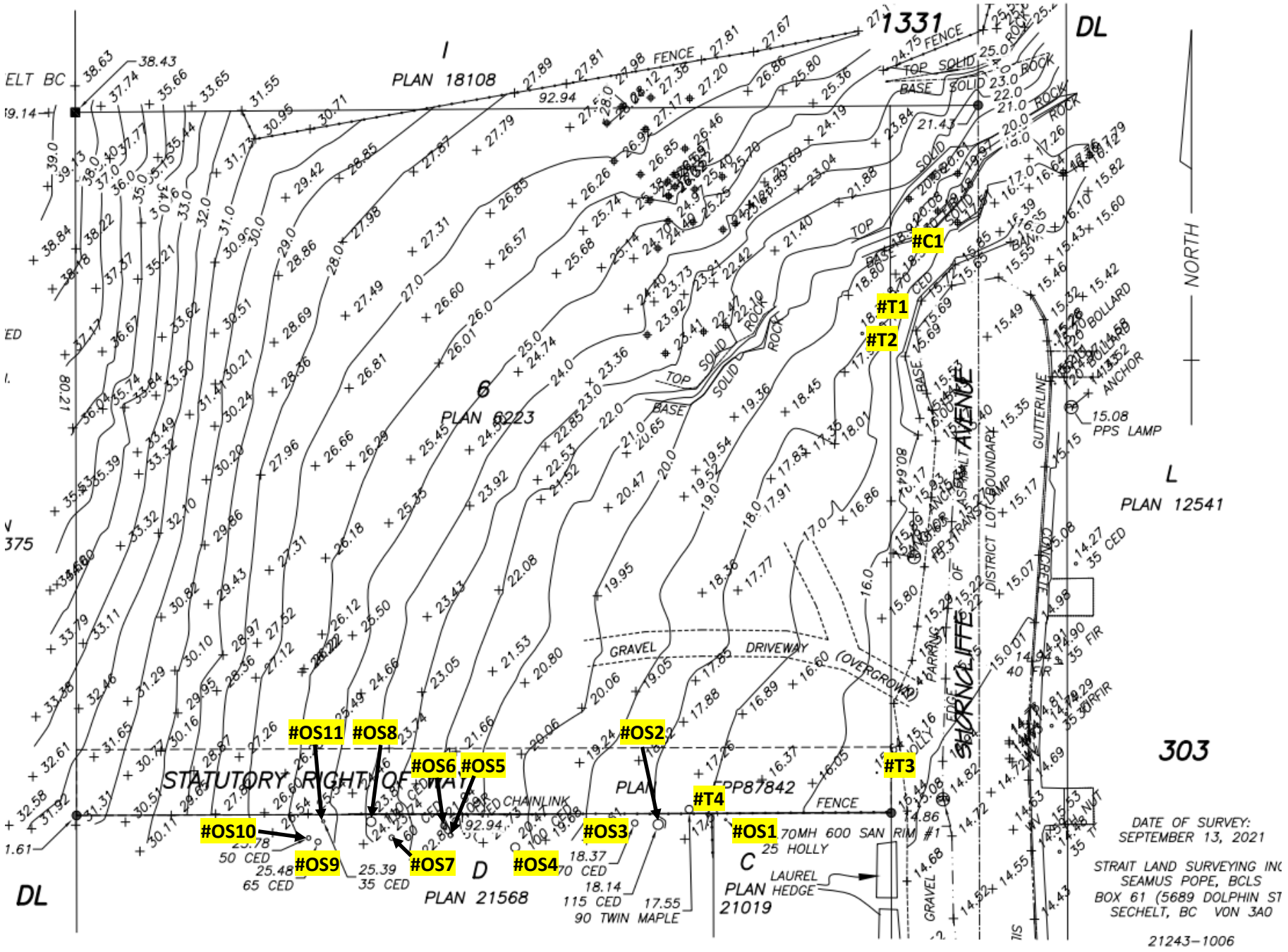
On June 17, 2022, Klimo & Associates Ltd. had conducted a site visit & visual inspection of all trees located on and off-site. A total of sixteen (16) trees were identified and had consisted of four (4) different types of species. The identified trees were measured to have an average DBH of 18cm to 118cm and overall, the subject trees had ranged from being in fair to good in condition.

The majority of the identified trees were examined to be in conflict with the proposed development as the subject trees had fallen within the limits of the proposed building footprint and of the high disturbance requirement areas pertaining to the lot grading, excavation, & of the site servicing related works.

On-site (*Development site*)	**City** (*Trees on City lot*)	**Off-site** (*Privately owned trees*)	**Total Tree(s)**	
4	1	11	**16**	
4		11	**15**	**Remove**
	1		**1**	**Retain**

Deciduous Tree(s)				**Coniferous Tree(s)**			
Bigleaf maple	1	Common holly	2	Douglas fir	3	Western redcedar	10
Total	**3**			**Total**	**13**		

5.0 SITE MAP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#OS9
#OS10
#OS11
1331
303
PLAN 18108
PLAN 6223
PLAN 12541
PLAN 21568
PLAN 21019
PLAN EPP87842
STATUTORY RIGHT OF WAY
SHORNCLIFFE AVENUE
NORTH
DATE OF SURVEY: SEPTEMBER 13, 2021
STRAIT LAND SURVEYING INC
SEAMUS POPE, BCLS
BOX 61 (5689 DOLPHIN ST
SECHELT, BC V0N 3A0
21243-1006

6.0 ON-SITE TREE INVENTORY

Table 1 - On-site Tree Inventory

Klimo & Associates Ltd.

June 17, 2022

5535 Shorncliffe Ave, Sechelt

ID#	Surveyed Y/N	On-site (ON) Off-site (OFF) City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
T1	Yes	On-site	Western redcedar	*Thuja plicata*	43	65	6	Subject tree was examined to have a single stemmed structured overall growth form. The overall development of the subject tree was examined to have been slightly influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree will be in direct conflict with the proposed development and will be within the zone of the heaviest construction & excavation related activities.	Suitable	Remove	2.6
T2	Yes	On-site	Douglas fir	*Pseudotsuga menziesii*	33	50	5	Subject tree was examined to have a single stemmed structured overall growth form. The overall development of the subject tree was examined to have been slightly influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree will be in direct conflict with the proposed development and will be within the zone of the heaviest construction & excavation related activities.	Marginal	Remove	2.0
T3	Yes	On-site	Common holly	*Ilex aquifolium*	18	35	2	Smaller diameter tree. The overall growth of the subject tree was examined to have developed a multi stemmed structured overall growth form. The overall crown was observed to have developed a phototropic and a supressed growth form. Subject tree is in fair condition	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities.	Marginal	Remove	1.2
T4	Yes	On-site	Bigleaf maple	*Acer macrophyllum*	93	65	12	Mature deciduous tree with a dominant overall growth form. Co dominant structured base. The overall growth of the subject tree was examined to have developed a single stemmed structured overall growth form. The crown was observed to be healthy. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities.	Marginal	Remove	5.6

6.1 OFF-SITE TREE INVENTORY

Table 2 - Off-site Tree Inventory

5535 Shorncliffe Ave, Sechelt

ID#	Surveyed Y/N	On-site (ON) Off-site (OFF) City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
OS1	Yes	Off -site	Common holly	*Ilex aquifolium*	27	50	4	The overall growth of the subject tree was examined to have developed a multi stemmed structured overall growth form. The overall crown was observed to have developed a phototropic influenced growth form. Subject tree is in fair condition	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Marginal	Remove	1.7
OS2	Yes	Off -site	Western redcedar	*Thuja plicata*	118	75	8	Larger diameter coniferous tree. Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	7.1
OS3	Yes	Off -site	Western redcedar	*Thuja plicata*	72	65	8	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	4.4
OS4	Yes	Off -site	Western redcedar	*Thuja plicata*	103	75	10	Larger diameter coniferous tree. Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to healthy with no major defects and or signs of stress. Subject tree is in good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	6.2
OS5	Yes	Off -site	Western redcedar	*Thuja plicata*	57	65	7	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	3.5

ID#	Surveyed Y/N	On-site (ON) Off-site (OFF) City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
OS6	Yes	Off -site	Douglas fir	*Pseudotsuga menziesii*	72	80	8	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	4.4
OS7	Yes	Off -site	Western redcedar	*Thuja plicata*	62	75	7	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	3.8
OS8	Yes	Off -site	Western redcedar	*Thuja plicata*	112	75	10	Larger diameter coniferous tree. Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to healthy with no major defects and or signs of stress. Subject tree is in good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	6.8
OS9	Yes	Off -site	Western redcedar	*Thuja plicata*	66	80	7	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	4.0
OS10	Yes	Off -site	Western redcedar	*Thuja plicata*	56	65	7	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. The development of its crown was observed to be influenced by adjacent trees. Subject tree is in fair to good condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Suitable	Remove	3.4

ID#	Surveyed Y/N	On-site (ON) Off-site (OFF) City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
OS11	Yes	Off -site	Western redcedar	*Thuja plicata*	37	65	6	Developing as part of a group. The overall growth of the subject tree was examined to have a single stemmed structure. Due to the growth of adjacent trees, a suppressed and a limited crown development was observed. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed underground parkade and will be within the zone of the heaviest site disturbance & grading related activities. ***The neighbor's authorization will be required for its removal.***	Marginal	Remove	2.3

6.2 CITY TREE INVENTORY

Table 3 - City Tree Inventory

5535 Shorncliffe Ave, Sechelt

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
C1	Yes	City	Douglas fir	*Pseudotsuga menziesii*	33	65	5	Subject tree was examined to have developed a multi stemmed clustered overall growth form. The unmaintained overall growth of the crown and structure was examined to have developed. The stems were examined to have a rapid growth form. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during various construction works occurring within the limits of the site.	Suitable	Retain	2.0

7.0 TREE RETENTION / REMOVAL RECOMMENDATIONS

A total of **sixteen (16) trees** have been found within the limits of the development project. Based on the factors that include the pre-existing condition of the subject trees as detailed in the Tree inventory, and the proposed building footprint & limits of the underground parkade, the subject trees are proposed to be treated as follows.

TREE RETENTION

Pursuant to the *"District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009",* the following tree(s) are recommended for Retention as detailed in the Tree Inventory and recommendations as noted below. Information regarding specific recommendations can be found below each of the categorized point and further referenced within the attached Tree Management Plan and within the body of the Arborist report.

City Tree(s) that are recommended for Retention,

- For the duration of the development project, **city tree #C1** has been recommended to be retained throughout the development process. As the protected tree was examined to be situated near the limits of the proposed construction and of its related works, the subject tree will require the placement of Tree Protection Barriers in order to protect its trunk, roots, and structure.
  The placement of Tree Protection Barriers would be required to be placed along its drip line or to its specified measurements as outlined within the Tree Inventory (*TPZ Column*) or as per the attached Tree Management Plan and left throughout the duration of the development project.

- **Any other off-site trees, hedges, & plantings (*All Identified to be Non-Bylaw Sized*)**
  Although several off-site trees as well as hedges spanning along the lengths of the site boundary lines were examined to be of non-by-law sized, it would be the developer's responsibility in order to ensure that the development does not adversely affect any neighbouring trees and or any other off-site hedging. In order to avoid a future civil matter, the non-bylaw sized trees, hedges, & any other off-site plantings are recommended to be respected and have measures to protect them throughout the development process.

  - ***Please note that certain sections of the retained off-site hedges may be required to be either removed or cut back for clearance of the proposed development, general lot maintenance, or of the required spacing for construction. The clearance works may require the neighbor's permission prior to commencing the works.***

Arborist Supervision Requirements - Lot Grading & Excavation Works occurring near tree(s)

- **Excavation & Grading related works occurring within the new lots,**
  Due to the proposed lot grading & excavation requirements for the new parkade, the current grades located along the lengths of the site boundary lines would be required to be manipulated in order to allow for the construction of the new development to take place. All grading & excavation related works occurring along the eastern length of the site boundary line and within the **TPZ of tree #C1,** are required to be performed under the direct guidance and supervision of the project Arborist.

  - **Tree Protection Requirements/Remedial measures**
    In order to limit the amount of disturbance encroaching into the TPZ(s) of the subject trees, the line of excavation/grading (*exposed interface*) would be required to be remediated in order to avoid the desiccation of roots (*If roots are exposed*).
    Furthermore, the extent of the grading works is recommended to be limited in order to clear the TPZ(s) of the retained trees. No major excavation/grading would be allowed when encroaching into the TPZ(s) or near the TPB enclosures of the protected trees and no major compaction of their protective grades is to occur. During the works, no heavy equipment would be allowed to encroach into their TPZ(s) throughout the subdivision process.

Management of Trees & Protection Requirements

- **Tree Removals**
  During the Removal and/or pruning of existing trees as identified on the landscape plan/Tree Management Plan, shall be undertaken or supervised by a certified arborist and performed in accordance with relevant Best Management Practices produced by ISA and ANSI A-300 Pruning Standards. All Tree work shall comply with the District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009.

- **Staging and storage of materials on site discussion (*General for all Trees*)**
  During the construction process, no storage or staging of materials, equipment, or debris can be placed within the TPZ of the protected Trees and or within their TPB enclosure. The proposed construction will require the storage and staging of its materials within the back yard area and will not be required to be placed towards any other areas within the property or near the protected Trees. In order to limit the potential disturbance within the TPZ of the protected Trees, no heavy equipment (If required) will be allowed to encroach, park, or traverse through their TPZ(s).

- **Removal of surrounding invasive growth / Site Clearing work**
  When clearing through the TPZ(s) of the retained trees, all clearing work as well as the grade preparation works are required to be performed by hand and no excavation machinery or any other heavy equipment would be allowed to encroach into their TPZ(s) throughout the clearing process. Larger stumps of removed vegetation are recommended to be either left in situ or grinded out. (*Please note: the remaining stumps cannot be pulled out by heavy machinery in order to ensure the protection of the retained trees*)

- **General Landscaping Methodology within TPZ(s)**
  General landscaping work has been proposed and may occur within the TPZ(s) of the retained trees. During the landscaping process, no fill and or soil can be deposited within its TPZ and any type of landscaping requiring extensive areas of poured concrete is not acceptable. Permeable surfaces can be placed on the original grade for hardscapes, all to be supervised and guided by an on-site Arborist.

  - As part of the landscaping process, a new wooden fence may be constructed along the lengths of the site boundary lines. The excavation for the main post holes will have to either be placed outside of the trees TPZ(s) or have the individual post holes excavated individually by hand. The new fencing is required to be installed without the use of continuous footings through the TPZ(s) of the retained trees.

  - The walkways installation would be required to be constructed on undisturbed grade and is recommended to be installed with a geogrid textile placed as its base. In order to limit the amount potential disturbance occurring within the TPZ(s) of the subject trees, no major excavation/grading would be allowed when encroaching into the TPZ(s) or near the TPB enclosures of the protected trees. No major compaction of the subgrade is to occur and no heavy equipment would be allowed to encroach into their TPZ(s) throughout the construction/landscaping process.

  - Ensuring any fill within protected root zone of existing trees does not exceed 4" (10cm) depth of sandy loam will be required and also during the removal and/or pruning of existing trees as identified on the landscape Tree Management Plan, shall be undertaken only by a qualified arborist certified by the International Society of Arboriculture (ISA) and in accordance with relevant Best Management Practices produced by ISA. Tree work shall comply with the District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009.

TREE REMOVAL

Pursuant to the "*District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009*", the following tree(s) are recommended for removal as per the following sections or as detailed in the report.

Protected Tree - includes:

- *Any tree with a DBH of 60 cm or more;*
- *Trees designated "to be retained" on a plan attached to a development permit, development variance permit, building permit or subdivision plan approved by the District of Sechelt;*

On-site & Off-site Tree(s) that are recommended for Removal,

- **Proposed building envelope conflicts,**
  On-site tree #T1 will be in direct conflict with the proposed development as the subject tree would either fall within the footprints of the proposed building (*proposed building envelopes*) or would be in direct conflict with the site preparation & lot grading requirements occurring within the limits of the site. The subject tree would fall within an area of high disturbance requirements related to the development project that would result in root loss & stability impacts.

  - **Removal of on-site non-bylaw sized trees**
    On-site trees #T1, #T2, #T3, along with off-site trees #OS1, #OS5, #OS10, and #OS11 have been recommended for removal due to conflicts with the proposed development. In combing their stems or measuring their trunks, none of the individual trees as numbered above had been identified to be "protected" as categorized in the *District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009*.

- **Falling towards the edge or in conflict with the perimeter construction works,**
  Off-site trees #OS1, #OS2, #OS3, #OS4, #OS5, #OS6, #OS7, #OS8, #OS9, #OS10, and #OS11 would be in direct conflict with the proposed development as the subject trees would either fall within the limits of the proposed underground parkade or would be in direct conflict with its perimeter excavation & shoring requirements. The subject trees as numbered above falls within an area requiring the heaviest grade disturbances related to the underground parkades construction resulting in impacts along with them becoming structurally destabilized during the construction works.

  - ***As trees #OS1, #OS2, #OS3, #OS4, #OS5, #OS6, #OS7, #OS8, #OS9, #OS10, and #OS11 were examined to be situated within the limits of the neighboring property, the neighbor's authorization will be required for their removal.***

8.0 SUMMARY OF TREE PRESERVATION BY TREE SPECIES:

Tree Species	Existing	Remove	Retain
Alder and Cottonwood Tree(s)			
Alder			
Cottonwood			
Deciduous Trees (E*xcluding Alder and Cottonwood Tree(s)*)			
Common holly	2	2	
Bigleaf maple	1	1	
Coniferous Tree(s)			
Douglas fir	3	2	1
Western redcedar	10	10	
Total (*Excluding Alder and Cottonwood Tree(s)*)	**16**	**15**	**1**
Additional Trees in the proposed Open Space / Riparian Area			
Total Replacement Trees Proposed (*Excluding Boulevard Street Tree(s)*)	**0**		
Total Retained and Replacement Tree(s) (*Total + Total replacement tree(s) proposed*)	**0**		

Please note: The trees identified in the table consists of only on-site, shared trees that are bylaw sized and incudes trees within boulevards, proposed streets, and lanes

9.0 TREE PRESERVATION SUMMARY

District of Sechelt Project No: N/A

Address: **5535 Shorncliffe Ave, Sechelt, B.C., V0N 3A7**

Registered Arborist: Francis Klimo

On-Site Trees	Number of Trees
Protected Trees Identified (*on-site and shared trees, including trees within boulevards and proposed streets and lanes, but excluding trees in proposed open space or riparian areas and non-bylaw protected trees*)	**4**
Protected Trees to be Removed	**4**
Protected Trees to be Retained (*Excluding trees within proposed open space or riparian areas*)	**0**
Total Replacement Trees Required: Protected Trees Requiring 1 to 1 Replacement Ratio (*protected trees*) 1 X one (1) = 1 All other Trees Not Requiring to be replaced (*non protected trees*) 3 X zero (0) = 0	**1** **0**
Replacement Trees Proposed	**0**
Replacement Trees in Deficit	**1**
Protected Trees to be Retained in Proposed [Open Space / Riparian Areas]	**N/A**

Off-Site Trees	Number of Trees
Protected Off-Site Trees to be Removed	**11**
Total Replacement Trees Required: Protected Trees Requiring 1 to 1 Replacement Ratio (*protected trees*) 7 X one (1) = 7 All other Trees Not Requiring to be replaced (*non protected trees*) 4 X zero (0) = 0	**7** **0**
Replacement Trees Proposed	**0**
Replacement Trees in Deficit	**7**

Summary, report and plan prepared and submitted by:

Francis Klimo

(*Signature of Arborist*)

June 17, 2022

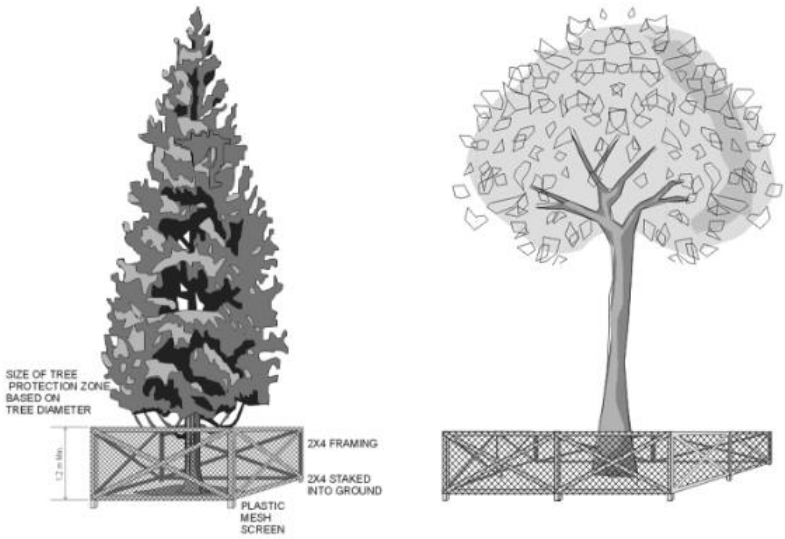
Date

10.0 TREE PROTECTION BARRIER

Tree Protection Barrier Summary					
Tree number (species)	DBH (cm)	Minimum tree protection barrier Radial span (m)	Tree number (species)	DBH (cm)	Minimum tree protection barrier Radial span (m)
C1	33	2.0			

All trees identified above will require tree protection barriers to protect and prevent the tree trunk, branches and roots being damaged by any construction activities/operations. Prior to any construction activity on site, tree protection fences must be constructed at the specified distance from the tree trunks. The protection barrier or temporary fencing must be at least 1.2 m in height and constructed of 2 by 4 lumber with orange plastic mesh screening. Structure must be sturdy with vertical posts driven firmly into the ground. This must be constructed prior to excavation or construction and remain intact throughout the entire period of construction. Further standards for fencing construction can be found at: "*District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009"*

Page -3-



11.0 TREE REPLACEMENT PLAN

Outlined in the "*District of Sechelt Environmental Management and Protection Bylaw No. 484, 2009*", the requirement for replacement Trees will be required based upon the Trees being cut or removed. The owner shall replace the Protected Trees cut and removed with the same number of trees planted on the same parcel in accordance with an approved permit;

On-Site & Shared Trees (*Including city trees within proposed lanes*)	**Number of Trees**
Protected Trees Identified	**9**
Protected Trees to be Removed	**8**
Protected Trees to be Retained	**1**
Total Replacement Trees Required: Protected Trees Requiring 1 to 1 Replacement Ratio (*protected trees*) 8 X one (1) = 8 All other Trees Not Requiring to be replaced (*non protected trees*) 7 X zero (0) = 0 Protected Tree – includes: • Any tree with a DBH of 60 cm or more; • (b) Trees designated "to be retained" on a plan attached to a development permit, development variance permit, building permit or subdivision plan approved by the District of Sechelt;	**8 Trees** **0 Trees**
Total Replacement Trees required	**8**
Replacement Trees Proposed	**0**
Replacement Trees for Cash in leu	**0**

Tree Replacement Species		
Planting(s) should be scheduled for the late winter/ early spring or early fall		
Quantity	Name	Species

Please see map for location Note: Planting cannot be within 3.0 meters of another significant tree

General Tree Planting Methodology

Replacement trees must meet plant condition and structure requirements as stated in "BC Landscape Standard" of the BCSLA/BCLNA and "Canadian Standards for Nursery Stock" of the CNTA. Also, the Replacement trees must be planted and maintained according to the requirements as stated in the "BC Landscape Standard" of the BCSLA.

It is important to locate your new plantings in accordance with the species' growing habits or tendencies. It is crucial to avoid planting your trees alongside buildings in which root ingress into drainage systems can occur and this can result in costly remedial work, also it is good practice not to plant your tall growing trees under power lines or utility lines as this can lead to pruning that may grossly adulterate the overall form or shape of the tree. Planting trees in the right location is the key to sustaining a balanced urban forest.

The proposed replacement Trees are to be a minimum size of 11cm caliper if deciduous, which is measured at 15 cm above the ground, or 2.7m tall if coniferous at the time of planting (*trunk width measured at 15 centimetres above the ground*) At least 1.0 metre away from any site boundary line, at least 3.0 metres away from any principle building or any accessory building or any other structure on or adjacent to the site that may adversely affect the tree and; at least 2.5 metres away from any other tree on or adjacent to the site including driveway or any other hardscape or underground service/utility lines.

12.0 CONCLUSIONS

Based on our findings, a total of sixteen (16) trees have been identified within the limits of the subject property. A total of fifteen (15) on/off-site trees have been recommended for removal due to conflicts with the proposed development and as the subject trees had fallen within the high disturbance requirement areas relating to the underground parkade, building footprint, and of the other construction related activities occurring within the limits of the site.

A total of one (1) off-site tree has been recommended for retention along with it having the requirement of erecting Tree Protection Barriers due to its close proximity towards the proposed construction working limits. Also, in order to ensure the retained tree and of its protection, Trigger points have been identified on the Tree Management Plan requiring Arborist supervision when working inside of its TPZ during a few of the construction milestones.

Thank you for choosing Klimo & Associates Ltd. Any further questions can be forwarded to Francis Klimo at (604)358-5562 or by email at klimofrancis@gmail.com

Regards,

Francis Klimo
ISA Certified Arborist #PN-8149A
ISA Certified Tree Risk Assessor (TRAQ)
BC Wildlife Danger Tree Assessor #7193

TREE MANAGEMENT PLAN

Project Number

Date -

Sheet #

Scale 1:400

Drawn

Checked

Francis R. Klimo
ISA Certified Arborist #PN-8149A
ISA Certified Tree Risk Assessor (TRAQ)
BC Wildlife Danger Tree Assessor #7193

Revisions

No.	Date	

Consultants

5535SHORN CLIFFE AVE, SECHELT

Klimo & Associates

TREE SCHEDULE

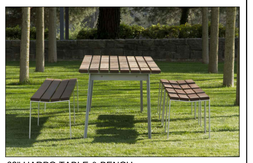
PMG PROJECT NUMBER: 22-119

KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE / REMARKS
TREE				
	16	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	2.5M HT; B&B
	7	ACER CIRCINATUM	VINE MAPLE	2.5M HT; B&B; 3 STEM CLUMP
	9	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY MAPLE	6CM CAL; 2M STD; B&B
	5	AMELANCHIER x G. 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	3M; B&B
	15	CORNUS NUTTALLII	PACIFIC DOGWOOD	2M HT; B&B
	13	MALUS 'PROFUSION'	PROFUSION FLOWERING CRABAPPLE	5CM CAL; 1.5M STD; B&B
	9	PICEA OMORIKA	SERBIAN SPRUCE	2.5M HT; B&B

NOTES: * PLANT SIZES IN THIS LIST ARE SPECIFIED ACCORDING TO THE BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD, LATEST EDITION. CONTAINER SIZES SPECIFIED AS PER CNLA STANDARD. BOTH PLANT SIZE AND CONTAINER SIZE ARE THE MINIMUM ACCEPTABLE SIZES. * REFER TO SPECIFICATIONS FOR DEFINED CONTAINER MEASUREMENTS AND OTHER PLANT MATERIAL REQUIREMENTS. * SEARCH AND REVIEW: MAKE PLANT MATERIAL AVAILABLE FOR OPTIONAL REVIEW BY LANDSCAPE ARCHITECT AT SOURCE OF SUPPLY. AREA OF SEARCH TO INCLUDE LOWER MAINLAND AND FRASER VALLEY. * SUBSTITUTIONS: OBTAIN WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO MAKING ANY SUBSTITUTIONS TO THE SPECIFIED MATERIAL. UNAPPROVED SUBSTITUTIONS WILL BE REJECTED. ALLOW A MINIMUM OF FIVE DAYS PRIOR TO DELIVERY FOR REQUEST TO SUBSTITUTE. SUBSTITUTIONS ARE SUBJECT TO BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD - DEFINITION OF CONDITIONS OF AVAILABILITY. * ALL LANDSCAPE MATERIAL AND WORKMANSHIP MUST MEET OR EXCEED BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD LATEST EDITION. * ALL PLANT MATERIAL MUST BE PROVIDED FROM CERTIFIED DISEASE FREE NURSERY. * BIO-SOLIDS NOT PERMITTED IN GROWING MEDIUM UNLESS AUTHORIZED BY LANDSCAPE ARCHITECT.


JAMBETTE THE VILLA A-16000


FORO TABLE & CHAIRS


69" HARPO TABLE & BENCH


CORNILLEAU TABLE TENNIS PRO510M


NEOROMANTICO BENCH


PICEA OMORIKA


MALUS 'PROFUSION'


CORNUS NUTTALLII


AMELANCHIER


PSEUDOTSUGA MENZIESII


ACER CIRCINATUM


ACER RUBRUM 'OCTOBER GLORY'

0 10' 20' 40' 60' 100'

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pmg LANDSCAPE ARCHITECTS
Suite C100 - 4185 Still Creek Drive
Burnaby, British Columbia, V5C 6G9
p: 604 294-0011 ; f: 604 294-0022

SEAL:

NO. DATE REVISION DESCRIPTION DR.

CLIENT:

PROJECT:

RESIDENTIAL DEV.
BUILDINGS 1 & 2

5535 SHORNCLIFF AVENUE
SECHELT, BC

DRAWING TITLE:

LANDSCAPE PLAN

DATE: 22.JUN.06
SCALE: 1/16"=1'-0"
DRAWN: JR
DESIGN:
CHK'D: PCM

DRAWING NUMBER: **L1**

OF 3

PMG PROJECT NUMBER: **22-119**

SHRUB SCHEDULE

PMG PROJECT NUMBER: 22-119

KEY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE / REMARKS
SHRUB			
A1	AZALEA JAPONICA 'PURPLE SPLENDOUR'	AZALEA; RED-VIOLET	#2 POT; 25CM
CS	CORNUS SERICEA	RED OSIER DOGWOOD	#2 POT; 50CM
HB	HYDRANGEA PANICULATA 'BIG BEN'	BIG BEN HYDRANGEA	#3 POT; 80CM
IC	ILEX CRENATA 'GREEN THUMB'	HOLLY; COMPACT	#3 POT; 50CM
NA	NANDINA DOMESTICA 'MOONBAY'	DWARF HEAVENLY BAMBOO	#3 POT; 50CM
PC	PHILADELPHUS LEWISII	LEWIS' MOCK ORANGE	#3 POT; 60CM
PH	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	#3 POT; 50CM
RS	RHODODENDRON 'COTTON CANDY'	RHODODENDRON; LIGHT PINK	#3 POT; 50CM
SY	SYMPHORICARPOS ALBUS	SNOWBERRY	#2 POT; 30CM
GRASS			
C	CALAMAGROSISTS CANADENSIS	BLUEJOINT GRASS	#1 POT
CO	CAREX OSHIMENSIS 'EVERGOLD'	EVERGOLD JAPANESE SEDGE	#1 POT
HS	HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	#1 POT
I	IMPERATA CYLINDRICA 'RED BARON'	BLOOD GRASS	#1 POT
ST	STIPA TENUISSIMA	MEXICAN FEATHER GRASS	#1 POT
GC			
O	OPHIOPOGON JAPONICUS 'NANA'	DWARF MONDO GRASS	9CM POT, 8" O.C.
PO	POLYSTICHUM MUNITUM	WESTERN SWORD FERN	#1 POT; 25CM

NOTES: * PLANT SIZES IN THIS LIST ARE SPECIFIED ACCORDING TO THE BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD, LATEST EDITION. CONTAINER SIZES SPECIFIED AS PER CNLA STANDARD. BOTH PLANT SIZE AND CONTAINER SIZE ARE THE MINIMUM ACCEPTABLE SIZES. * REFER TO SPECIFICATIONS FOR DEFINED CONTAINER MEASUREMENTS AND OTHER PLANT MATERIAL REQUIREMENTS. * SEARCH AND REVIEW: MAKE PLANT MATERIAL AVAILABLE FOR OPTIONAL REVIEW BY LANDSCAPE ARCHITECT AT SOURCE OF SUPPLY. AREA OF SEARCH TO INCLUDE LOWER MAINLAND AND FRASER VALLEY. * SUBSTITUTIONS: OBTAIN WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO MAKING ANY SUBSTITUTIONS TO THE SPECIFIED MATERIAL. UNAPPROVED SUBSTITUTIONS WILL BE REJECTED. ALLOW A MINIMUM OF FIVE DAYS PRIOR TO DELIVERY FOR REQUEST TO SUBSTITUTE. SUBSTITUTIONS ARE SUBJECT TO BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD - DEFINITION OF CONDITIONS OF AVAILABILITY. * ALL LANDSCAPE MATERIAL AND WORKMANSHIP MUST MEET OR EXCEED BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD LATEST EDITION. * ALL PLANT MATERIAL MUST BE PROVIDED FROM CERTIFIED DISEASE FREE NURSERY. * BIO-SOLIDS NOT PERMITTED IN GROWING MEDIUM UNLESS AUTHORIZED BY LANDSCAPE ARCHITECT.


SYMPHORICARPOS MOLLIS


PHYSOCARPUS CAPITATUS


CORNUS SERICEA


POLYSTICHUM MUNITUM


CAREX O. 'EVERGOLD'


OPHIOPOGON J. 'NANA'


IMPERATA C. 'RED BARON'


ARCTOSTAPHYLOS UVA-URSI


PHILADELPHUS LEWISII


RIBES SANGUINEUM


CALAMAGROSISTS

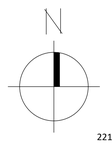

HELICTOTRICHON S.


STIPA TENUISSIMA


NANDINA D. 'MOONBAY'


ILEX C. 'GREEN THUMB'

0 10' 20' 40' 60' 100'



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Suite C100 - 4185 Still Creek Drive
Burnaby, British Columbia, V5C 6G9
p: 604 294-0011 ; f: 604 294-0022

SEAL:

NO. DATE REVISION DESCRIPTION DR.

CLIENT:

PROJECT:

RESIDENTIAL DEV.
BUILDINGS 1 & 2

5535 SHORNCLIFF AVENUE
SECHELT, BC

DRAWING TITLE:

LANDSCAPE PLAN

DATE: 22.JUN.06
SCALE: 1/16"=1'-0"
DRAWN: JR
DESIGN:
CHK'D: PCM

DRAWING NUMBER: **L2** **OF 3**

PMG PROJECT NUMBER: **22-119**

LEGEND

- EX. TREE TO BE RETAINED
- EX. TREE TO BE REMOVED
- TREE PROTECTION FENCE

NOTE:

PLEASE REFER TO ARBORIST REPORT

CONTACT: FRANCIS KLIMO
[KLIMO & ASSOCIATES LTD.]

PHONE: (604)358-5562

EMAIL: KLIMOFRANCIS@GMAIL.COM

0 10' 20' 40' 60' 100'

22119-1.ZIP

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pmg LANDSCAPE ARCHITECTS
Suite C100 - 4185 Still Creek Drive
Burnaby, British Columbia, V5C 6G9
p: 604 294-0011 ; f: 604 294-0022

SEAL:

NO.	DATE	REVISION DESCRIPTION	DR.

CLIENT:

PROJECT:

RESIDENTIAL DEV.
BUILDINGS 1 & 2

5535 SHORNCLIFFE AVENUE
SECHELT, BC

DRAWING TITLE:

EX. TREE MANAGEMENT PLAN

DATE:	22.JUN.06	DRAWING NUMBER:
SCALE:	1/16"=1'-0"	**L3**
DRAWN:	JR	
DESIGN:		
CHK'D:	PCM	**OF 3**

PMG PROJECT NUMBER: **22-119**

PRELIMINARY HYDROGEOLOGICAL STUDY

July 05, 2022

AE PROJECT NUMBER: PROJECT 2909

Genaris Properties
206 - 15272 Croydon Drive
Surrey, BC V3S 0Z5

ATTENTION: Gurbir Khaira, M.Eng

REFERENCE: Preliminary Hydrogeology Study
5535 Shorncliffe Avenue, Sechelt, BC

1 INTRODUCTION

In response to your request, Active Earth Engineering Ltd. (Active Earth) has prepared this hydrogeological report for the proposed development located at 55535 Shorncliffe Drive, Sechelt, BC (the Site).

The purpose of the investigation is to evaluate the groundwater conditions in accordance with the District of Sechelt requirements and determine if the development is in compliance with the Planning and Development Procedures and Fees Bylaw 522.16, 2018.

The following are the District of Sechelt requirements pertaining to the hydrogeological conditions within Schedule A of the bylaw:

- *An impact assessment of the proposed development on groundwater quantity and quality, and surface water affected by the development including options for collection, storage and drainage of surface water; and*
- *A desktop analysis of all available information to design an adequate field investigation and monitoring program. This would include:*
    - *Recommendations on how to manage water moving on and through the site while ensuring any creeks are protected and maintained and downstream properties are protected from any impacts.*
    - *Recommendations for drainage of building foundations.*

This report presents our scope of work and findings.

2 SCOPE OF WORK

Active Earth has developed the following scope of work for the services outlined above for the proposed re-zoning application:

- Review of building concept;
- Review of IMapBC database to identify aquifers underlying the site;
- Review the WELLS database for existing wells in the surrounding area;
- Review Geotechnical Report;
- Preparation of a Preliminary Hydrogeological Study in accordance with the District of Sechelt requirements, including the following:
    - Site details, including lot boundaries, ground elevations;
    - Proposed development structure, including and foundation/excavation elevations;
    - Description of site stratigraphy, based on test pit information;
    - Estimated static and seasonal high groundwater elevations including estimate of water table fluctuations from the provincial Observation well network and potential impacts and mitigation measures on nearby watercourses.

3 SITE DECRIPTION

3.1 Site Location

The following table summarizes the location and physical description for the Site.

LOCATION AND PHYSICAL DESCRIPTION

Address	Current Civic Address	5535 Shorncliffe Avenue, Sechelt, BC
	Legal Description	Block 6 Plan VAP6223 District Lot 1331 Land District 36
	PID	010-945-091
Location and Dimensions	Cartographic Coordinates	49.47347° N 123.76563° W
	Approximate Dimensions and Area	Rectangular lot, approximately 93 m X 80 m Area: 1.82 Acres (7479 m2)

The proposed development consists of four and five storey multi-family structures with at grade parking. It is understood that no below grade parking structures will be constructed.

3.2 Climate

The following table summarizes the climate data for the Site.

CLIMATE SUMMARY

Climate Normals	Local Weather Station	Merry Island Light-station
	Annual Rainfall	1006 cm
	Annual Snowfall	22.8 cm

3.3 Topography

The following table summarizes the topography of the Site and surrounding area.

TOPOGRAPHY

Topography	Geodetic Elevation	*Between 38 m geodetic in the northwest to 16 m geodetic in the southeast.*
	Site Topography	*Gradual slope from the northwest towards the east-southeast.*
	Regional Topography	*Regional topography slopes downwards to the south towards the Strait of Georgia.*

3.4 Nearby Surface Water Bodies

Nearby surface water bodies are described in the following table.

SURFACE WATER

Area Water Uses	Surface Water	*The nearest surface water body is the Strait of Georgia, located 500 m south of the Site.*

3.5 Surficial Geology

The surficial geology mapping of the Site is described in the following table.

SURFICIAL GEOLOGY

Geology	Surficial Geology *Surficial Geology Sunshine Coast Area (Ministry of Mines and Petroleum Resources)*	*Marine/ glacio-marine sand associated with the Capilano Sediments, underlain by granitic igneous bedrock.*

Granitic, igneous bedrock outcrops are present in the northeast corner of the Site. The remainder of the Site overlies marine/ glaciomarine sand with trace to some silt, and trace gravels/ cobbles, with depth to bedrock increasing towards the south.

4 GROUNDWATER RESOURCES

The BC Water Resource Atlas (BCWRA) was reviewed for available aquifer mapping and existing water well information as described in the following.

4.1 Existing Water Wells

A search of the WELLS database indicates there are three (3) existing water wells within 1 km of the Site.

EXISTING NEARBY WELLS

Address	Well Tag Number (WTN)	Yield* (USgpm)	Well Depth (m)	Depth to Water (m)	Aquifer No.
Inlet Ave, Sechelt	88753	50	33.5	Unknown	566
Inlet Road, Sechelt	88780	50	33.5	Unknown	566
546 Inlet Ave, Sechelt	117951	30	22.9	5.8	Unknown

*Driller's Estimate

4.2 Aquifer Mapping

A search of the IMapBC interface indicates that the Site is underlain by two aquifers:

Aquifer #566 – East Sechelt Delta

The East Sechelt Delta aquifer is an unconfined sand and gravel aquifer associated with fluvial/ deltaic Capilano sediments. The western-most boundary of the aquifer is defined by bedrock outcrops mapped to the west of the District of Sechelt. The southerly extent of the aquifer aligns with the coastline along the Strait of Georgia, and the eastern and northern boundaries are defined by the mapped extents of the host sediments. Groundwater levels in the aquifer range from <15 m to > 60 m with median values of 15 m to 30 m. There is a Provincial observation well (Observation Well 499; WTN 123004) installed in this aquifer, located at 4595 Sunshine Coast Highway (5 km southeast of the Site). Long term groundwater monitoring in Well 499 has shown that groundwater levels fluctuate from a low of 1.8 m below grade in the dry months to a high of about 0.8 m below grade in the wet months.

Groundwater is inferred to be a subdued replica of topography, flowing towards the Strait of Georgia to the south, or the Sechelt Inlet to the southeast.

Aquifer #564 – East Porpoise Bay

The East Porpoise Bay aquifer is a confined to unconfined fractured granodioritic-dioritic intrusive bedrock aquifer. The upper western boundary follows the Sechelt Inlet, the southern boundary follows the coastline along the Strait of Georgia, and the eastern boundary is associated with an increase in slope at an elevation of approximately 180 m geodetic. Groundwater levels range from <15 m to > 60 m with median values of 15 m to 30 m. Regionally, groundwater is inferred to be a subdued replica of topography, flowing towards the Strait of Georgia to the southwest, or the Sechelt Inlet to the west, although flow is locally controlled by the orientations of fracture sets.

Based on local surficial geology, aquifer mapping, and site-specific observations, we infer that the bedrock outcrop in the northeast corner of the Site is a recharge area for Aquifer #564 (East Porpoise Bay). The remainder of the Site is directly underlain by Aquifer #566 (East Sechelt Delta).

5 SITE INVESTIGATIONS

Braun Geotechnical Ltd. (Braun) conducted a site visit on June 28, 2021. Following the site visit, sixteen (16) test pits were excavated to depths of 0.2 m to 2.7 m. The geotechnical report prepared by Braun, dated November 12, 2021, indicates that the soils generally consist of the following stratigraphy:

FILL/ORGANICS

FILL, including grey, damp, loose to compact SAND with some gravel, trace silt, and occasional rootlets was encountered within TP21-02 to a depth of 0.6 m. ORGANICS, including brown, damp, loose silty SAND to firm SILT with some sand, some organics, trace gravel, trace cobbles, occasional boulders and occasional rootlets was encountered within all test pits to depths of 0.1 m to 0.8 m.

Loose to Compact SAND

Brown to grey-brown, damp, loose to compact SAND with trace to some silt, trace gravel, trace cobbles, and occasional boulders was encountered within all test pits except TP21-13 to depths of 0.9 m to 2.7 m. TP21-02 terminated within this zone. Within test pits TP21-02, -04, -07, -15 and -16, the sand was noted to become dense below 1.1 m to 2.1 m.

Dense to Very Dense SAND

Grey-brown, damp, dense to very dense SAND with some silt to silty, trace to some gravel, and occasional cobbles (Till-like) was encountered below to the depths of test pit exploration.

BEDROCK

Test pits TP21-13, -14, and -16 encountered refusal on bedrock at approximately 0.2 m to 1.7 m.

Bedrock outcrop exposures comprised granitic igneous rock were identified at the northeast portion of the Site.

GROUNDWATER

Groundwater seepage was not encountered within the maximum depth of test pit excavation of 2.7 m at the time of exploration in June 2021. Review of test pit logs and surrounding well data indicates the permanent water table is greater than 2 m below the ground surface.

6 CONCEPTUAL HYDROGEOLOGICAL MODEL AND IMPACT ASSESSMENT

A conceptual hydrogeological model has been developed for the Site based on the above-described background and site investigation information.

Local groundwater flow direction is inferred to be east-southeast towards the Strait of Georgia. Recharge to the shallow groundwater beneath the Site occurs primarily within the surrounding catchment to the east, northeast, and southeast versus the footprint of the Site.

The Braun geotechnical test pit logs indicate that all test pits contain 0.1 to 0.6 m of organic material. One (1) test pit (TP21-02) was found to contain approximately 0.6 m of FILL material. Loose to very dense SAND units with varying amounts of silt, gravel, and cobbles underlie the topsoil/ FILL. Groundwater seepage was not encountered within the maximum test pit excavation depth (2.7 m). Based on Provincial aquifer mapping, we understand that median groundwater depths in both Aquifer #566 and Aquifer #564 are between 15 m to 30 m. However, peak groundwater levels beneath the Site have not been determined, and water levels may rise to within the SAND/ silty SAND units situated above the bedrock during wet season.

As outlined in Section 4.1, there are only three provincially mapped wells within 1 km of the Site. Out of these, the static groundwater level is only known for Well 117951, located approximately 700 m east-northeast of, and approximately 10 m lower than the Site. Depth to groundwater in Well 117951 is reported to be 5.8 m below grade.

Foundation excavations will likely be designed such that the strip and pad footings are resting on the dense silty SAND unit, as per Braun's geotechnical recommendations. According to the architectural plans provided by Genaris (Appendix C), foundation excavation depths range from approximately 3 m below grade in the northwest of the Site to <0.5 m below grade in the southwest of the Site. As explained above, these excavations may encounter groundwater seasonally. Literature values for hydraulic conductivity of silty SAND range from $1x10^{-3}$ to $1x10^{-7}$ m/s[1], although the dense unit observed at the Site will likely have a lower hydraulic conductivity. Therefore, if any excavation dewatering is required, flows will likely be relatively minor.

The groundwater flux into the excavation and post-construction can be estimated once the design is complete and detailed assessment of the groundwater elevations relative to the design is undertaken in conjunction with further hydrogeological assessment if/as warranted.

[1,2] Freeze, R.A. and Cherry J.A., (1979) *Groundwater*, Prentice Hall, Englewood Cliffs, NJ

Rainfall within the excavation is expected to account for the majority of the dewatering flows if completed in the winter months and is dependent on the open area of the excavation at any time.

7 CONCLUSIONS AND RECOMMENDATIONS

The Site overlies an unconfined, dense, silty SAND aquifer. The foundation excavation is planned to be approximately 3 m deep in some areas of the Site and may encounter groundwater at least seasonally or periodically during wet weather (October – April). However, the silty SAND unit is inferred to be of low to moderate permeability (based on unit descriptions). Therefore, excavation dewatering flows will likely be relatively minor.

The groundwater flux into the excavation and post-construction can be estimated once the design is complete and detailed assessment of the groundwater elevations relative to the design is undertaken in conjunction with further hydrogeological assessment if/as warranted.

The Braun geotechnical report includes references to temporary and permanent cut slopes (Sections 8.4.1 and 8.4.2). The cut slopes could provide some infiltration capacity at the Site, depending on their locations, orientations and maximum depths.

A Groundwater Management Plan (as part of the Hydrogeological Study) is recommended to determine the depth to groundwater, temporary excavation and permanent groundwater inflows (if any), seasonal high water table, assess the need for perimeter drainage and determine the infiltration capacity of stormwater or groundwater.

The following investigation is recommended:

- At least two monitoring wells should be completed to depths of at least 3 m below grade to determine the depth to water throughout the site.
- Monitoring wells should be tested to obtain a hydraulic conductivity estimate for the dense silty SAND.
- Two infiltration tests should be conducted in the shallow loose SAND, and lower dense silty SAND units to determine the infiltration capacity on Site.

8 LIMITATIONS

This report has been prepared by Active Earth Engineering Ltd. exclusively for Genaris Properties. This report is intended to address requirements set out by the District of Sechelt Planning and Development Procedures and Fees Bylaw 522.16, 2018.

Should Genaris submit this report to the District of Sechelt, the District is authorized to rely on the results within the limitations of the following paragraphs for the purpose of determining whether Genaris is fulfilling its obligations with respect to the District of Sechelt.

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care normally exercised by hydrogeological professionals currently practicing under similar conditions in the area. The conclusions made in this report reflect Active Earth's best judgement in light of the information available at the time of writing. No warranty is expressed or implied. Should additional information become available, or Site conditions change, the conclusions and recommendations of this report may be subject to change.

Information included in this report has been obtained from several sources. Active Earth makes no representation as to the accuracy of information obtained from outside sources other than direct observations made by Active Earth.

Any use which the client or a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such parties. Active Earth accepts no responsibility for damages, if any, suffered by third parties as a result of business decisions made or actions based on this letter.

9 CLOSURE

We trust this provides the information required at this time. If you have any questions, or require additional clarification, please contact the undersigned.

Yours truly,

ACTIVE EARTH ENGINEERING LTD.

Prepared By:

Rabeea Fatima, GIT
Intermediate Hydrogeologist

Reviewed By:

David Kneale, P.Geo
Senior Hydrogeologist

ATTACHMENTS

APPENDICES

Appendix A	BC Water Resources Atlas Search Results
Appendix B	Braun Geotechnical Site Plan and Borehole Logs
Appendix C	Architectural Site Plans

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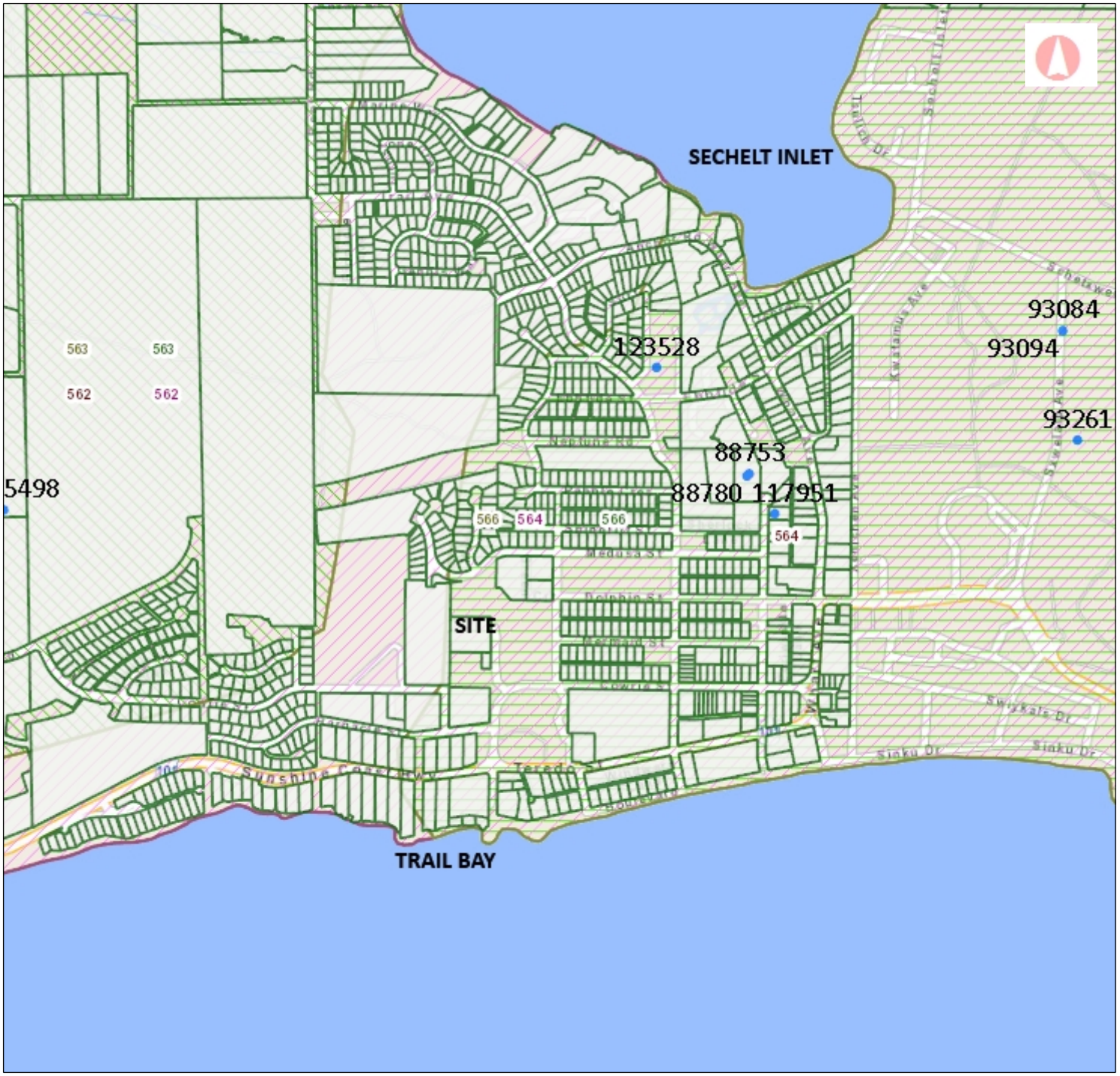
www.activeearth.ca

APPENDIX A

BC Water Resources Atlas Search Results



BRITISH COLUMBIA

iMapBC Mapping

Legend

Groundwater Wells - All

ARTESIAN_IND

- Reported Artesian Well
- Well

PMBC Parcel Cadastre - Pri

Aquifers - All

MATERIAL

- Unconsolidated
- Bedrock

Aquifers - Subtype

SUBTYPE

- 1a. Unconfined sand and gravel
- 1b. Unconfined sand and gravel system
- 1c. Unconfined sand and gravel

0 0.41 0.81 km

1: 20,000

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Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

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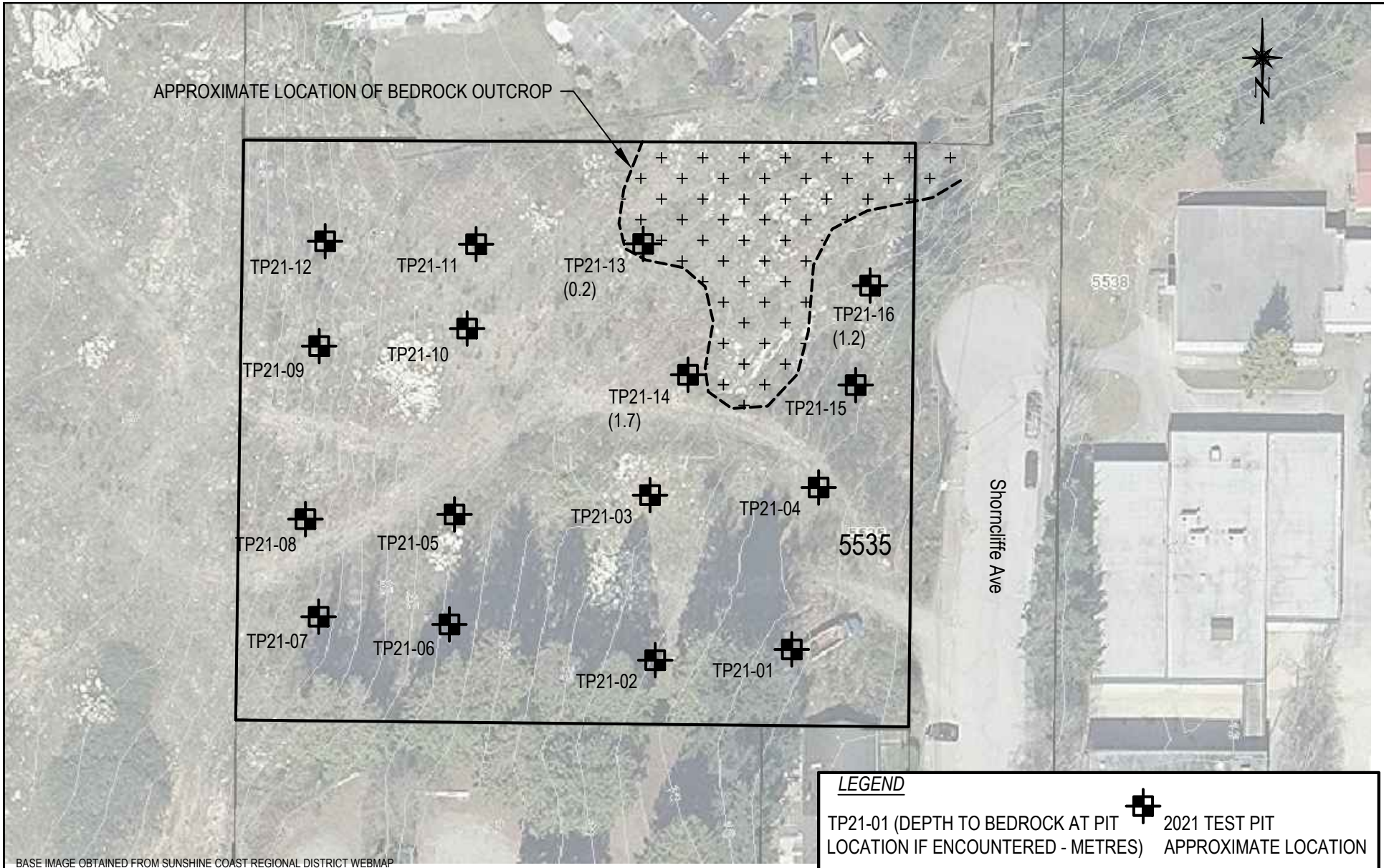
APPENDIX B

Braun Geotechnical Site Plan and Borehole Logs



BRAUN GEOTECHNICAL LTD.

PTP# 1002594

Client: Genaris Properties				Title: LOCATION PLAN			
Project: Proposed Development 5535 Shorncliffe Avenue, Sechelt, BC							
Project no.: 21-9115	Drawn: AP	Design: SN	Checked: SH	Date: June 21, 2021	Scale: 1:750	Drawing no.: 21-9115-01	

Test Pit Log: TP21-01

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose silty SAND, some organics, occasional rootlets (ORGANICS)			
1				brown, damp, loose to compact SAND, some silt, trace gravel, trace cobbles, occasional boulders			
2			○		S1	7%	
3	1		○○	grey-brown, damp, dense to very dense silty fine SAND, trace gravel	S2 S3	7% 7%	
				End of Test Pit, Practical Refusal @ 1.1m			
4							
5							
6							
7	2						
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP01
Page: 1 of 1

Test Pit Log: TP21-02

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				grey, damp, loose to compact SAND, some gravel, trace silt, occasional rootlets (FILL)			
1			○		S1	4%	
2				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, moist, compact SAND, some gravel, trace to some silt			
3	1		○		S2	6%	
4							
5							
6							
	2						
7				brown-grey, dense below 2.1m			
8							
			○		S3	5%	
9				End of Test Pit @ 2.7m			
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP02
Page: 1 of 1

Test Pit Log: TP21-03

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown, damp, loose to compact SAND, some silt, some gravel, trace cobbles			
1			○		S1	8%	
2							
3	1		○	grey-brown, occasionally rust-mottled, damp, very dense silty SAND, trace gravel	S2	7%	
				End of Test Pit, Practical Refusal @ 1.0m			
4							
5							
6	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP03
Page: 1 of 1

Test Pit Log: TP21-04

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose silty SAND, some organics, occasional rootlets (ORGANICS)			
				rust-brown, damp, loose to compact SAND, some gravel, trace to some silt, trace cobbles			
1							
2				-grey-brown below 0.6m			
3	1						
			○		S1	5%	
4				-dense below 1.2m			
5				grey, damp, very dense silty SAND, some gravel			
			○		S2	9%	
6	2			End of Test Pit, Practical Refusal @ 1.8m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP04
Page: 1 of 1

Test Pit Log: TP21-05

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
			○	brown, damp, firm sandy SILT, some organics, occasional rootlets (ORGANICS)	S1	13%	
1				rust-brown, damp, compact SAND, some gravel, some silt, trace cobbles			
2							
3	1		○		S2	10%	
4				grey-brown, occasionally rust-mottled, damp, dense to very dense SAND, some silt, trace gravel			
			○		S3	14%	
5							
6				End of Test Pit @ 1.8m			
	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP05
Page: 1 of 1

Test Pit Log: TP21-06

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, loose SAND, some silt, some organics, trace gravel, occasional rootlets (ORGANICS)			
1				grey-brown, occasionally rust-mottled, damp, compact SAND, some gravel, trace to some silt			
2			○		S1	7%	
3	1			grey-brown, occasionally rust-mottled, dense to very dense SAND, trace silt, trace gravel			
4			○		S2	12%	
5							
6				-dense, some silt below 1.8m			
	2						
7			○		S3	13%	
8				End of Test Pit @ 2.4m			
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP06
Page: 1 of 1

Test Pit Log: TP21-07

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown to rust-brown, damp, compact SAND, some gravel, trace to some silt			
2			○		S1	4%	
	1						
5				-dense below 1.5m			
	2			grey, damp, dense to very dense SAND, trace to some silt, trace gravel, occasional cobbles			
7			○		S2	5%	
				-trace silt, no gravel below 2.3m			
9				End of Test Pit @ 2.7m			
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP07
Page: 1 of 1

Test Pit Log: TP21-08

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
1				grey to rust-brown, damp, compact SAND, some gravel, trace to some silt, occasional rootlets			
2							
3	1			grey, damp, dense to very dense SAND, trace silt			
			○		S1	3%	
4							
5							
6							
			○		S2	7%	
	2			End of Test Pit @ 2.0m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP08
Page: 1 of 1

Test Pit Log: TP21-09

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles, occasional boulder			
5			○		S1	5%	
6				grey, moist, dense to very dense SAND, trace to some silt, trace gravel			
8			○		S2	13%	
9				End of Test Pit @ 2.7m			

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP09
Page: 1 of 1

Test Pit Log: TP21-10

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
			○	brown, damp, firm SILT, some organics, some sand, trace gravel, trace cobbles, occasional rootlets (ORGANICS)	S1	12%	
1				rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles			
2							
3	1						
4				grey, damp to moist, dense to very dense SAND, trace gravel, trace to some silt			
5							
6			○		S2	15%	
	2			End of Test Pit @ 2.0m			
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP10
Page: 1 of 1

Test Pit Log: TP21-11

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
1				brown to rust-brown, damp, compact SAND, some gravel, trace to some silt, trace cobbles, occasional boulders			
2			○		S1	11%	
3	1			grey-brown, occasionally rust-mottled, damp, dense to very dense SAND, trace gravel, trace silt			
4							
5							
6							
	2						
7			○		S2	13%	
8				End of Test Pit @ 2.4m			
9							
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP11
Page: 1 of 1

Test Pit Log: TP21-12

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				brown to rust-brown, damp to moist, compact SAND, trace to some silt			
1							
2							
3	1						
4							
5							
				grey-brown, dense to very dense SAND, trace silt			
6							
	2						
7				-grey below 2.1m			
			O		S1	9%	
8							
				End of Test Pit @ 2.6m			
9							
	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP12
Page: 1 of 1

Test Pit Log: TP21-13

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				End of Test Pit, Bedrock Refusal @ 0.2m			
1							
2							
3	1						
4							
5							
6	2						
7							
8							
9	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP13
Page: 1 of 1

Test Pit Log: TP21-14

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, trace to some silt			
				grey, moist, dense to very dense SAND, trace silt, trace gravel			
			○		S1	12%	
				End of Test Pit, Bedrock Refusal @ 1.7m			
1							
2							
3	1						
4							
5							
6	2						
7							
8							
9							
10	3						

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP14
Page: 1 of 1

Test Pit Log: TP21-15

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, some cobbles, occasional rootlets (ORGANICS)			
				rust-brown, damp, compact SAND, trace gravel, trace silt			
			○	-dense below 0.8m	S1	5%	
				grey, damp, dense to very dense SAND, trace to some silt, trace gravel, occasional cobbles			
			○		S2	7%	
				End of Test Pit @ 2.3m			

Equipment: Tracked Excavator
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP15
Page: 1 of 1

Test Pit Log: TP21-16

PTP# 1002594

File: 21-9115
Project: Proposed Development
Client: Genaris Properties Inc.
Location: 5535 Shorncliffe Avenue, Sechelt, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0			GRASS OVER			
				brown, damp, firm SILT, some organics, some sand, trace cobbles, trace boulders, occasional rootlets (ORGANICS)			
1				grey, damp, compact SAND, trace to some silt, trace gravel, occasional rootlets			
2							
3	1			-rust-brown, dense below 1.1m			
4			○	grey-brown, damp, dense to very dense SAND, trace silt	S1	12%	
				End of Test Pit, Bedrock Refusal @ 1.2m			
5							
6	2						
7							
8							
9	3						
10							

Equipment: Tracked Excavator
Sampling Method: Lump Sample

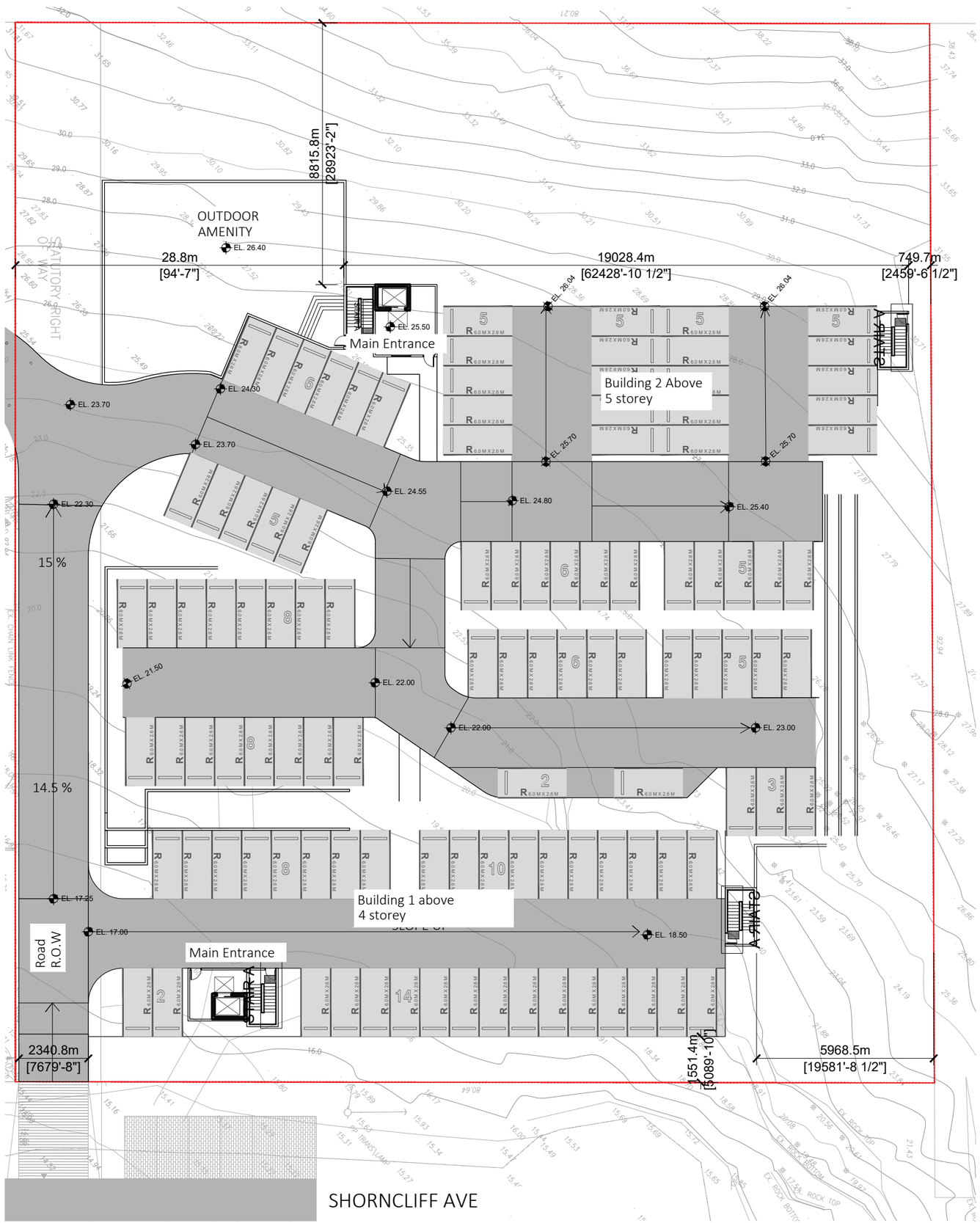
Datum: Ground Surface
Water Depth: Not Encountered

Logged By: SN
Exploration Date: June 28, 2021
Dwg No.: 21-9115-TP16
Page: 1 of 1

ACTIVE EARTH
ENGINEERING LTD

www.activeearth.ca

APPENDIX C
Architectural Site Plans



SITE STATISTICS

CIVIC ADDRESS:		5535 SHORNCLIFF AVENUE SECHELT BC		
LEGAL DISCRIPTION				
OCP DESIGNATION		MULTIPLE FAMILY RESIDENTIAL		
GROSS SITE AREA:	79279 ft2	1.82 Acre		
ZONING				
	BUILDING HEIGHT			
		20.0 m		
	SETBACKS	PROVIDED		
	NORTH	2.0 m		
	SOUTH	11.6 m		
	EAST:	4.0 m		
	WEST:	16.0 m		
LOT COVERAGE				
	PROPOSED	33%		
DENISTY				
	PROPOSED 60 UPA = 60 X 1.82 Acre	109 units	PROPOSED 109 UNITS	VARIANCE REQUESTED
OFF STREET PARKING				
	PARKING FOR 109 UNITS	109 X 1.00 (including Visitor)	109 PROVIDED	

UNIT MIX SCHEDULE

Floor Level	1 Bed	2 Bed	Studio	Penthouse	Total Units per Floor
Building 1					
LVL 1	9	4	2		15
LVL 2	9	4	2		15
LVL 3	9	4	2		15
LVL 4	9	4	2		15
Building 2					
LVL 1	4	8			12
LVL 2	4	8			12
LVL 3	4	8			12
LVL 4	4	8			12
LVL 5				1	1
TOTAL	52 UNITS	48 UNITS	8 UNITS	1 UNITS	109 UNITS

1 LEVEL 1
Scale: 1/32"=1'

FLAT ARCHITECTURE INC.
Unit 209- 6321 King George
Surrey BC, V3X 1G1
www.flatarchitecture.ca
contact@flatarchitecture.ca
Ph: 604-503-4484

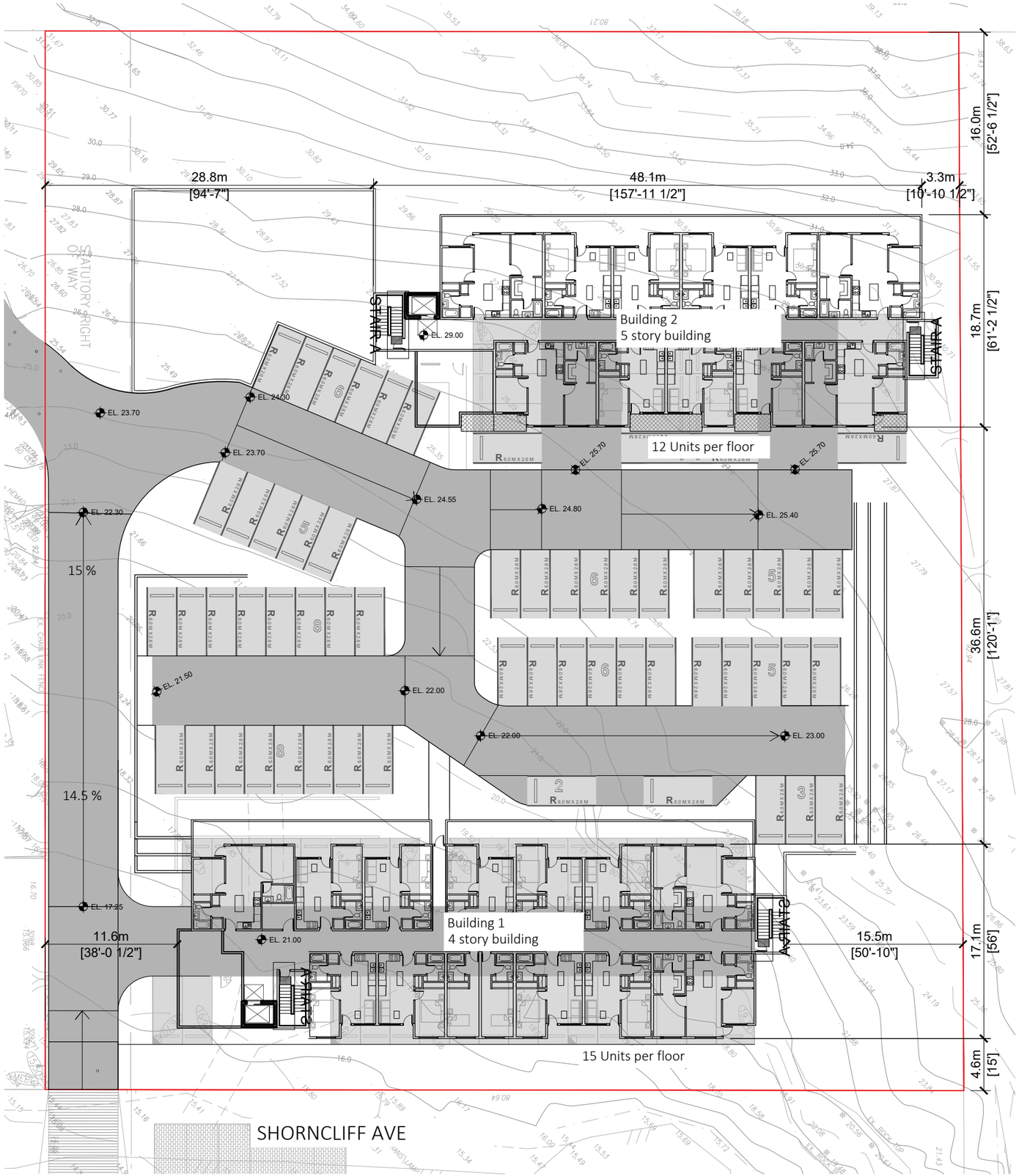
PROJECT INFO:
APARTMENT BUILDING AT 5535
SHORNCLIFF AVENUE
SECHELT BC
CLIENT:

DATE
15 JUNE 22
PROJECT NO:

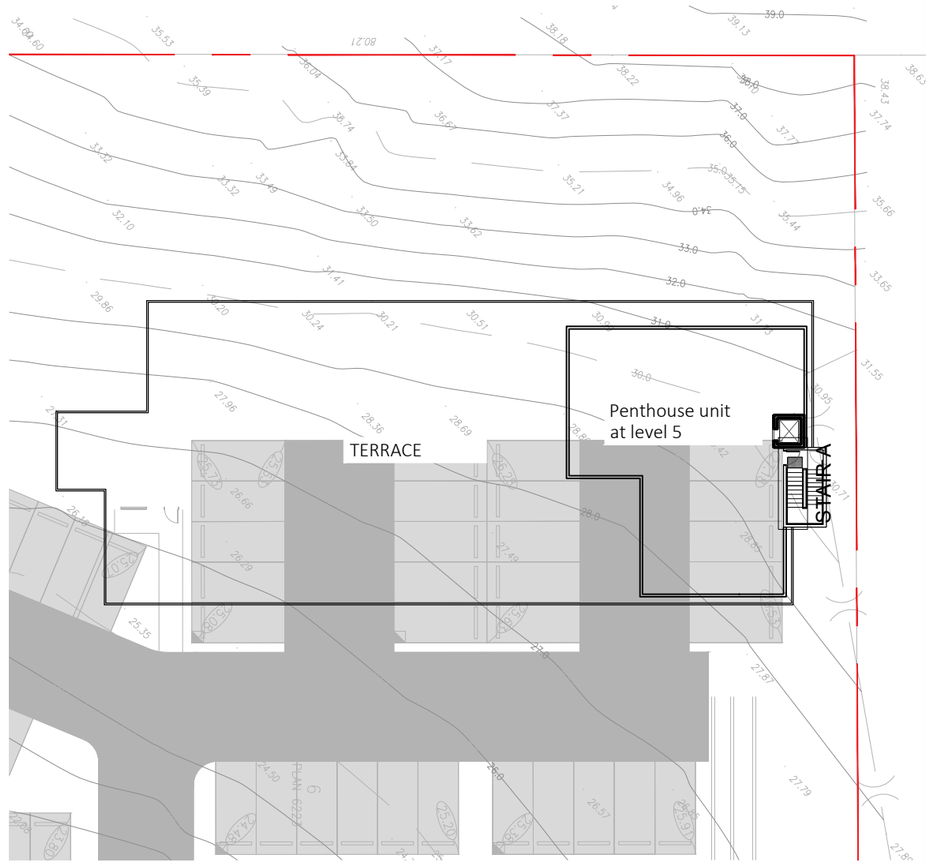
SCALE: As Noted
DRAWN VK

LEVEL 1

A 1.1



1 LEVEL 2-4
Scale: 1/32"=1'



2 LEVEL 5
Scale: 1/32"=1'

FLAT ARCHITECTURE INC
Unit 209- 6321 King George Blvd
Surrey BC, V3X 1G1
www.flatarchitecture.ca
contact@flatarchitecture.ca
Ph: 604-503-4484

PROJECT INFO:
APARTMENT BUILDING AT 5535
SHORNCLIFF AVENUE
SECHELT BC
CLIENT:
GENARIS

DATE
15 JUNE 22
PROJECT NO:

SCALE: As Noted
DRAWN BY: VK

REV	DESCRIPTION	BY	DATE

LEVEL 2-4

A 1.2