

**MUNICIPAL PLANNING COMMISSION AGENDA
SUMMER VILLAGE OF BIRCHCLIFF
SUMMER VILLAGES ADMINISTRATION OFFICE
MARCH 1, 2021 @ 9:00 A.M.**

A. CALL TO ORDER

B. ADOPTION OF AGENDA

C. DEVELOPMENT ITEMS

- 1) 71 Birchcliff Road
- 2) 363 Birchcliff Road
- 3) 553 Birch Close

D. ADJOURNMENT

Summer Village of Birchcliff – Municipal Planning Commission

March 1, 2021

Agenda Item

71 Birchcliff Road (Lot 2, Block 4, Plan 4486AX)

Development Permit Application

Background:

The homeowners of 71 Birchcliff Road (Lot 2, Block 4, Plan 4486AX) in the Summer Village of Birchcliff submitted a complete application for Landscaping/Mechanized Excavation. This property is located in the R-1 District (Lakeshore Residential). The development proposed will take place on the escarpment of the property.

Discussion:

This application is before MPC for the following reasons:

- Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
- Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.

Recommendation:

The Municipal Development Plan 6.3.4 states “Birchcliff recognizes that remedial actions may be necessary from time to time, the village strongly desires that banks abutting the shoreline remain as natural as possible to retain natural ecosystems.” The shoreline and bank measures appear necessary, but the proposed development show the escarpment to be a maintained grass area with a beach and little natural landscaping. The Land Use Bylaw, part 3 section 4(5) states “The following standard of landscaping shall be required for all areas of a parcel not covered by buildings, driveways, storage and display areas: the retention in their natural state of land located below the top of bank of the lake, or any water body or water course” and Caring for Shoreline Properties states “artificial beaches damage the shoreline, do not create a beach where none existed before”.

After reviewing all relevant planning and other statutory documents, it is the recommendation of administration to deny the application. The bank stabilization work may seem necessary, but the proposed development should have proposed landscaping that includes heavily native vegetated areas with no man made beaches and include a no mow zone adjacent to the lake.

Conditions:

If approved, Administration would recommend the following conditions:

- Completions Deposit of \$3,000.00

February 22, 2021

- At minimum, the same number of trees removed from the escarpment to be replaced.
- Minimum 1m no mow zone required adjacent to lake, including native grassy areas.
- Proposed grass areas between retaining walls to be left natural and be heavily vegetated with native plantings.
- No beach to be created.
- Land below the escarpment to be left natural with no seating areas, firepits, or decks.
- Future dwelling plans are to comply with the geotechnical report recommendations to ensure that the bank is protected, and the development is safe.

Authorities:

The MPC may:

- Grant a variance to reduce the requirements of any use of the LUB and that use will be deemed to comply with LUB.
- Approve application even though the proposed development does not comply or is a non-conforming building if:
 - It would not unduly interfere with the amenities of the neighborhood, or
 - Materially interfere with or affect the use, enjoyment, or value of neighboring parcels of land, And
 - It conforms with the use prescribed for that land or building in the bylaw.
- Consider a Variance only where warranted by the merits or the proposed development and in response to irregular lot lines, parcel shapes or site characteristics which create difficulties in siting structures within the required setback or in meeting the usual bylaw requirements, except there shall be no variance for Parcel Coverage or Building Height.

For a discretionary use in any district:

- The Municipal Planning Commission may approve an application for a Development Permit:
 - With or without conditions;
 - Based on the merits of the proposed development, including it's relationship to any approved statutory plan, non-statutory plan, or approved policy, affecting the site;
 - Where the proposed development conforms in every respect to this Land Use Bylaw; or
- May refuse an application for a development permit based on the merits of the proposed development, even though it meets the requirements of the Land Use Bylaw; or
- Subject to provisions of section 2.4 (2), the Municipal Planning Commission shall refuse an application for a development permit if the proposed development does not conform in every respect to the Land Use Bylaw.

Decision:

In order to retain transparency of the Commission, Administration recommends one of the following:

1. Approve the application with or without conditions (*Section 642 of the MGA*), or
2. Deny the application stating reasons why (*Section 642(4) of the MGA*).

February 4, 2021

Summer Village of Birchcliff

Bay 8, 14 Thevenaz Industrial Trail
Sylvan Lake, AB T4S 2J5

RE: Devleopment Application (Letter of Intent)
Location: 71 Birchcliff Road - Plan 4486AX, Block 4, Lot 2

I am supplying this letter on intent along with a development application dated Februatry 4, 2021

At this time I would like to request a development/Landscape permit for the construction of the retaining walls only, once the said permit is issued we would be applying for a development permit for the dwelling. The proposal includes two lateral retaining walls and a retaining wall along each property line to allow for a dwelling with a walk out basement. The development along the lakefront also includes a dock storage area for winter dock storage and stairs going down to access the lake.

As you can see on the attached landscape plan the proposed landscaping calls for a steel sheet pile wall on the lake side of the lot, we feel that this design is the best application considering the extreme amount of erosion currently on the property as well as the safest and most secure method. Erosion control is recommended in the geotechnical report along with pictures provided by Smith Dow Engineering. Smith Dow Engineering also recommended that a walk out basement is the best development for this lot as there was a lot of fill brought in by the previous owner and pushed over the bank. Removing this fill for a walk out basement would make the bank more stable.

A contracting firm based out of Sundre, Alberta, Al Saunders Contracting was also consulted on the lakefront erosion issues as they speacialize in environmental construction near and on waterways. Their recommendation regarding the erosion is also sheet pile as there is no excavation required which is the safest for the protection of the lake.

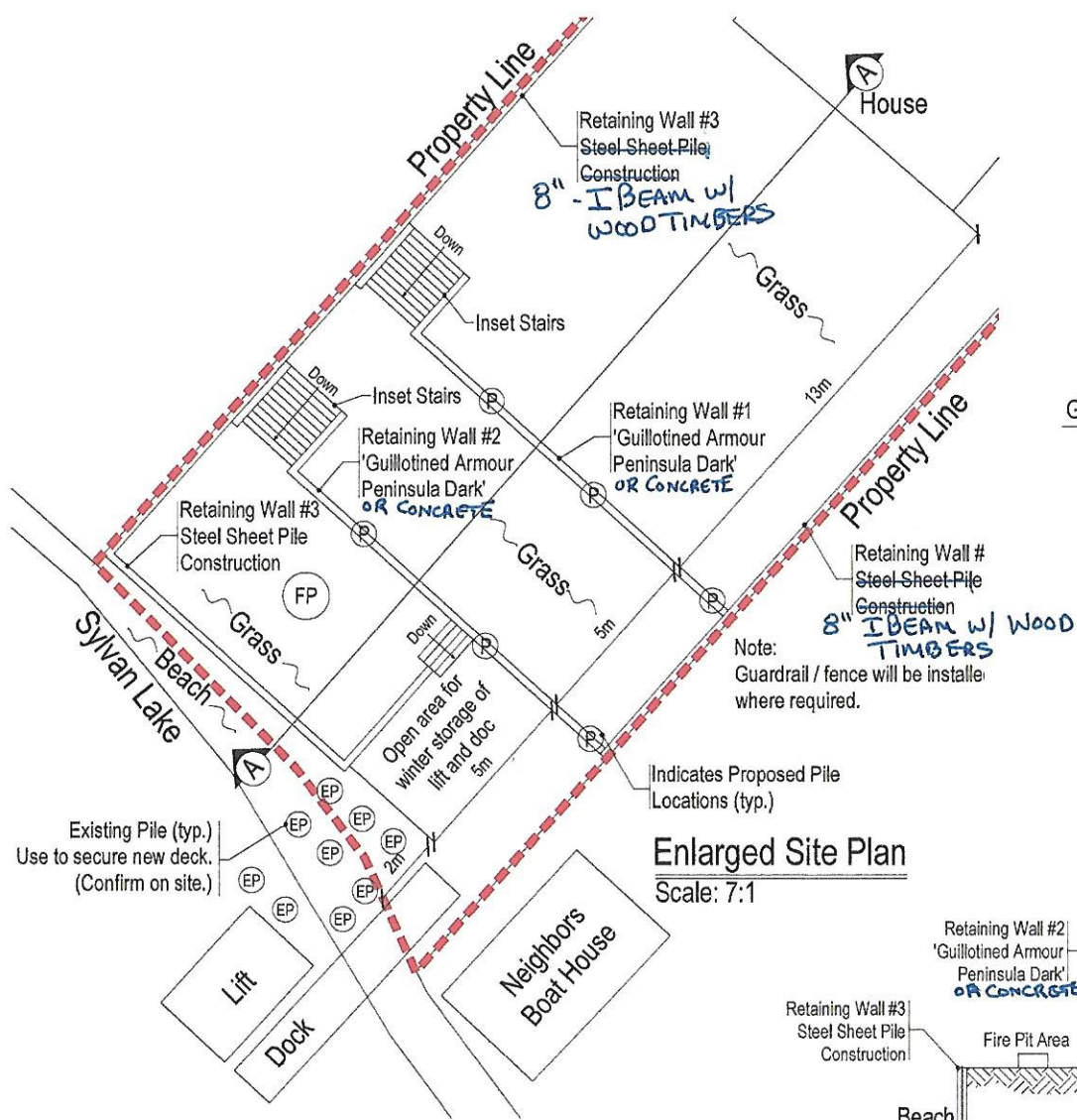
The side retaining walls will be constructed using 8" steel "I" beam and 6x6 wooden timbers. These walls have been engineered and approved by Cognidyne Engineering, stamped document attached.

The lateral retaining walls will be constructed with either natural stone or concrete which are projected to be approximated 4' above grade. The landscaping on each bench will be finalized when the house plans are submitted for approval to ensure we meet the total parcel coverage as per the LUB.

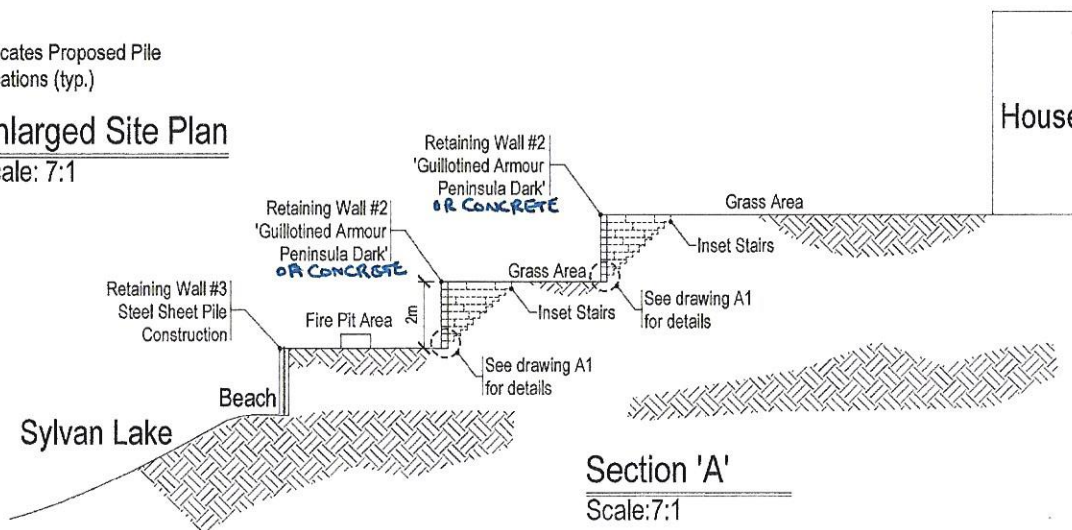
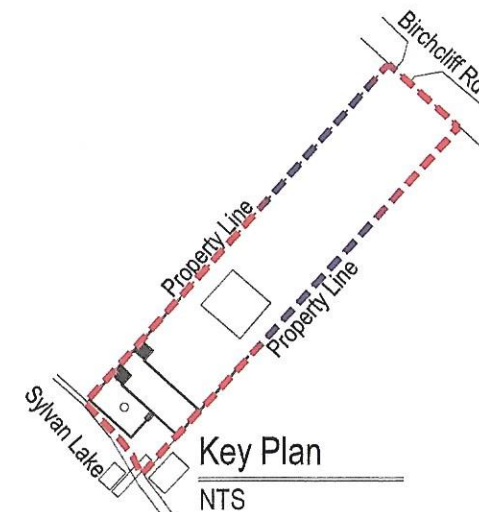
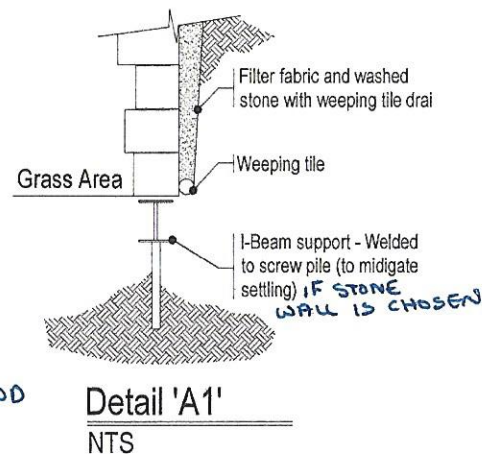
If you have any questions or concerns regarding the above information, please contact the undersigned at 403-304-4417.

Sincerely,

██████████



Notes:
All dimensions to be confirmed on site.
Drawing for discussion purposes only.



Site Features

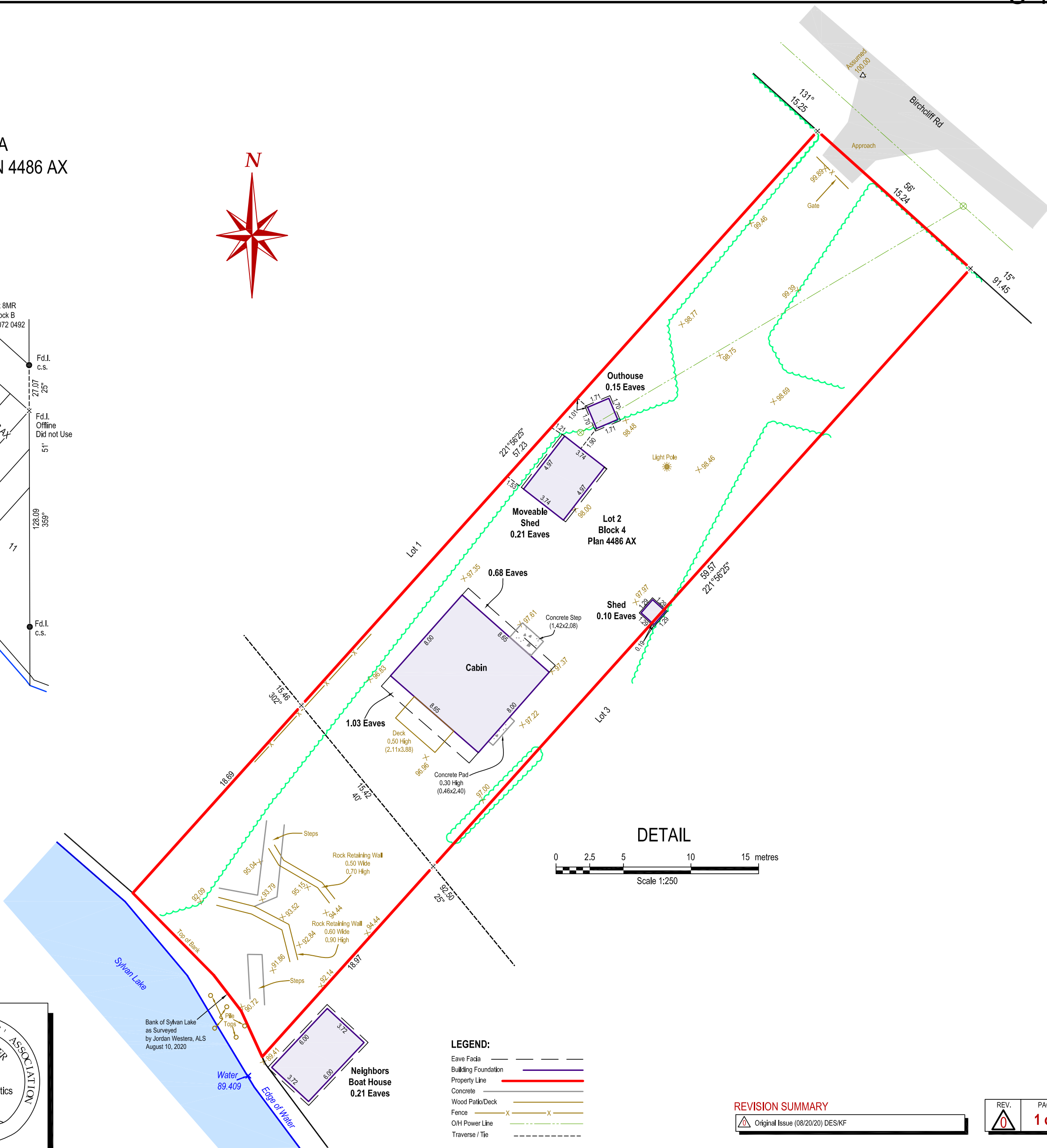
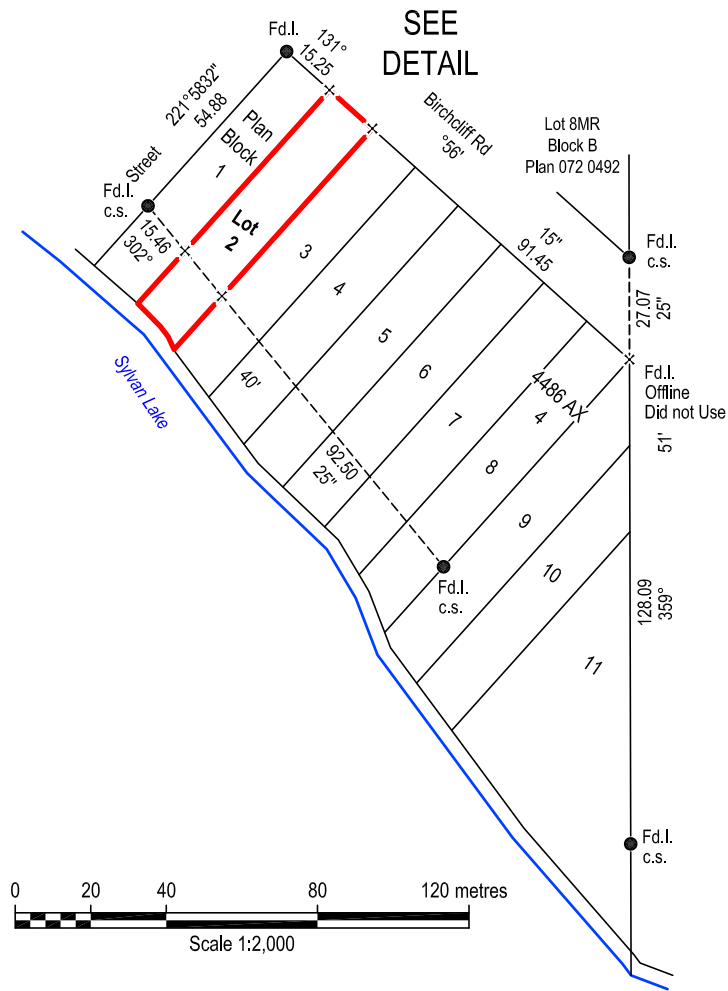
Civic Address:
71 Birchcliff Road
Summer Village of Birchcliff, AB

Legal Description
Lot 2, Block 4, Plan 4486 AX

SKETCH PLAN

SHOWING
SITE FEATURES

CIVIC ADDRESS: 71 BIRCHCLIFF ROAD
SUMMER VILLAGE OF BIRCHCLIFF, ALBERTA
LEGAL DESCRIPTION: LOT 2, BLOCK 4, PLAN 4486 AX



NOTES:

Distances shown are in metres and decimals thereof.
The area affected by registration of this plan is denoted thus —
And contains 0.117 ha (1 Lot)

11-4608 62nd Street
Red Deer, Alberta T4N 6T3
Office (403) 356-0111 Fax (403) 356-0114
www.compassgeomatics.ca

ALBERTA LAND SURVEYORS' ASSOCIATION
PERMIT NUMBER
P266
Compass Geomatics Ltd.

LEGEND:

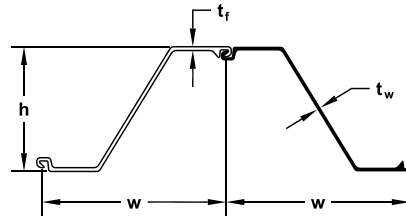
Eave Facia	---
Building Foundation	---
Property Line	---
Concrete	---
Wood Patio/Deck	---
Fence	X X
O/H Power Line	---
Traverse / Tie	---

REVISION SUMMARY

REV.	PAGE
Original Issue (08/20/20) DES/KF	1 of 1

AZ

AZ Hot Rolled Steel Sheet Pile



SECTION	Width (w) in mm	Height (h) in mm	THICKNESS		Cross Sectional Area in ² /ft cm ² /m	WEIGHT		SECTION MODULUS		Moment of Inertia in ⁴ /ft cm ⁴ /m	COATING AREA	
			Flange (t _f) in mm	Web (t _w) in mm		Pile lb/ft kg/m	Wall lb/ft ² kg/m ²	Elastic in ³ /ft cm ³ /m	Plastic in ³ /ft cm ³ /m		Both Sides ft ² /ft of single m ² /m	Wall Surface ft ² /ft ² m ² /m ²
AZ 12-770	30.31 770	13.52 344	0.335 8.5	0.335 8.5	5.67 120.1	48.78 72.6	19.31 94.3	23.2 1245	27.5 1480	156.9 21430	6.07 1.85	1.20 1.20
AZ 13-770	30.31 770	13.54 344	0.354 9.0	0.354 9.0	5.94 125.8	51.14 76.1	20.24 98.8	24.2 1300	28.8 1546	163.7 22360	6.07 1.85	1.20 1.20
AZ 14-770	30.31 770	13.56 345	0.375 9.5	0.375 9.5	6.21 131.5	53.42 79.5	21.14 103.2	25.2 1355	30.0 1611	170.6 23300	6.07 1.85	1.20 1.20
AZ 17-700	27.56 700	16.52 420	0.335 8.5	0.335 8.5	6.28 133.0	49.12 73.1	21.38 104.4	32.2 1730	37.7 2027	265.3 36230	6.10 1.86	1.33 1.33
AZ 18-700	27.56 700	16.54 420	0.354 9.0	0.354 9.0	6.58 139.2	51.41 76.5	22.39 109.3	33.5 1800	39.4 2116	276.8 37800	6.10 1.86	1.33 1.33
AZ 19-700	27.56 700	16.56 421	0.375 9.5	0.375 9.5	6.88 145.6	53.76 80.0	23.35 114.3	34.8 1870	41.0 2206	288.4 39380	6.10 1.86	1.33 1.33
AZ 20-700	27.56 700	16.57 421	0.394 10.0	0.394 10.0	7.18 152.0	56.11 83.5	24.43 119.3	36.2 1945	42.7 2296	300.0 40960	6.10 1.86	1.33 1.33
AZ 18-800	31.5 800	17.68 449	0.335 8.5	0.335 8.5	6.07 128.6	54.26 80.7	20.67 100.9	34.2 1840	39.7 2135	302.6 41320	6.82 2.08	1.30 1.30
AZ 20-800	31.5 800	17.72 450	0.375 9.5	0.375 9.5	6.66 141.0	59.50 88.6	22.67 110.7	37.2 2000	43.3 2330	329.9 45050	6.82 2.08	1.30 1.30
AZ 22-800	31.5 800	17.76 451	0.413 10.5	0.413 10.5	7.25 153.5	64.77 96.4	24.68 120.5	40.3 2165	47.0 2525	357.3 48790	6.82 2.08	1.30 1.30
AZ 23-800	31.50 800	18.66 474	0.453 11.5	0.354 9.0	7.12 150.6	63.56 94.6	24.22 118.2	43.3 2330	49.9 2680	404.6 55260	6.94 2.11	1.32 1.32
AZ 25-800	31.50 800	18.70 475	0.492 12.5	0.394 10.0	7.71 163.3	68.91 102.6	26.26 128.2	46.5 2500	53.8 2890	435.1 59410	6.94 2.11	1.32 1.32
AZ 27-800	31.50 800	18.74 476	0.531 13.5	0.433 11.0	8.31 176.0	74.26 110.5	28.29 138.1	49.7 2670	57.6 3100	465.5 63570	6.94 2.11	1.32 1.32
AZ 24-700	27.56 700	18.07 459	0.441 11.2	0.441 11.2	8.23 174.1	64.30 95.7	28.00 136.7	45.2 2430	53.5 2867	408.8 55820	6.33 1.93	1.38 1.38
AZ 26-700	27.56 700	18.11 460	0.480 12.2	0.480 12.2	8.84 187.2	69.12 102.9	30.10 146.9	48.4 2600	57.1 3070	437.3 59720	6.33 1.93	1.38 1.38
AZ 28-700	27.56 700	18.15 461	0.520 13.2	0.520 13.2	9.46 200.2	73.93 110.0	32.19 157.2	51.3 2760	60.9 3273	465.9 63620	6.33 1.93	1.38 1.38
AZ 28-750	29.53 750.0	20.04 509.0	0.472 12.00	0.394 10.00	8.09 171.2	67.73 100.80	27.53 134.40	52.3 2810	60.3 3245	523.9 71540	6.93 2.11	1.41 1.41
AZ 30-750	29.53 750.0	20.08 510.0	0.512 13.00	0.433 11.00	8.73 184.7	73.08 108.80	29.70 145.00	55.9 3005	64.8 3485	561.5 76670	6.93 2.11	1.41 1.41
AZ 32-750	29.53 750.0	20.12 511.0	0.551 14.00	0.472 12.00	9.37 198.3	78.44 116.70	31.88 155.60	59.5 3200	69.2 3720	599.0 81800	6.93 2.11	1.41 1.41
AZ 36-700N	27.56 700	19.65 499	0.591 15.0	0.441 11.2	10.20 215.9	79.72 118.6	34.71 169.5	66.8 3590	76.4 4110	656.2 89610	6.73 2.05	1.47 1.47
AZ 38-700N	27.56 700	19.69 500	0.630 16.0	0.480 12.2	10.87 230.0	84.94 126.4	36.98 180.6	70.6 3795	81.1 4360	694.5 94840	6.73 2.05	1.47 1.47
AZ 40-700N	27.56 700	19.72 501	0.669 17.0	0.520 13.2	11.54 244.2	90.16 134.2	39.26 191.7	74.3 3995	85.7 4605	732.9 100080	6.73 2.05	1.47 1.47
AZ 42-700N	27.56 700	19.65 499	0.709 18.0	0.551 14.0	12.22 258.7	95.51 142.1	41.59 203.1	78.2 4205	90.3 4855	768.4 104930	6.75 2.06	1.47 1.47
AZ 44-700N	27.56 700	19.69 500	0.748 19.0	0.591 15.0	12.89 272.8	100.74 149.9	43.87 214.2	81.9 4405	95.0 5105	806.6 110150	6.75 2.06	1.47 1.47
AZ 46-700N	27.56 700	19.72 501	0.787 20.0	0.630 16.0	13.56 287.0	105.97 157.7	46.14 225.3	85.7 4605	99.5 5350	844.9 115370	6.75 2.06	1.47 1.47
AZ 48-700	27.56 700.0	19.80 503.0	0.866 22.00	0.591 15.00	13.63 288.4	106.49 158.50	46.37 226.40	88.4 4755	102.1 5490	876.2 119650	6.70 2.04	1.46 1.46
AZ 50-700	27.56 700.0	19.84 504.0	0.906 23.00	0.630 16.00	14.30 302.6	111.73 166.30	48.65 237.50	92.2 4955	106.7 5735	914.6 124890	6.70 2.04	1.46 1.46
AZ 52-700	27.56 700.0	19.88 505.0	0.945 24.00	0.669 17.00	14.97 317.0	116.97 174.10	50.93 248.70	95.9 5155	111.3 5985	953.0 130140	6.70 2.04	1.46 1.46

AZ

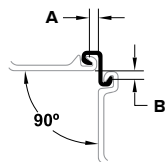
AZ Hot Rolled Steel Sheet Pile

Available Steel Grades

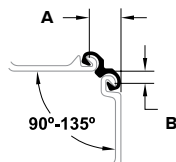
AMERICAN			CANADIAN			EUROPEAN			AMLoCor***		
ASTM	YIELD STRENGTH		CSA G40.21	YIELD STRENGTH		EN 10248	YIELD STRENGTH			YIELD STRENGTH	
	ksi	MPa		ksi	MPa		ksi	MPa		ksi	MPa
A 328	39	270	Grade 260 W	38	260	S 240 GP	35	240	Blue 320	46	320
A 572 Gr. 42	42	290	Grade 300 W	43	300	S 270 GP	39	270	Blue 355	51	355
A 572 Gr. 50	50	345	Grade 350 W	51	355	S 320 GP	46	320	Blue 390	57	390
A 572 Gr. 55	55	380	Grade 400 W	58	400	S 355 GP	51	355			
A 572 Gr. 60	60	415				S 390 GP	57	390			
A 572 Gr. 65	65	450				S 430 GP	62	430			
A 690	50	345				S 460 AP	67	460			
A 690*	57	390									

Highlighted fields represent the most commonly used and readily available steel grades. *Not available for AZ48/50/52-700. ** Corrosion resistant steel, check for availability

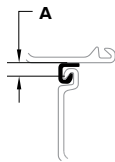
Corner Piles



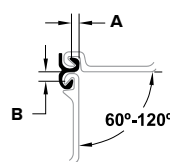
C 14/E 20
Gr: S 355 GP
Wt: 9.68 lb/ft
14.4 kg/m
A: ~0.98"
~25 mm
B: ~0.98"
~25 mm



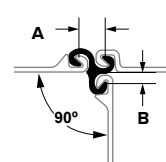
Omega 18
Gr: S 430 GP
Wt: 12.10 lb/ft
18.0 kg/m
A: ~2.76"
~70 mm
B: ~1.18"
~30 mm



E 22
Gr: S 355 GP
Wt: 6.87 lb/ft
10.2 kg/m
A: ~1.28"
~32.5 mm



Delta 13
Gr: S 355 GP
Wt: 8.8 lb/ft
13.1 kg/m
A: ~0.59"
~15 mm
B: ~0.79"
~20 mm



Larssen T
Gr: A 572 Gr. 60
Wt: 14.02 lb/ft
00 kg/m
A: 2.075"
5.27 mm
B: 0.914"
23.2 mm

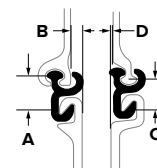


SKLC 90
Gr: A 572 Gr. 60
Wt: 8.50 lb/ft
12.6 kg/m
A: 4.09"
103.9 mm
B: 1.10"
27.9 mm
C: 2.05"
52.1 mm

Delivery Conditions & Tolerances

	ASTM A 6	EN 10248
Mass	± 2.5%	± 5%
Length	+ 5 in. - 0 in.	± 200 mm
Height		± 7 mm
Thickness		≤ 8.5 mm ± 0.5 mm > 8.5 mm ± 6%
Single Pile Width		± 2%
Double Pile Width		± 3%
Straightness		0.2% of the length
Ends out of Square		2% of the width

Transitional Piles



SKAP
Gr: A 572 Gr. 50/60
Wt: 8.95 lb/ft 13.3 kg/m
A: 1.97" 50.0 mm
B: 0.69" 17.5 mm
C: 1.61" 40.9 mm
D: 0.02" 0.5 mm

Maximum Rolled Lengths†

AZ	101.7 ft.	31.0 m
E 22	59.1 ft.	18.0 m
C 14	59.1 ft.	18.0 m
Delta 13	55.8 ft.	17.0 m
Omega 18	52.0 ft.	16.0 m

Delivery Forms



Single Pile
Position A



Double Pile
Form I Standard



Single Pile
Position B



Double Pile
Form II on Request

† Longer lengths may be possible upon request.



31 December 2020

File No: 20-480

Square Structures Ltd.
193 Grand Avenue
Norglenwold (Sylvan Lake), Alberta T4S 1S5

Attention: [REDACTED] – Principal

Dear Sir:

Re: Property Retaining Walls – New Home @ 71 Birchcliff Road, Birchcliff, Alberta

As requested, and further to our meeting on site last week, Cognidyn Engineering & Design have now completed a structural design review of applicable retaining wall systems for the noted property. It is our understanding that you wish to develop a 'walk-out basement' feature as part of a new home for the site, and need retaining walls at various locations to suit the work. To that end, we have the following comments and design recommendations for the retaining walls in question.

- 1) All the primary walls will consist of stacked, P/T 6x6 SPF No1 grade 'planking', set inside driven steel 'H-piles', on a bed of well drained gravel a nominal 4" thick and set about 8" below the finished interior grade.
- 2) All the piles shall be HP200x54 – 350W grade steel members, with shop primer or epoxy painted surfaces (where exposed), placed at various spacing relative to each other, depending on the retained depth of soil. The embedment depth of any and all the piles shall be the greater of 2.25 times the retained depth of soil, or 12' below the exposed lower surface of the finished grade. (For example, if the differential height of the ground is 5', then the pile shall be embedded $5 \times 2.25 = 11.25'$, rounded up to the minimum of 12', and the pile would thus be 17' long).
- 3) The 6x6 P/T planking shall be 'pinned together' with $\frac{1}{2}$ " diameter galvanized steel rods, set at maximum of 4' o/c and drilled a minimum of 1.5" into each successive plank (both up and down), but with a staggered pattern vertically. Lag bolts (min. 7" long) of the same diameter can also be used for this purpose. Note the following design chart:

Retained Backfill Depth:

Maximum Pile Spacings:

0' to 2'-0"
2'-1" to 3'-3"
3'-4" to 4'-6"
4'-7" to 5'-4"
5'-5" to 6'-6"
6'-7" to 7'-10"

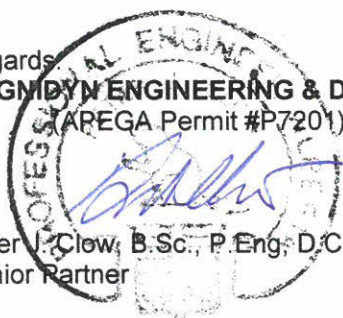
16'-0"
14'-0"
12'-0"
11'-0"
10'-0"
8'-0"

We trust this is to your understanding, and sufficient for your needs. Call if you have questions. We can be on site during the installation if required, and will complete a final framing review once in place if called for the the local AHJ.

Regards,
COGNIDYN ENGINEERING & DESIGN

(AREGA Permit #P7201)

Peter J. Clow, B.Sc., P.Eng, D.C.E.
Senior Partner





SmithDow
— & Associates Ltd. —

- Foundation and Geotechnical Engineering
- Soil Investigation and Site Assessment
- Slope Stability Reports
- Environmental Audits
- Material Testing: Soil, Asphalt, and Concrete

**71 Birchcliff Road
Summer Village of Birchcliff, Alberta**

File No: 71 Birchcliff Road

November 3, 2020



November 3, 2020

Square Structures
Red Deer, AB.

File: 71 Birchcliff Road

Attn: Jodi Neish

Re: 71 Birchcliff Road
Summer Village of Birchcliff, Alberta

At your request, we conducted a geotechnical investigation for the suggested residence home at the above referenced location on October 7, 2020.

The existing site sloped from the northeast to the southwest. A small cabin was present on the property at the time of site drilling. It is our understanding that the proposed new development will consist of a two storey structure with a walkout basement and an attached garage. The subject slope to the south was covered with mixed vegetation. The south-west facing downward slant contained various gradients as per the provided cross-sectional drawing.

The south-west facing slope was primarily flat to gentle, starting from Birchcliff Road. The slope began to decline at a steady gradient from the slope crest to the toe of the slope. A sharp slope drop off near the vicinity of the water's edge was noted. The existing structure will be removed to allow for the new house construction.

The existing rock retaining walls on the slope were deemed unsuitable and must be removed and reconstructed with professionally designed rock retaining walls. Once design of the new rock retaining walls are completed, we can review the new design and provide our comments.

The observed localized erosional features associated with the slope were considered part of a very slow process and posed no immediate threat to the existing slopes. Visible evidence of current or previous slope erosion was observed near the lake end of the property. This soil in the toe area of the slope is to be stabilized with a rip-rap system placed on geotextile filter cloth to minimize slope toe erosion and to maintain the slope stability.

The purpose of this investigation was to determine the general extent and nature of the subsurface materials encountered along with some basic engineering properties of the subsurface soil. Environmental studies are beyond the scope of this report.

Field Investigation

Two (2) bore holes were required at this site. The test holes were opened near the vicinity of the suggested building footprint. A drilling rig with continuous flight auger was utilized to drill the test holes. The approximate locations of the test holes are shown on drawing #1.

The holes were advanced incrementally by auguring approximately 1.6 meters into the ground and withdrawing soil on the auger vanes. All samples retained were carefully sealed to prevent moisture loss and subsequently taken to our Soil Mechanics Laboratory for further analysis.

The in-situ strength of the soil was determined in the field by conducting a series of standard penetration tests and obtaining the corresponding blow count - N values. Where cohesive materials were encountered, pocket penetrometer tests were performed.

Subsurface Features

A) Subsoil Conditions

The soil profiles, as logged at the borehole locations, are shown on drawing No.'s 2 through 3 inclusive, Appendix A. Results of field and laboratory tests are shown on the borehole logs.

The soil profile at the test hole areas consisted of fill material and native clay till. The geotechnical report should be read in conjunction with information provided in the attached soil logs.

Fill

Fill material thickness of approximately 100 millimeters was encountered at both test holes locations. The fill material was a mixture of grass, topsoil, silt and clay. One should be noted that the thickness and characteristics of the fill material may vary across the site. This is especially significant along the slope area and near the existing structures.

The fill material is unsuitable as foundation material to support any structural load. Exterior flatworks, brick / stoneworks, etc. resting on the on-site fill soil could experience some differential movement. Any fill material placed near the slope crest or along the slope will reduce the stability of the slope. All excavated soil during construction should be moved from the property.

Clay Till

Underlying the fill material was a native silty clay till deposit. The brown / olive brown colored native clayey soil was firm to stiff in consistency. The silty clay till was encountered at all borehole locations.

As drilled depth increased, the native clay till transitioned into a greyish color, and remained firm to stiff in consistency. The native silty clay till was characterized with stones, pebbles, rusting, coal fragments and bedrock fragments. Damp interlayers were noted at occasional elevations within the native clay deposit.

The on-site clayey soil with a plastic index of about 14.0% can be classified as inorganic clay with medium plasticity. It could have a low to medium potential to swell when in contact with water. It is imperative penetration of surface and subsurface water (such as pipe leakage) into the native clay subgrade soil should be prohibited. All subsurface plumbing work must be completed to the highest standard to prevent leaking. Any leakage could cause undesirable movement of the slab or exterior flatworks and reduce the stability of the slope.

B) Groundwater

No underground water was detected in each of the boreholes in the midst of site testing on October 7, 2020. Two (2) slotted PVC standpipes were installed in boreholes #1, and #2 locations for monitoring the groundwater levels. On October 27, 2020 the watertable measurement was recorded and summarized as follows in the table below.

Hole	Water Table Measurement Below Existing Grade
1	Dry
2	Dry

It should be noted that the water conditions were observed in a relatively short term and may not represent stabilized ground water readings. The groundwater table has the potential for short term upward fluctuations during periods of snow melt or precipitation. These seasonal fluctuations will impact subgrade support conditions and excavations.

C) Stability of Slope

Field observation revealed the south-west facing slope appeared to have no apparent signs of slope movement within the subject property with the exception of the erosion near the toe of the slope in the lake area. Though groundwater or seepage was not noticed on the slope surface neighboring the building site, the potential of seepage or springs cannot be wholly discounted of under all circumstances.

Slope stability analyses was carried out using the slope computer program (Geostudio) to evaluate the stability of the existing south-west facing slope angle with the construction of a residential structure. The slope stability analyses were to determine the factors of safety (FS) for various slip planes through compelling development features.

The slope factors of safety (FS) based on the new house constructed near the slope crest were analyzed.

The following conservatively assumed soil parameters were used:

Soil Type	Unit Weight (kN/m ³)	Cohesive Strength (kPa)	Angle of Internal Friction (degree)
Fill / Topsoil	15	0	10
Native Clay Till	22	10	32

Essentially, a factor of safety (FS) of less than 1 indicates that failure is expected. Given the possibility of soil variation, groundwater fluctuation, erosion and other factors, slopes with FS ranging between 1.0 and 1.3 are considered to be marginally stable. A “long term” stable slope to have a calculated FS of at least 1.5 is required for structures constructed at or near the slope.

On account of the present slope configuration, vegetation and a proposed new residence constructed a minimum from 5 meters from the slope crest, the stability of the single slope profile were analyzed under the following conditions.

- a) Under “normal” groundwater and existing slope conditions.

This first stage of the slope stability analysis of the existing slope confirms a long-term factor of safety (F.S.) of 3.460. This means the construction of the new building at a minimum of 5 meters from the slope crest is deemed stable. The F.S. of 3.460 exceed the minimum required FS of 1.5.

- b) The second stage of slope stability analysis was under the assumption of simulated high groundwater level at the single cross-section area.

The second stage of the slope stability assessment also confirmed a long-term factor of safety (FS) of 2.627 can be achieved. This F.S. of 2.627 also exceeds the minimum required FS = 1.5.

In order to maintain the stability of the slope, it is imperative the following should be adhered to:

- a) The erosion of the slope toe must be addressed and prevented.
- b) New rock retaining walls replacing the existing rock retaining walls should be properly designed and installed.
- c) Proper drainage and site grading must be maintained in order to maintain the stability of the slope.
- d) Confirmation of the exact building setback distance from the slope crest is required by our personnel during site preparation.

The following sections regarding recommendations for foundation construction, slab construction, soil compaction, the slope developments, slope toe erosion control, site grading, subsurface drainage, and different stages of site inspections as required must also be adhered to for maintaining the stability of the slope during and after construction.

Recommendations

A) Footings

- 1) All fill / organic material must be removed to expose the underlying natural clay till deposit. The exposed over-excavated area must be inspected and approved by our personnel.
- 2) All footings must be directly supported by the firm native clay till deposit.
- 3) Footing founded on the firm to stiff native clay till soil may be designed based on the factored resistance or serviceability bearing resistance values given in the following table:

BEARING RESTANCE FOR FOOTINGS

Soil Type	ULS (kPa)		SLS (kPa)
	Ultimate Resistance	Factored Resistance	
Native Silty Clay Till	250	125	90

The ultimate resistance values in this table are only based on semi-empirical data, therefore the factored resistance or serviceability bearing resistance should be used for the footing design. The “factored” resistance has been calculated by reducing the ultimate resistance values above by a geotechnical resistance factor of 0.5, in accordance with the building code.

- 4) Any fill material encountered within the footing zone must be completely removed to expose the underlying native clay. The exposed native clay must be inspected and approved by our personnel in writing. Replacement material should be concrete.
- 5) If construction is carried out during the winter, the foundation excavation must be protected against freezing of the subsoil at the footing grade. Under no circumstances shall concrete be placed on frozen soil.
- 6) For protection against frost action, exterior footing in continuously heated structures should be provided with a minimum depth of ground cover 1.5m. Insulation should be placed on the exterior of the footing wall. Isolated footing and exterior footing in unheated structures will require 2.5m of ground cover. Styrofoam insulation may be used to prevent frost penetration where adequate depths of ground cover cannot be economically provided.
- 7) Site classification for seismic site response is E for this specific site.
- 8) All exposed footing bases must be inspected and approved by our personnel to confirm the soil bearing strength (factored resistance or serviceability bearing resistance) prior to footing construction.

B) Concrete Floor Slab

- 1) A reinforced grade-supported slab should be received by a prepared subgrade soil and base gravel or radon rocks.
- 2) Proper preparation of the subgrade soil for the floor slab includes the following:
 - removal of all vegetation, organic soil, fill material, and construction debris to expose the firm to stiff native clay subgrade soil. The exposed excavation must be inspected by our representative for approval prior to proof-rolling.
 - re-compacting the exposed and approved native subgrade soil to at least 95% Standard Proctor Maximum Dry Density (S.P.M.D.D). Any soft subgrade soil encountered should be sub-excavated and replaced with low plastic clay. All replacement soil has to be compacted to at least 95% S.P.M.D.D.
- 3) A minimum of 200 millimeters of crushed gravel (minus 20 mm) or radon rock as required must be placed directly beneath the entire slab and above the re-compacted subgrade soil. The gravel must be uniformly compacted to at least 98% S.P.M.D.D.
- 4) Compaction tests should be conducted on replacement soil and slab base gravel or radon rocks to confirm adequate and uniform compaction has been achieved. Improper and non-uniform soil compaction could cause differential movement, deflection and cracking of the concrete slab.
- 5) All utility trenches must be backfilled with inorganic suitable soil. The inorganic acceptable soil must be compacted to at least 95% Standard Proctor Maximum Dry Density.
- 6) The slab base gravel, radon rocks, and subgrade soil must be protected from snow, freezing, excessive drying, rain and ingress of free water, during and after the construction to prevent any foundation movement.
- 7) It is imperative penetration of surface and subsurface water (such as pipe leakage) into the native subgrade soil must be prohibited. Water leaking below the concrete slab could soften the footing soil and affect the slope stability. It is imperative all subsurface plumbing work has to be completed to the highest standards.
- 8) Adequate perimeter and interior subsurface drainage must be provided to discharge all subslab water away from the building and towards positive outlets.
- 9) The above recommendations are for a continuously heated building with light floor loading.

C) Erosion Near Lake Area

Erosion was present near the slope toe of the lake side property at the time of site visit (see attached photos). Below is a general procedural guideline for the detected erosion near the slope toe.

- 1) Removal of all unstable soil to expose the suitable material. The removal of unstable soil has to be under our direct supervision to ensure all unsuitable soils are removed without affecting the slope integrity.
- 2) Upon removal of unsuitable soil and our approval, immediately cover the exposed area with geotextile filter cloth or burlap material and place a thick layer of rip rap gravel to replace the eroded area. The rip rap gravel should maintain a gentle slope and follow close to the existing slope contour to minimize further erosion.
- 3) Remove the concrete and wood debris near the toe areas and replace with rip rap.
- 4) It is imperative that the repaired eroded areas should be checked periodically and provide proper maintenance as needed to prevent further erosion.
- 5) All erosion control measures and repair work must be approved by the appropriate government departments.

D) Retaining Wall

- 1) All retaining walls must be properly designed by a qualified structural engineer to ensure they can withstand the following anticipated soil lateral pressures and over-burden load.
- 2) The lateral pressures are dependent on the soil type behind the wall, the wall orientation, exposure to frost action, the slope of the backfill away from the wall, and compactive effort used.
- 3) For the general case of a permanent vertical wall with horizontal backfill, lateral earth pressures may be computed using the following equation:

$$P = KQ + KrH$$

Where:

- P = Lateral earth pressure at depth H below ground level(kPa)
 Q = Surcharge loading at the ground surface (kPa.)
 K = Coefficient of lateral earth pressure
 r = Total unit weight of soil backfill compacted to at least 95% Standard Proctor Maximum Dry Density (KN/m³)
 H = depth below ground level (meters)

- 3) Recommended designed values for these parameters will depend on the type of backfill used. Recommended designed values are given below:

Lateral Earth Pressure Parameter		
Type of Backfill	Total Unit Weight (KN/m ³)	Coefficient of Lateral Earth Pressure K
Inorganic clay	19	0.6
Free draining granular material	21	0.4

The values given above are for backfill compacted to 95 % Standard Proctor Maximum Dry Density. If the density of the backfill is increased, the lateral pressures acting on the wall should be reviewed.

The following should also be considered in the wall design:

- 1) All backfill material should be moderately compacted to 90 % Standard Proctor Maximum Dry Density. Compaction tests should be conducted to confirm the percentage of compaction achieved.
- 2) Applicable surcharge loading should be applied if applicable.
- 3) It is imperative that proper steps be taken to prevent any water that infiltrates the backfill soil from accumulating behind the wall. If water is allowed to permeate the soil behind the wall, large additional pressures will be applied to the wall. Therefore, proper site grading must be provided to shed all surface water from the retaining area.
- 4) It is our understanding that two rock retaining walls are to be constructed above and near the erosion area to replace the two existing failing rock retaining walls.
- 5) The bottom rock retaining wall (nearest to the lake) shall maintain a minimum horizontal distance about 2 meters from the toe crest or 3 meters from the lake water edge.

E) Ground Water- Drainage

a) Around House Perimeters

A permanent subdrainage system (weeping tile drain) is recommended for the residential structure. The weeping tile should be placed around the outside perimeter of the basement walls to allow drainage of local groundwater and water trapped in backfill; and to reduce the hydrostatic pressures against foundation walls and floor slabs.

The weeping drain should be surrounded with granular material to minimize fine grained native soil migration into the drain. The drains shall be of a minimum 150 millimeter diameter, connected to sump pumps and provided with back flushing facilities and clean outs.

Infiltration flows into the weeping tile drains will depend on the surficial soil around the house. The largest flows will occur during periods of heavy precipitation and will be greatest for basements within sand or silt soils that are perched on top of lower permeable clay soils. Except for seepage through loose backfill, flows will not be instantaneous with precipitation. Groundwater infiltration flows can be significantly increased by poor site drainage around houses, improperly directed roof leaders and poorly compacted backfill.

b) Backfill Soil Compaction

In general, compaction of backfill soil in the following areas are advised to minimize seepage from the surface and surrounding areas.

- 1) All backfill soil along the perimeters of the foundation walls must be uniformly compacted in 0.3 meter lifts. This is especially important in the frost wall in the walkout basement area where groundwater can be trapped and soften the footing foundation soil. Each lift should be moderately compacted to 95% S.P.M.D.D. During compaction, caution must be exercised to prevent any damage to the foundation walls.
- 2) All backfill soil within the utility trenches must be properly compacted in 0.3 meter lifts to 95% S.P.M.D.D. As well, proper measures must be provided to prevent water from the surrounding areas seeping into the building and the subject property.
- 3) All surface areas outside the gravel trench drains in the lower plateau area should also be compacted to 95% S.P.M.D.D.
- 4) Any other excavated areas must also be properly re-compacted to 95% S.P.M.D.D.

c) Compaction Tests

Compaction tests must be conducted at each lift of backfill soil of about 300 millimeter lifts to ensure proper compaction has been achieved and warrant if additional compaction testing is required.

d) Site Grading

Proper site grading must be provided to direct all surface away from the buildings and the property.

In providing subsurface drainage and soil compaction, one should note these will only minimize on-site fill soil differential movement. Any exterior flatworks, brick works, fences, etc. supported by the on-site fill material could still experience some differential movement, deflection, or crackings. These are due to the thickness, quality, and compactness of the fill material will vary across the site. As well, the potential presence of undetected organic fill material within the on-site fill soil could be a factor.

F) General Slope Recommendations

The following general recommendations apply to residential development at this site.

- 1) In order to reduce the possibility of surficial sloughing, the slopes must be kept well vegetated at all times. The factor of safety of a slope will increase slightly as vegetation is maintained on the slope surface to protect the subgrade soil from weathering.
- 2) The native soil could be susceptible to erosion. Surface drainage and roof water must be discharged on the ground surface and kept away from the developed slope and the new building. No water is permitted to discharge below grade as that could cause erosion and potential slope failure.
- 3) All underground services should be installed to the highest standards to minimize the risk of seepage infiltration into the slope area due to leaking water.
- 4) No fill or excavated material from the building site (basement etc.) may be placed at the top of the slope.
- 5) Construction of such items as wooden decks and paved patios would be permitted.
- 6) Automatic sprinkler system, ornamental fountains, other water retaining structure are prohibited.
- 7) The finished site grade should be properly sloped to direct all surface water from the house and sloped areas. A minimum grade slope of 3% is advised at this site.

G) Foundation Concrete

Water soluble sulphate concentration tests were completed on two soil samples randomly collected from selected borehole locations indicated a water soluble concentration between 0.059% to 0.067%. In accordance with current CSA standards, the degree of sulphate exposure may be considered negligible and the use of sulphate resistant hydraulic cement is not required for concrete in contact with local soil. It is advisable water soluble sulphate concentration tests should be completed on any imported fill to verify the sulphate resistant requirements for concrete elements in contact with fill material.

Concrete element exposed to de-icing salts or other substances containing chlorides should be designed in accordance with an exposed concrete classification pertaining to concrete exposed to chloride attack. As well, subsurface concrete could be subject in seasonal saturated conditions. Air-entrainment should be incorporated into any concrete elements that are exposed to freeze-thaw to enhance its durability. In accordance with Clause 4.1.1.1 of CSA A23.1-19, where more than one exposure condition applies to concrete elements, the concrete shall be designed to meet the highest specified 28 day compressive strength, the lowest water-to-cementing materials ratio, the highest range in air content, and the most stringent cement type requirement.

H) Construction Monitoring

The engineering design recommendations presented in this report are based on the assumption that an adequate level of inspection will be provided during construction and that all construction will be carried out by a qualified contractor experienced in concrete and earthworks construction.

- for footing foundation -confirm the recommended soil bearing strength can be achieved at the footing elevation.
- for slab and flatworks -confirm all subgrade soil is acceptable prior to construction of the slab and exterior flatworks.
- for earthworks: -full time monitoring of soil compaction and testing.
- for concrete construction - testing of plastic and hardened concrete in accordance with CSA A23.1-19 and A23.3-19.

Closure

This report is based on the findings at the borehole locations. Should conditions encountered during construction appear to be different from those shown by the test holes, this office should be notified immediately so that we may reassess our recommendations on the basis of the new findings. Recommendations presented herein may not be valid if an adequate level of inspection is not provided during construction or if relevant building code requirements are not met.

Soil conditions, by their nature, can be highly variable across a construction site. The placement of fill during and prior to construction activities on a site can contribute to variable near surface soil conditions. A contingency should be included in the construction budget to allow for the possibility of variations in soil conditions, which may result in modification of the design, and / or changes in construction procedures.

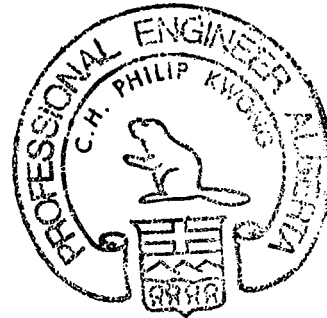
This report has been prepared for the exclusive use of Jodi Neish of Square Structures and her agents, for specific application to the development at 71 Birchcliff Road, Summer Village of Birchcliff, Alberta. Any use that a third party makes of this report, or any reliance or decisions based on this report, are the sole responsibility of those parties. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty is made, either expressed or implied.

Sincerely,

Smith Dow and Associates Ltd. (Red Deer)



Philip Kwong (P.Eng)



APPENDIX - A

SKETCH PLAN

SHOWING

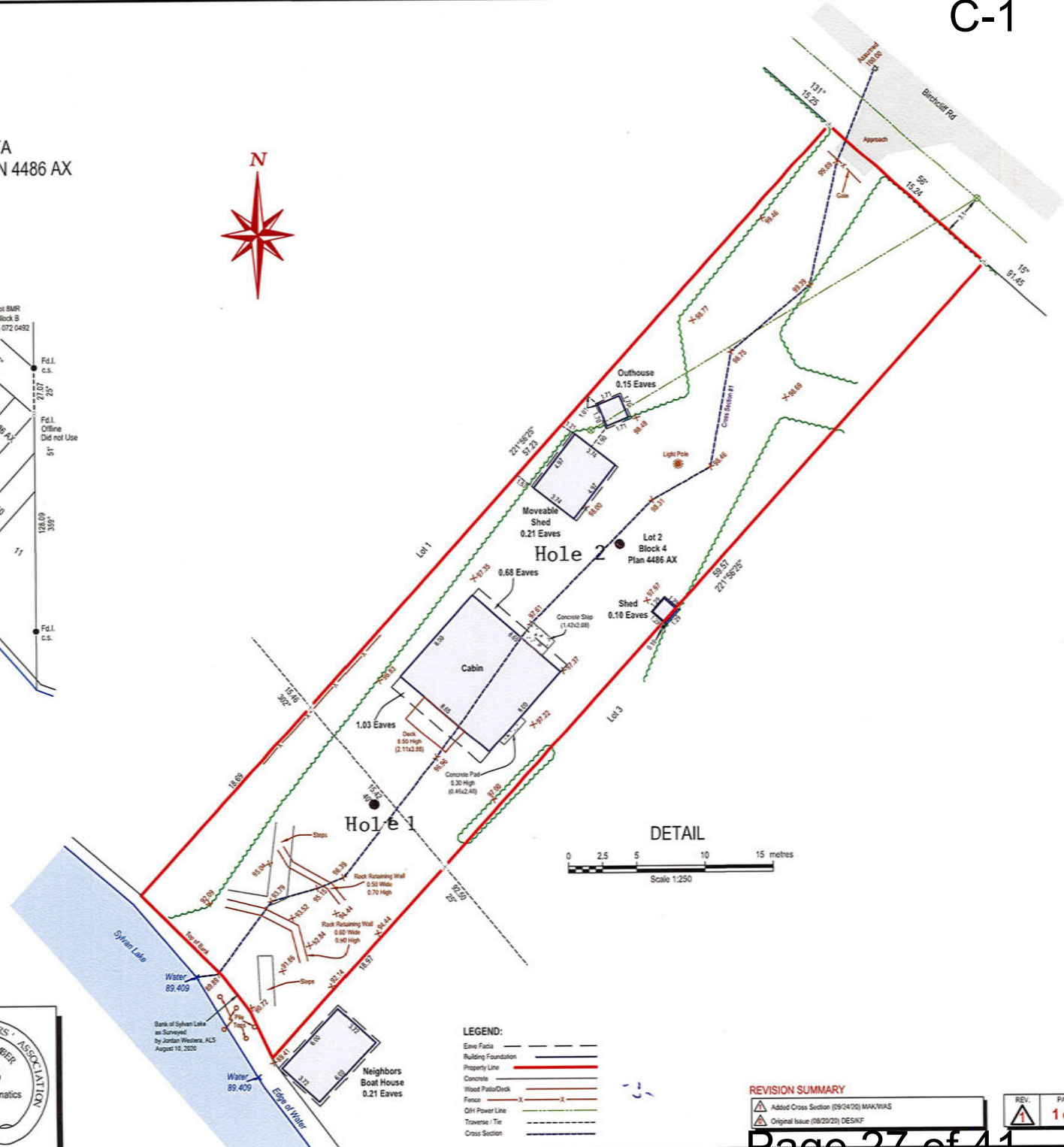
SITE FEATURES

CIVIC ADDRESS: 71 BIRCHCLIFF ROAD

SUMMER VILLAGE OF BIRCHCLIFF, ALBERTA

LEGAL DESCRIPTION: LOT 2, BLOCK 4, PLAN 4486 AX

C-1



NOTES:

Distances shown are in metres and decimals thereof.

The area affected by registration of this plan is denoted thus: ———

And contains 0.117 ha (1 Lot)

COMPASS
Geomatics Ltd.

11-4038 12nd Street
Red Deer, Alberta T4B 4T3
Office (403) 256-4111 Fax (403) 256-4114
www.compassgeomatics.ca



LEGEND:

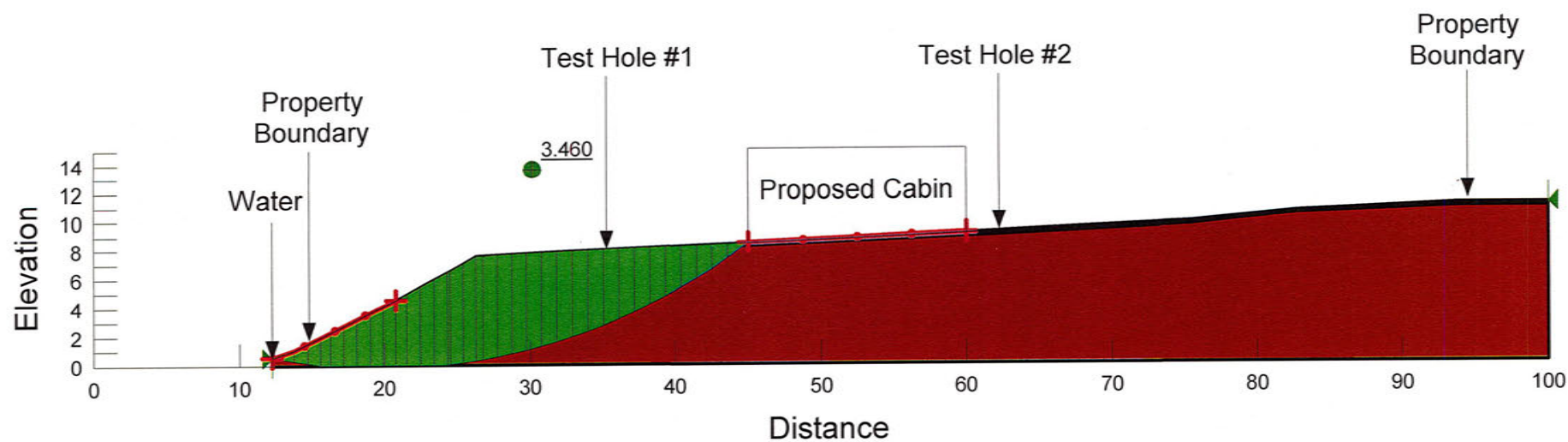
Eave Facia	---
Building Foundation	---
Property Line	---
Concrete	---
Wood Patio/Deck	---
Fence	---
OHV Power Line	---
Traverse / Tie	---
Cross Section	---

REVISION SUMMARY

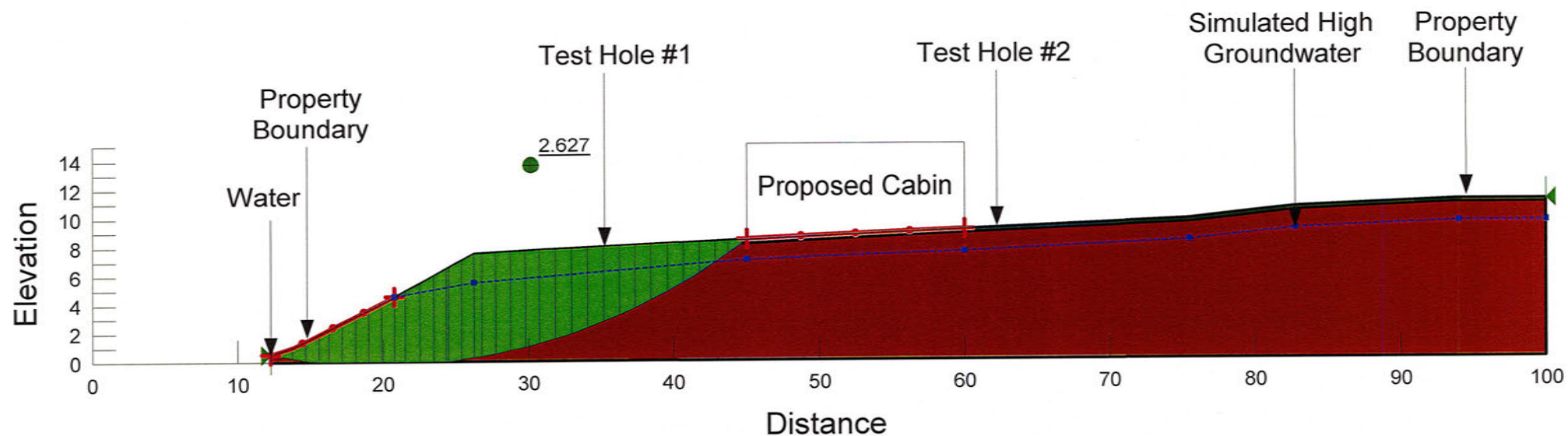
Added Cross Section (S9/04/00) MAK/VAS
Original Issue (S9/03/00) DES/KF

REV.	PAGE
1	1 of 2

71 Birchcliff Road
Summer Village of Birchcliff, Alberta
Cross Section #1



71 Birchcliff Road
Summer Village of Birchcliff, Alberta
Cross Section #1
Simulate High Groundwater



-----Engineering Consultants-----

Project: 71 Birchcliff Road
SV of Birchcliff, Alberta

DWN	HB	CKD	AK	DATE October 7, 2020	FILE #	HOLE 1
STRENGTH----- MOISTURE----- PENETRATION-----				▲ DATUM ● GROUND ELEV.-		Depth feet meters
				X CLASSIFICATION		
<p>The penetration chart shows blow counts (X) at various depths: - ~1.5 ft: X - ~5.5 ft: X - ~9.5 ft: X - ~14.5 ft: X - ~18.5 ft: X - ~26.5 ft: X - ~32.5 ft: X</p>				SYMBOL		TEST DATA
Topsoil 75mm, black, organic, grass, rootlets Clay Till roots,, brown, silty stones, low plastic, sand/silt specks rusting, coal fragments, tan stiff to medium dense, iron nodules small roots, bedrock fragments sand lenses, low to non-plastic olive/tan, coal & bedrock fragments white mineral deposits silt/sand specks low plastic, slightly clayey carbonates, stiff moist, pebbles to stones low plastic, coal & bedrock fragment white mineral traces olive/brown low plastic firm to stiff sand lenses to specks low plastic stiff, sand lenses, stones low to non-plastic, silt/sand low to medium plastic, coal specks damp, bedrock fragments, stones firm to stiff greyish olive, rust stains various sizes bedrock fragments greyish/olive stones, coal & sand specks olive grey, bedrock fragments				N=20 N=17 N=10 N=10 N=13 N=12		SAMPLE
End of Hole (Standpipe In)				Tube / Penetrometer X No Recovery		

FILL
TOPSOIL
SAND
SILT

CLAY
PEAT
GRAVEL
SILTSTONE

TILL
COAL
WATER
LIMITS

Q - Unconfirmed Strength, kN/m2
d - Dry Unit Weight, kN/m3
S - Sulphate Concentration, %
N - Penetration Resistance, blows

TEST HOLE LOG AND LAB DATA

DWG # 2



SMITH DOW & ASSOCIATES LTD.

-----Engineering Consultants-----

Project: 71 Birchcliff Road
SV of Birchcliff, Alberta

DWN	HB	CKD	AK	DATE	October 7, 2020	FILE #	HOLE	2	
STRENGTH ----- MOISTURE ----- PENETRATION -----				DATUM GROUND ELEV-		SYMBOL	TEST DATA	SAMPLE	Depth feet meters
▲ 100 200 300 400 500 ● 10 20 30 40 50 X 0 10 20 30 40 50 60 70 80 90 100				CLASSIFICATION					
5 10 15 20 25 30				Topsoil 75mm, organic silt, rootlets, grass Clay Till silty, tan pebbles, low plastic tan/golden brown, white mineral traces rust & sand specks, silty small boulder/rock, medium dense coal & bedrock fragments low plastic, rust specks firm, silty, coal fragments varying size bedrock fragments rust stains low to medium plastic olive brown bedrock & coal fragments firm olive/brown moist, white mineral traces low to medium plastic, bedrock frag firm to stiff rust specks & coal fragments grey mottles, sand/silt speck, stiff End of Hole (Standpipe In)		N=20 N=11 N=8 N=9	X X X X	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9

FILL	CLAY	TILL	Q - Unconfirmed Strength, kN/m2	Tube /
TOPSOIL	PEAT	COAL	d - Dry Unit Weight, kN/m3	Penetrometer X
SAND	GRAVEL	WATER	S - Sulphate Concentration, %	No Recovery
SILT	SILTSTONE	LIMITS	N - Penetration Resistance, blows	

TEST HOLE LOG AND LAB DATA **DWG # 4**

Smith Dow & Associates Ltd.

4632-62 Street

Red Deer, Alberta

Phone 403-343-6888

Fax 403-341-4710

Client

Jodi Neish

Project #

71 Birchcliff Road

Date

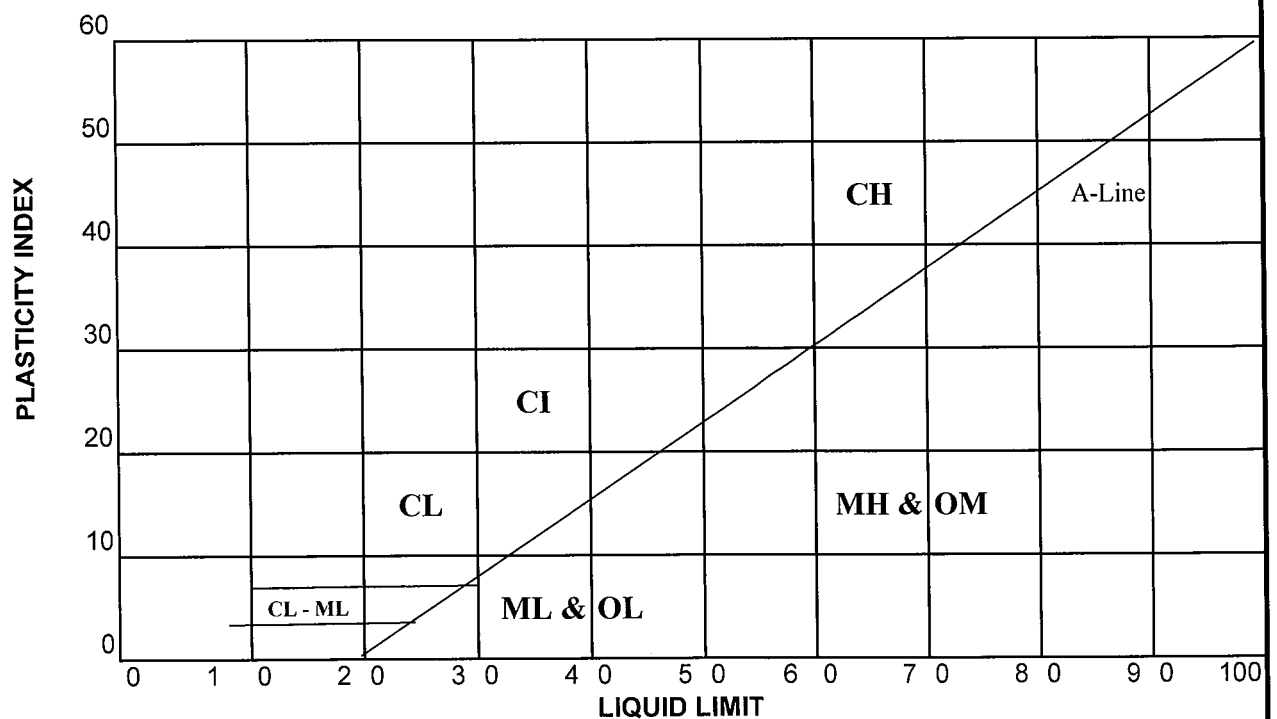
08-Oct-20

Location

Summer Village of Birchcliff, Alberta

Location	Depth (meters)	Liquid Limit	Plastic Limit	Plasticity Index	Flow Index
Hole #1	0.9	36.9	22.9	14.0	7.3

Location	Depth (meters)	Inherent Swelling Capacity	Soil Classification
Hole #1	0.9	Low/Medium	Inorganic Clay, Medium Plasticity



ATTERBERG LIMIT TEST - ASTM D4318







C-1



C-1





FEB 22 2021





FEB 22 2021





FEB 22 2021





Summer Village of Birchcliff – Municipal Planning Commission

March 1, 2021

Agenda Item

363 Birchcliff Road (Lot 12PT, Block -, Plan 6333KS)

Development Permit Application

Background:

Lakeview Contracting submitted an application on behalf of the registered owners for Landscaping/Mechanized Excavation located on the property of 363 Birchcliff Road (Lot 12PT, Block -, Plan 6333KS) in the Summer Village of Birchcliff. This property is located in the R1 District (Lakeshore Residential). The development proposed will take place on the escarpment of the property. Currently there are two sets of decks and stairs that are on the property, one is encroaching onto the neighbouring lot and the other is encroaching onto municipal land, both of these structures will be removed. In the documents provided, consent from the neighbour has been included. 8 trees will be removed from the escarpment and will be replaced along with other natural, native vegetation that includes a no mow zone.

Discussion:

This application is before MPC for the following reasons:

- Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
- Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.

Recommendation:

The Municipal Development Plan 6.3.4 states *“Birchcliff recognizes that remedial actions may be necessary from time to time, the village strongly desires that banks abutting the shoreline remain as natural as possible to retain natural ecosystems.”* The shoreline and bank measures appear necessary, and the proposed development show the escarpment to have natural/native landscaping with a no mow zone.

After reviewing all relevant planning and other statutory documents, it is the recommendation of administration to approve the application.

Conditions:

If approved, Administration would recommend the following conditions:

- Completions Deposit of \$5,000.00
- Vegetation to be planted according to the landscaping plan, including the minimum replacement of 8 trees, with a minimum 1m no mow zone adjacent to the lake.

February 19, 2021

- Future dwelling plans are to comply with the geotechnical report recommendations to ensure that the bank is protected and the development is safe.

Authorities:

The MPC may:

- Grant a variance to reduce the requirements of any use of the LUB and that use will be deemed to comply with LUB.
- Approve application even though the proposed development does not comply or is a non-conforming building if:
 - It would not unduly interfere with the amenities of the neighborhood, or
 - Materially interfere with or affect the use, enjoyment, or value of neighboring parcels of land, And
 - It conforms with the use prescribed for that land or building in the bylaw.
- Consider a Variance only where warranted by the merits or the proposed development and in response to irregular lot lines, parcel shapes or site characteristics which create difficulties in siting structures within the required setback or in meeting the usual bylaw requirements, except there shall be no variance for Parcel Coverage or Building Height.

For a discretionary use in any district:

- The Municipal Planning Commission may approve an application for a Development Permit:
 - With or without conditions;
 - Based on the merits of the proposed development, including it's relationship to any approved statutory plan, non-statutory plan, or approved policy, affecting the site;
 - Where the proposed development conforms in every respect to this Land Use Bylaw; or
- May refuse an application for a development permit based on the merits of the proposed development, even though it meets the requirements of the Land Use Bylaw; or
- Subject to provisions of section 2.4 (2), the Municipal Planning Commission shall refuse an application for a development permit if the proposed development does not conform in every respect to the Land Use Bylaw.

Decision:

In order to retain transparency of the Commission, Administration recommends one of the following:

1. Approve the application with or without conditions (*Section 642 of the MGA*), or
2. Deny the application stating reasons why (*Section 642(4) of the MGA*).

363 Birchcliff Letter of Intent

[REDACTED] have recently purchased the property located at 363 Birchcliff Rd. The intention is to eventually build a new dwelling on the property, however, a time line for that has not yet been determined. In anticipation of the future development and to address some of the immediate issues, an application is being made for bank stabilization.

In March of 2018 the Village administration had identified the escarpment on this property as being unstable and recommended that a consultant be contacted if remediation was desired. The owners at that time decided not to proceed with any works to the escarpment. After spending several months at the property with their young children, the [REDACTED]s have identified the instability and safety of the escarpment as a priority to address and engaged Parkland Geotechnical Consulting Ltd. to assess the current state of the slope and recommend actions that could be taken to help mitigate future failure of the slope and accommodate a future house build. Other issues identified include a failing/unsafe deck on the escarpment that needs to be removed, a lack of access to the lakeshore and the need for an area to safely and securely store equipment such as docks and boat lift. Currently the access to the lake and storage area are on a structure that is encroaching on summer village property which does not accommodate the installation of a dock and boat lift that is following new provincial requirements.

After a site visit with Parkland Geo's engineer, it was determined that the escarpment is showing signs of instability and imminent failure. A report was drafted documenting their findings and is included with the application package. The report states that the slope has short term stability but will eventually regress at the crest of the slope up to 4m, provided that ongoing erosion is prevented. In this failed state the slope would still be considered unsuitable for the construction of a dwelling above it.

Remediation suggestions include reducing the load at the top of the escarpment by flattening the slope or removing soil at the crest, installing retaining walls and placing rip rap to prevent future erosion of the bank.

Based on these recommendations as well as the needs and safety concerns of the owners, a plan was developed and reviewed with Parkland Geo to mitigate these issues and to stabilize the escarpment in a way that

is conducive to the environment in appearance and environmentally responsible. The use of an engineered system of natural stone retaining walls and removing soil from the crest of the slope would reduce the load on the escarpment and stabilize the slope, while accommodating the anticipated grade for a walk out basement in the future. AEP approved rip rap would also be installed to reduce erosion at the toe of the escarpment. Parkland Geo will be conducting site inspections during construction to monitor the works and ensure that site conditions are not compromised and neighbouring slopes are not affected by the construction or the removal of vegetation.

The retaining walls would not only help to stabilize the escarpment but will also allow for the installation of a dock system and boatlift that would be compliant with the new provincial requirements as well as create an area at the lakeshore to store a boat lift and docks. Stone steps would be incorporated in the wall system to allow access to the lakeshore. On the East end of the property there is an existing deck and retaining wall structure that is in a state of failure. This would be removed to eliminate the hazard and also accommodate the proposed mitigation. The area will be reinforced with boulders and revegetated. Eight mature poplar trees will also be removed during the project. The trees would be replaced along with the revegetation of any disturbed areas on the escarpment. The removal of any vegetation that may have an impact on the neighbouring slopes will be avoided.

It is our opinion that the proposed development would be adequate in addressing and meeting the needs and concerns of the [REDACTED]s and the summer village. The products chosen would help to make the development as natural as possible and would be consistent with other properties in the community. Maintaining a healthy lake is of great importance to both the proponent and the contractor. Care would be used to ensure that vegetation remains to the greatest extent possible and that responsible construction methods are practiced. With this in mind it is proposed to carry out the initial stages of the project in the winter while the ice is on the lake. This will allow access to the toe of the escarpment and eliminate the potential of siltation in the lake.

[REDACTED]
[REDACTED]

February 17, 2021

To Whom it may concern

As owners of 361 Birchcliff Road in the Summer Village of Birchcliff we have been approached by the neighbors at 363 Birchcliff Road to remove the encroaching deck as shown on the R.P.R. We understand, and agree, that the removal of this deck is necessary for the Owners of 363 Birchcliff Road to pursue remediation & stabilization of the shoreline & bank that have deteriorated.

James Oien



Danette Oien



Page 6 of 20

Paulgaard
363 Birchcliff Rd

C-2

8 Mature trees to be removed

Deck and stairs to be removed

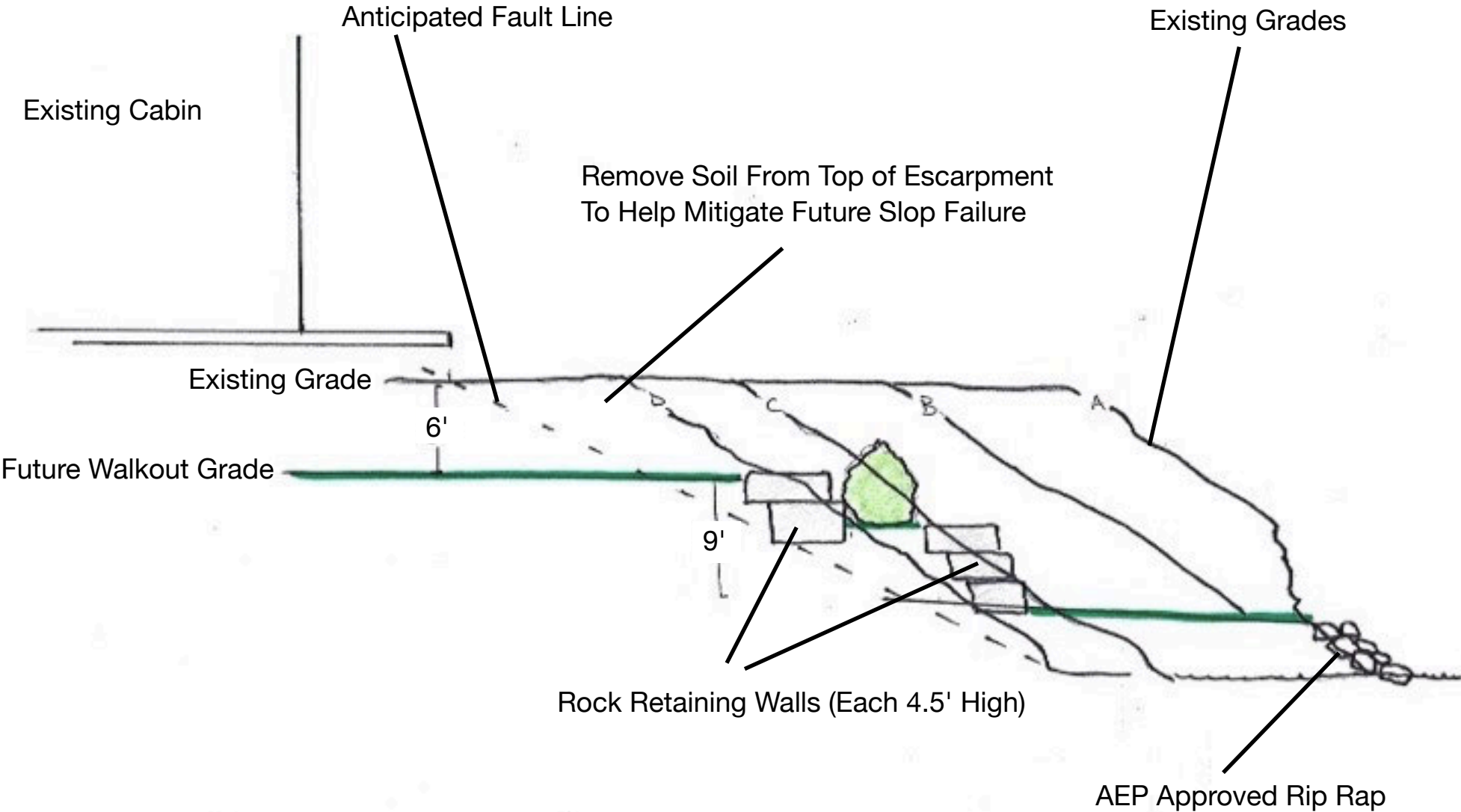
Property Line

Failing structure to be removed

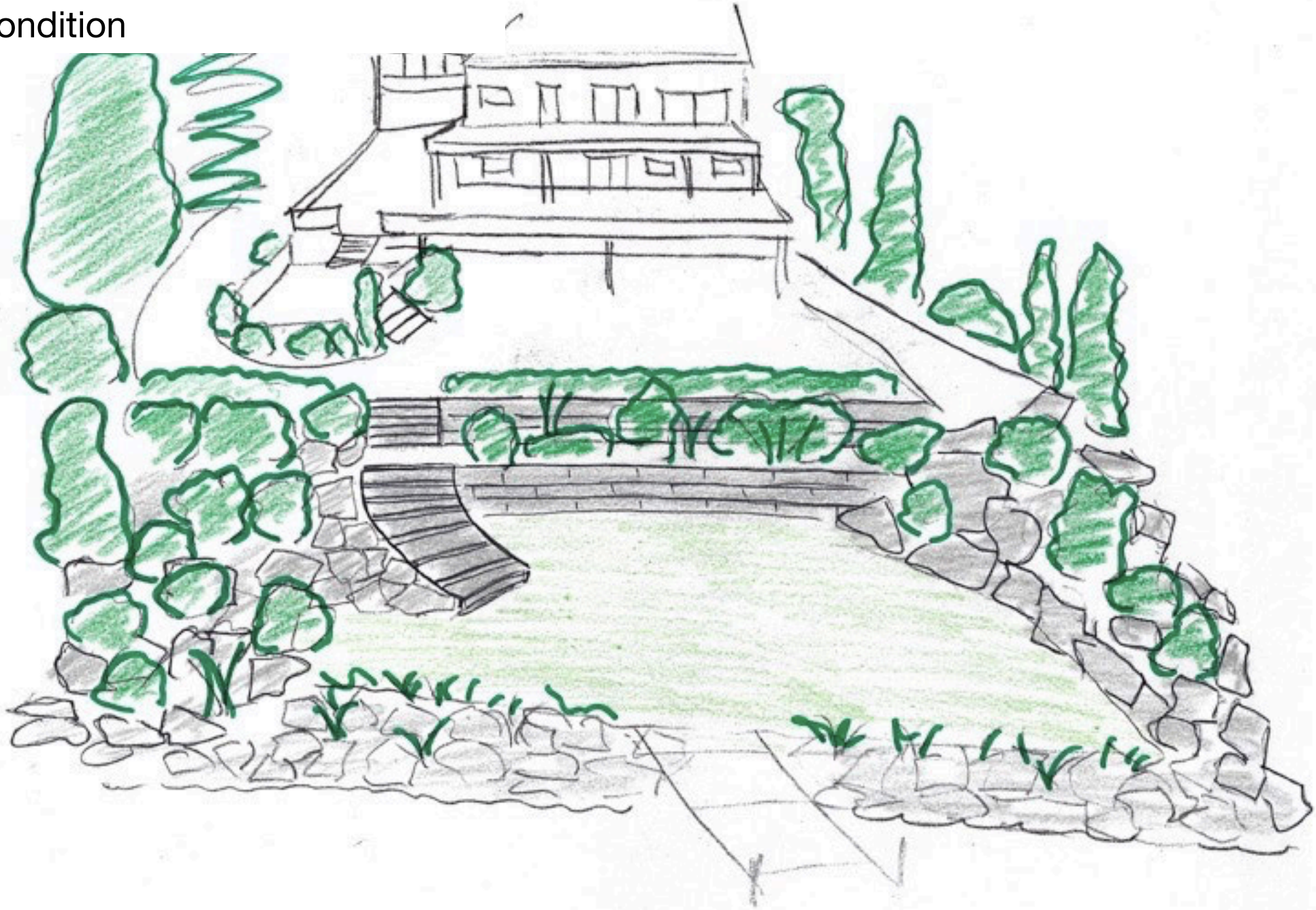
Property Line

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Parkland Geotechnical Consulting Ltd.
#102 – 4756 Riverside Drive
Red Deer, AB, T4N 2N7
www.parklandgeo.com
T: 403 343 2428
F: 403 343 7699

January 22, 2021
Project No. RD7303-01

[REDACTED]
Original will remain on file

[REDACTED]
[REDACTED]
[REDACTED] Alberta
[REDACTED]

Re: Slope Inspection
363 Birchcliff Road
Summer Village of Birchcliff, Alberta

Dear [REDACTED]

1.0 INTRODUCTION

Mr. Paulgaard purchased a property located at 363 Birchcliff Road in late 2020 that fronts onto Sylvan Lake. The attached letter from the Summer Village of Birchcliff, dated March 28, 2018, was provided during disclosure to notify the property owners of signs of potential instability of the lakeside slope bank. As a concerned homeowner, Mr. Paulgaard requested Parkland Geotechnical Consulting Ltd. (ParklandGEO) complete a visual inspection of the slope and provide comments regarding stability and potential remediation options. This geotechnical assessment is intended to provide the Owner with a reasonable expectation with respect to slope stability and the potential for slope movement; and to communicate the technical risks so that the Owner and the summer villager can make informed decisions relating to the site slopes.

2.0 SITE VISIT

Mr. Bryden Lutz, P.Eng. of ParklandGEO visited the site on December 14, 2020 and completed a visual inspection with Mr. Brian Engel of Lakeview Contracting and Mr. Paulgaard. The inspection consisted of observations from the crest of the slope and from the toe area on the frozen lake. The following observations were made during the site visit:

1. The property has an existing house set back about 5 m from the crest of the slope.
2. The slope is about 6 m high and generally has a constant grade of about 1.5 to 2.5H:1V.
3. The slope face is vegetated with native prairie grasses, shrubs, and birch trees.

4. Toe erosion resulted in a roughly 1.5 m vertical back slope about 25 m long on the east side of the slope. This area is offset towards the east property boundary and is not located below the house. The exposed soil profile was clay till overlying bedrock. The bedrock surface appeared to be roughly 0.6 m above the frozen lake elevation.
5. Directly above the toe erosion, vegetation has been undercut and is currently holding the immediate lower slope in place.
6. Evidence of tension cracks and slumping extending east from eroded toe area push out support column on neighbours deck (see attached photo).

3.0 DISCUSSION AND ASSESSMENT

Slope stability is dependent on a number of factors such as: slope geometry; groundwater and soil moisture conditions; and soil characteristics including soil strength. It is not uncommon to find slopes with very steep inclinations or even near vertical faces for relatively weak clay soils. This is an example of short-term stability based on short-term soil strength of the clay. The short-term stability of a slope is based on all of the potential strength factors available under current conditions. Under ideal conditions steep clay slopes are possible, but if conditions change like: removal of vegetation; wetting the slope face; erosion of toe support; or raising of the groundwater table, overly steep slopes will begin failing as the short term strength disappears. With proper management to avoid destabilizing factors, this short-term soil strength can be preserved and steepened slopes can be maintained for extended periods, but not indefinitely.

Slope stability is described in terms of a factor of safety (FS) against slope failure which is the ratio of total forces resisting failure divided by the sum of forces promoting failure. In general, a FS of less than 1 indicates that failure is expected and a FS of more than 1 indicates that the slope is stable. Given the possibility of soil variation, groundwater fluctuation, erosion and other factors, slopes with a FS ranging between 1.0 and 1.3 are considered to be marginally stable and a "long-term" stable slope is considered to have a FS of over 1.3. A slightly higher FS of 1.5 for slope stability is typically used for permanent structures which generally involve a higher level of risk.

The erosion at the toe of the slope and associated over steepening of the slope directly around this area is currently relying on short-term strength and will eventually regress to a stable slope configuration unless action is taken to stabilize it. In the long-term, the slope will like regress to a similar inclination as the surrounding natural slope, about 2H:1V, measured from the toe. Assuming on-going toe erosion is prevented, the crest of the slope above the erosion area could regress 2 to 4 m. This new crest point would have a long-term factor of safety of 1.0. A full slope analysis would be required to assess the impact to structure near the slope crest and is beyond the scope of this assignment.

There are a number of options that can be considered to remediate the slope and limit the risk movement. Remediation options includes: reconfiguration/ regrading of the slope (flattening of slope or removal of soil loading at crest); replacement of the eroded toe soils; and installation of retaining wall system. It is recommended that any remediation includes provisions to protect the toe of the slope from further erosion, such as toe armouring.

It is understood that the owner's preferred remediation plan includes a retaining wall system and toe armouring. This is considered to be reasonable to reduce risk to structures near the crest of the slope and risk of slope movement. Any changes to the slope configuration, such as regrading or retaining wall system, should include a detailed geotechnical slope stability investigation to limit the risk of detrimental changes impacting the structure near the crest of the slope. The next step in the phased geotechnical investigation would be an on-site drilling and groundwater monitoring program to allow for accurate verification of this assessment and detailed slope stability analysis for design of the retaining wall.

4.0 LIMITATIONS AND CLOSURE

The recommendations presented in this letter are based on site observations. The conditions are thought to be reasonably representative of the site. If conditions are which are believed to be at variance with the conditions described in this letter, this office should be contacted immediately.

This letter report has been prepared for the exclusive use of **Mr. Jonathan Paulgaard** and their approved agents for the specified application of the slope at 363 Birchcliff Road, Summer Village of Birchcliff, Alberta. Any use which a third party makes of this letter, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Parkland Geotechnical Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this letter. The recommendations in this letter should not be used for another development on this site nor any other site. If you have any questions about the information provided in this report, please do not hesitate to call this office.

Respectfully submitted,
PARKLAND GEOTECHNICAL CONSULTING LTD.

APEGA Permit to Practice No. P - 7312

Bryden Lutz, P.Eng.
Geotechnical Engineer

Steve Selst, MEM, P.Eng.
Responsible Member/ Reviewer



Photo #1: Shows Toe Erosion and slope movement pushing Deck Support Column (facing east)



Photo #2: Shows toe erosion and slope face (facing west)



Summer Villages Administration Office
Bay 8, 14 Thevenaz Industrial Trail
Sylvan Lake, AB T4S 2J5
Ph: (403) 887-2822 Fax: (403) 887-2897

March 28, 2018

RE: BANK INSTABILITY – 363 BIRCHCLIFF ROAD

Last winter, our office took photos of the shoreline along the Summer Village. The bank at the front of your property shows concerning signs of instability. The purpose of this letter is to inform you of our concern, and recommend you access your current bank stability to confirm you are not in a position for the bank to slump. If you wish to repair, please hire a consultant.

Please note, if you wish to repair, permits are required from the Summer Village office and Alberta Environment and Parks. Please visit the websites below for additional information:



- Riparian Rights and Shoreline Modifications - <http://aep.alberta.ca/water/education-guidelines/documents/RiparianRightsShorelineModification-FS.pdf>
- Respect Our Lakes - <http://aep.alberta.ca/water/programs-and-services/respect-our-lakes/default.aspx>
- Water Act Forms - <http://aep.alberta.ca/water/forms-applications/water-act-forms.aspx>
- Development Permit Application - http://www.sylvansummervillages.ca/uploads/8/8/0/5/88056186/complete_dp_application_package_ngw_with_brochure.pdf

Should you require further information, you may contact the development department at 403-887-2822 or development@sylvansummervillages.ca.

Respectfully,

Koralyn Lemmon, Development Officer

The use of this attached report is subject to the following general terms and conditions.

1. **STANDARD OF CARE** - In the performance of professional services, ParklandGEO used the degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same or similar localities. No other warranty expressed or implied is made in any manner.
2. **INTERPRETATION OF THE REPORT** - The CLIENT recognizes that subsurface conditions will vary from those encountered at the location where borings, surveys, or explorations are made and that the data, interpretations and recommendation of ParklandGEO are based solely on the information available to him. Classification and identification of soils, rocks, geological units, contaminated materials and contaminant quantities will be based on commonly accepted practices in geotechnical or environmental consulting practice in this area. ParklandGEO will not be responsible for the interpretation by others of the information developed.
3. **SITE INFORMATION** - The CLIENT has agreed to provide all information with respect to the past, present and proposed conditions and use of the Site, whether specifically requested or not. The CLIENT acknowledged that in order for ParklandGEO to properly advise and assist the CLIENT, ParklandGEO has relied on full disclosure by the CLIENT of all matters pertinent to the Site investigation.
4. **COMPLETE REPORT** - The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to ParklandGEO by the CLIENT, communications between ParklandGEO and the CLIENT, and to any other reports, writings or documents prepared by ParklandGEO for the CLIENT relative to the specific Site, all of which constitute the Report. The word "Report" shall refer to any and all of the documents referred to herein. In order to properly understand the suggestions, recommendations and opinions expressed by ParklandGEO, reference must be made to the whole of the Report. ParklandGEO cannot be responsible for use of any part or portions of the report without reference to the whole report. The CLIENT has agreed that "This report has been prepared for the exclusive use of the named CLIENT. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ParklandGEO accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report."

The CLIENT has agreed that in the event that any such report is released to a third party, the above disclaimer shall not be obliterated or altered in any manner. The CLIENT further agrees that all such reports shall be used solely for the purposes of the CLIENT and shall not be released or used by others without the prior written permission of ParklandGEO.

5. **LIMITATIONS ON SCOPE OF INVESTIGATION AND WARRANTY DISCLAIMER**
There is no warranty, expressed or implied, by ParklandGEO that:
 - a) the investigation uncovered all potential geo-hazards, contaminants or environmental liabilities on the Site; or
 - b) the Site is entirely free of all geo-hazards or contaminants as a result of any investigation or cleanup work undertaken on the Site, since it is not possible, even with exhaustive sampling, testing and analysis, to document all potential geo-hazards or contaminants on the Site.

The CLIENT acknowledged that:

- a) the investigation findings are based solely on the information generated as a result of the specific scope of the investigation authorized by the CLIENT;
 - b) unless specifically stated in the agreed Scope of Work, the investigation will not, nor is it intended to assess or detect potential contaminants or environmental liabilities on the Site;
 - c) any assessment regarding geological conditions on the Site is based on the interpretation of conditions determined at specific sampling locations and depths and that conditions may vary between sampling locations, hence there can be no assurance that undetected geological conditions, including soils or groundwater are not located on the Site;
 - d) any assessment is also dependent on and limited by the accuracy of the analytical data generated by the sample analyses;
 - e) any assessment is also limited by the scientific possibility of determining the presence of unsuitable geological conditions for which scientific analyses have been conducted; and
 - f) the laboratory testing program and analytical parameters selected are limited to those outlined in the CLIENT's authorized scope of investigation; and
 - g) there are risks associated with the discovery of hazardous materials in and upon the lands and premises which may inadvertently discovered as part of the investigation. The CLIENT acknowledges that it may have a responsibility in law to inform the owner of any affected property of the existence or suspected existence of hazardous materials and in some cases the discovery of hazardous conditions and materials will require that certain regulatory bodies be informed. The CLIENT further acknowledges that any such discovery may result in the fair market value of the lands and premises and of any other lands and premises adjacent thereto to be adversely affected in a material respect.
6. **COST ESTIMATES** - Estimates of remediation or construction costs can only be based on the specific information generated and the technical limitations of the investigation authorized by the CLIENT. Accordingly, estimated costs for construction or remediation are based on the known site conditions, which can vary as new information is discovered during construction. As some construction activities are an iterative exercise, ParklandGEO shall therefore not be liable for the accuracy of any estimates of remediation or construction costs provided.
 7. **LIMITATION OF LIABILITY** - The CLIENT has agreed that to the fullest extent permitted by the law ParklandGEO's total liability to CLIENT for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in anyway relating to the Project is contractually limited, as outlined in ParklandGEO's standard Consulting Services Agreement. Further, the CLIENT has agreed that to the fullest extent permitted by law ParklandGEO is not liable to the CLIENT for any special, indirect or consequential damages whatsoever, regardless of cause.
 8. **INDEMNIFICATION** - To the fullest extent permitted by law, the CLIENT has agreed to defend, indemnify and hold ParklandGEO, its directors, officers, employees, agents and subcontractors, harmless from and against any and all claims, defence costs, including legal fees on a full indemnity basis, damages, and other liabilities arising out of or in anyway related to ParklandGEO's work, reports or recommendations.

Rock Sample





FEB 22 2021





FEB 22 2021





FEB 27 2021



Summer Village of Birchcliff – Municipal Planning Commission

Agenda Item

553 Birch Close (Lot 15, Block 1, Plan 0224592)

Development Permit Application

Background:

The homeowner of 553 Birch Close (Lot 15, Block 1, Plan 0224592) in the Summer Village of Birchcliff submitted a complete application for a recently constructed accessory building. This property is in the R2 District (Backlot Residential).

The accessory building meets the front and side yard setbacks, it also meets the height requirement. The proposed lot coverage is 23% and under the maximum 30% with the accessory building being 154 ft.². The Land Use Bylaw states that accessory building's combined footprints shall be no larger than 6% of the parcel's total area, to a maximum of 2200 ft², all 5 of the accessory building's footprint totals 578ft², which is a footprint of 0.8% on a parcel with an area of 66,646.8 ft². Regarding the other 4 accessory buildings, none of the 4 meet the rear yard setback of 15.24m (50ft.) and 2 of them meet the side yard setbacks. These would be considered non-conforming buildings which require to be reviewed regardless when new development takes place even if they were constructed prior to the current Land Use Bylaw regulations.

Discussion:

This application is before MPC for the following reasons:

- The total number of accessory buildings proposed to remain on the parcel is 5, the maximum amount on an unsubdivided parcel shall not be more than 2 accessory buildings, therefore requires a variance.
- The proposed rear yard setback of 14.32m (47ft.) does not meet the minimum 15.24m (50ft.) setback, therefore a variance of 0.91m (3ft.) is required.

Recommendation:

A “discretionary use” means a use which may be compatible with other uses in the district, for which a Development Permit may be issued upon an application having been made. Based on the size of the lot, and the size of the accessory buildings combined being well below 6%, it is in our opinion that this will not unduly interfere with the amenities of the neighborhood or materially interfere with or affect the use, enjoyment, or value of neighboring parcels.

My recommendation for a smaller lot may not have been the same but as the size of the lot is large, I would recommend approving the variances requested for the accessory buildings. A variance shall be considered with irregular parcel lines, parcel shapes or site characteristics. After viewing the application and all relevant planning documents, it is the recommendation of administration to approve the application as a discretionary use with the variances requested.

Conditions:

February 17, 2021

If approved, Administration would recommend the following conditions:

- An accessory building erected or placed on a parcel shall not be used as a dwelling unit.
- Electrical power from the property line to any buildings situated on this parcel to be constructed underground.
- The exterior of an accessory building must be finished to match or compliment the exterior finish of the main building.
- The other 4 accessory buildings will be considered non-conforming.
- When a future garage/accessory building is constructed, the number of accessory buildings on the parcel shall meet the number of accessory buildings permitted in the Land Use Bylaw.
- Completions Deposit of \$500.00

Authorities:

The MPC may:

- Grant a variance to reduce the requirements of any use of the LUB and that use will be deemed to comply with LUB.
- Approve application even though the proposed development does not comply or is a non-conforming building if:
 - It would not unduly interfere with the amenities of the neighborhood, or
 - Materially interfere with or affect the use, enjoyment, or value of neighboring parcels of land, And
 - It conforms with the use prescribed for that land or building in the bylaw.
- Consider a Variance only where warranted by the merits or the proposed development and in response to irregular lot lines, parcel shapes or site characteristics which create difficulties in siting structures within the required setback or in meeting the usual bylaw requirements, except there shall be no variance for Parcel Coverage or Building Height.

As per the MGA, a non-conforming building:

- means a building: (i) that is lawfully constructed or lawfully under construction at the date a land use bylaw affecting the building or the land on which the building is situated becomes effective, and (ii) that on the date the land use bylaw becomes effective does not, or when constructed will not, comply with the land use bylaw.
- May continue to be used but the building may not be enlarged, added to, rebuilt or structurally altered except: to make it a conforming building; for routine maintenance of the building; if the development authority considers it necessary; or in accordance with a land use bylaw that provides minor variance powers to the development authority for the purposes of this section.
- Is damaged or destroyed to the extent of more than 75% of the value of the building above its foundation, the building may not be repaired or rebuilt except in accordance with the land use bylaw.

Decision:

February 17, 2021

In order to retain transparency of the Commission, Administration recommends one of the following:

1. Approve the application with or without conditions (*Section 642 of the MGA*), or
2. Deny the application stating reasons why (*Section 642(4) of the MGA*).

Letter of Intent

To whom it may concern:

To accompany my application for a development permit I would like to include this letter of intent pertaining to the development of a shop or structure in the future.

Currently with inflated building costs due to Covid-19 and the uncertainty of employment I have decided to hold off on the erection/construction of a shop. I am currently looking at different shop options and materials that would suit my needs. At this point I'm thinking we are looking at 5-10 years out for construction but could be sooner if the right fit is found.

I've asked the Junior Development Office for building recommendations as the village land use bylaw isn't clear on materials or styles of accessory buildings allowed. I will be submitting some different options to her for approval should I find a fit.

Jason McDonald

February 8, 2021

Parcel Calculations

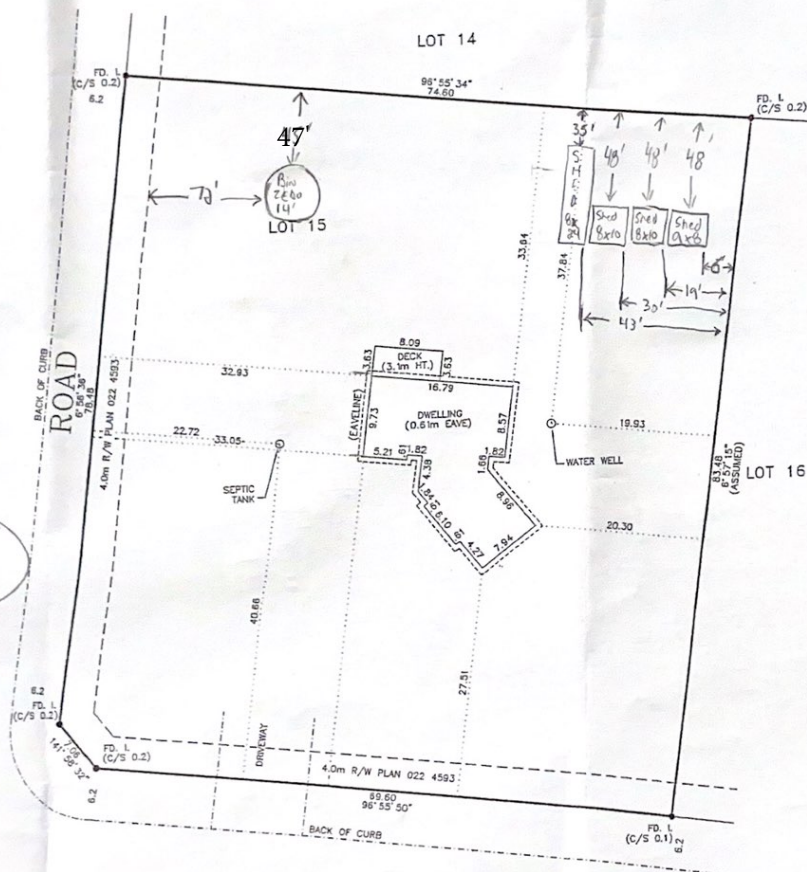
Divanay = .125 ACRE

Rear Parking - .175 Acre

House .067 Acre

Fire pit & Binzebo Area = .063 Acre

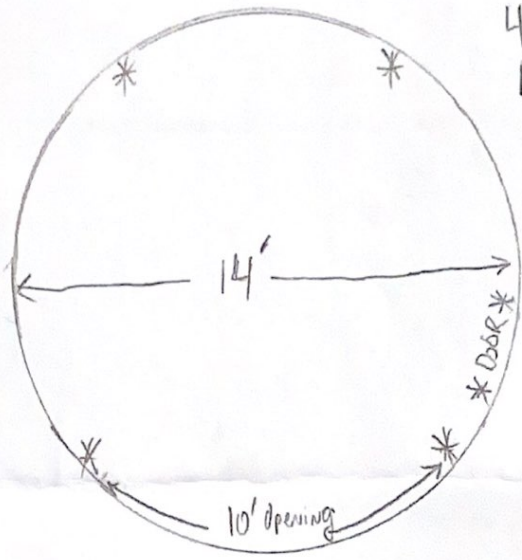
Total =	.375 Acre 25%
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BIRCH CLOSE

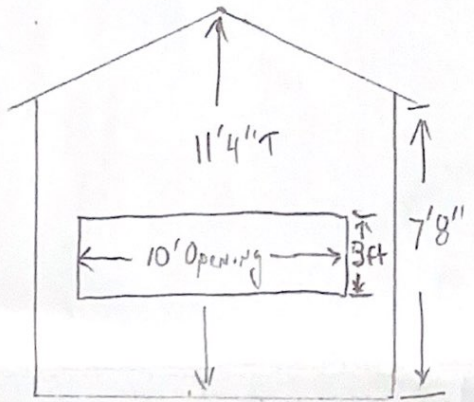
Legend:
 Right of Way ---- R/W
 Found Iron Post ---- FD.
 Found No Mark ---- FD. NO
 Metre ---- m
 Countersunk ---- C/S
 Fenceline ---- X X X X

Top View

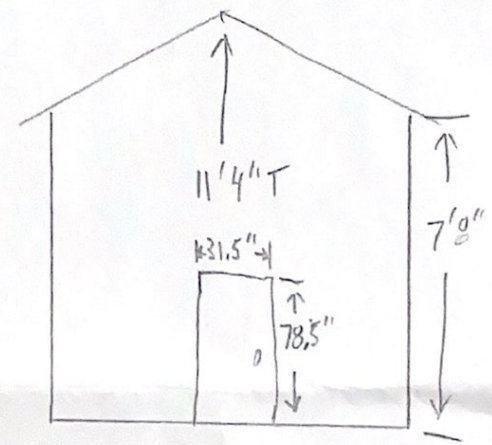


* Represents
4" Support Posts
Running full Height of
walls. This Adds Structural Support
for Door & sliding opening.

Front View



Side View



JAN 05 2021



JAN 08 2021





JAN 08 2021





JAN 08 2021





JAN 08 2021



