MUNICIPAL PLANNING COMMISSION AGENDA
SUMMER VILLAGE OF BIRCHCLIFF
SUMMER VILLAGES ADMINISTRATION OFFICE
JUNE 16, 2021 @ 2:30 P.M.

A. CALL TO ORDER

B. ADOPTION OF AGENDA

C. DEVELOPMENT ITEMS

1) 83 Birchcliff Road
2) 383 Birchcliff Road

D. ADJOURNMENT

Summer Village of Birchcliff – Municipal Planning Commission

Agenda Item

83 Birchcliff Road (Lot 4&5, Block 3, Plan 4486AX)

Development Permit Application

Background:

Lakeview Contracting Inc. submitted a complete application for escarpment work and boathouse repairs on behalf of the homeowner for 83 Birchcliff Road (Lot 4&5, Block 3, Plan 4486AX) in the Summer Village of Birchcliff. This property is in the R1 District (Lakeshore Residential). The proposed development is to repair the boathouse and to construct two retaining walls on the escarpment to accommodate storage of a boat lift and dock. The boathouse is in the state of failure with large cracks in the floor and walls, the roof of the structure will be removed and the soil around the walls will be removed to allow installation of screw piles to provide a foundation. Forms will then be put in place around the exterior of the existing walls and 8 inches of concrete is to be poured to reinforce the walls. The roof would then be reinstalled, and the exterior of the building will be cladded with new materials. Existing stairs beside the boathouse encroaching onto the adjacent property will be removed and replaced to no longer encroach and 15 shrubs and two trees will be replanted to replace those removed. The two retaining walls will be constructed with a precast concrete block with each wall being approximately 5.5ft. tall.

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 bank abutting the shoreline remain as natural as possible to retain natural ecosystems."* It clearly states in the geotechnical report that the slope appears to have no signs of erosion.

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"*.

The boathouse is considered to be a non-conforming building meaning it was 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. In our current Land Use Bylaw, an accessory building on a parcel abutting Sylvan Lake shall be situated so that it is not closer to the front parcel boundary and the top of any escarpment area or high water mark than the front wall of the main building or 15m whichever is least.

Based on the Municipal Government Act section 643 (5),
"a non-conforming building may continue to be used but the building may not be enlarged, added to, rebuilt or structurally altered to except: to make it a conforming building, and for routine maintenance of the building; if the development authority considers it necessary."
(6) *"If a non-conforming building 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.*

After reviewing all relevant planning and other statutory documents, it is the recommendation of administration to deny the application. The retaining walls and grass areas for storage require bank re-grading that is not necessary, and the boat house repairs are significant and in administration's opinion are not considered to be routine maintenance of the building.

Conditions:

If approved, Administration would recommend the following conditions:

- Completions Deposit of $4,000.00
- 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.

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.

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:

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).*

Lakeview CONTRACTING Inc.

PO Box 9045, Sylvan Lake, Ab. T4S 1S6
Phone: (403) 340-2778 Fax: (403) 887-4955

April 15, 2021

SV of Birchcliff
Bay 8 - 14 Thevenaz Industrial Trail
Sylvan Lake, AB T4S 2J5

Re: Letter of Intent for [redacted] of 83 Birchcliff Rd.

[redacted] of 83 Birchcliff Rd. is applying for a development permit to repair a failing boathouse structure and to construct two retaining walls to accommodate storage of a boat lift and docks. The property is 100 feet wide and has approximately 70% of the escarpment in a natural state. On the north west end of the escarpment there is a boathouse and stairs to access the shoreline.

The boat house is in a state of failure that is very evident. Photos will show the large cracks in the walls and floor. A structural engineer was consulted and has given a letter of recommendation. After a site visit and conversations with the engineer our proposal for repair of the building is as follows.

The roof of the structure will be removed and reused. Once removed, the soil around the walls can be removed to allow for the installation of screw piles. Forms would be put in place around the exterior of the existing walls and 8 inches of concrete would be poured to reinforce the failing walls. The previously mentioned screw piles would provide the foundation. The roof would then be reinstalled and the exterior of the building will be cladded with new materials.

Currently the stairs that are used to access the entrance of the boathouse are encroaching on the neighbouring property. They will be removed and this area will be revegetated with shrubs to aid in the stabilization of the escarpment and bring it back to a more natural state. New stairs will be constructed alongside of the building, making them compliant with setbacks from the property line.

With the current overhang of the roof, adding 8” to the exterior walls would not increase the existing footprint of the boathouse with the overhangs. Existing walls and materials that can be salvaged and retain their structural integrity will remain or be reused.

It is proposed to install the two engineered retaining walls on the escarpment in order to create an area to safely store the lift and docks through the winter months. This new grassy area would also act as the staging area for the dock in the summer and would ensure compliance with the new requirements from the province for setbacks from property lines with the docks and lift.

The retaining walls will be constructed with Verti Block, a precast concrete block that is formed to have a natural rock appearance. Each wall will be approximately 5.5 feet tall. Composite stairs will allow access to the two-tiered grass areas created. With the stairs located to the South East end of the wall 26 feet of space will remain for the storage of the lift and 2 stacks of docks.

Most of the vegetation that will be lost is caragana, which are considered to be an invasive species. In addition to the caragana, two large poplars will be lost. A minimum of 15 shrubs and two trees will be planted on the property to compensate for the loss of this vegetation. To help maintain environmental integrity a 1m no-mow zone will remain along the top of the bank behind the AEP approved riprap.

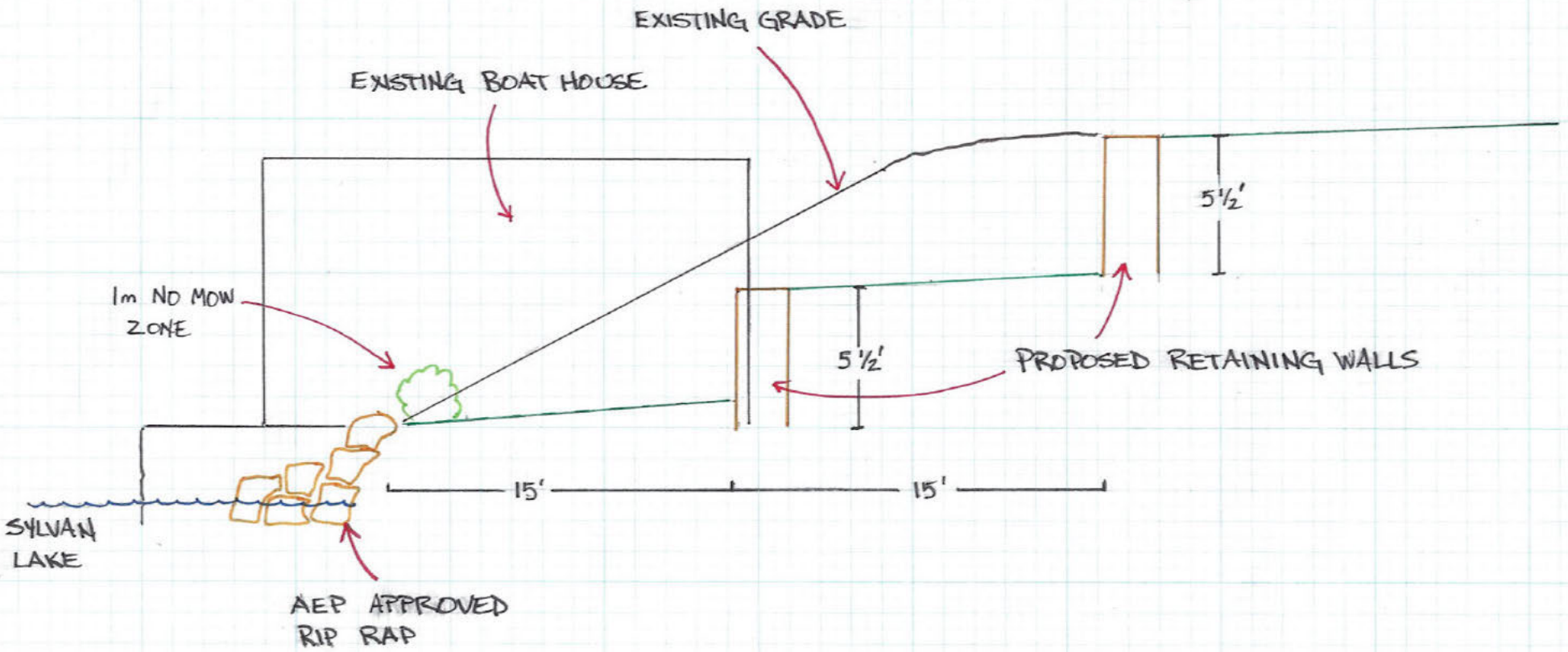
Care has been taken to consider not only the environmental impact of this project to the area but the visual as well. The Verti Block product has been used on other projects in the neighborhood with positive feedback, and the structures are located central on the property so the lift and docks will be stored with a maximum setback from neighboring property lines. This will minimize the visual imposition on the adjacent lots. It will also maximize personal space and privacy to the neighbours throughout the year.

We look forward to your recommendations and questions. Respectfully submitted, Brian Engel

[redacted] WALL CROSS SECTION

C-1

83 BIRCHCLIFF RD.

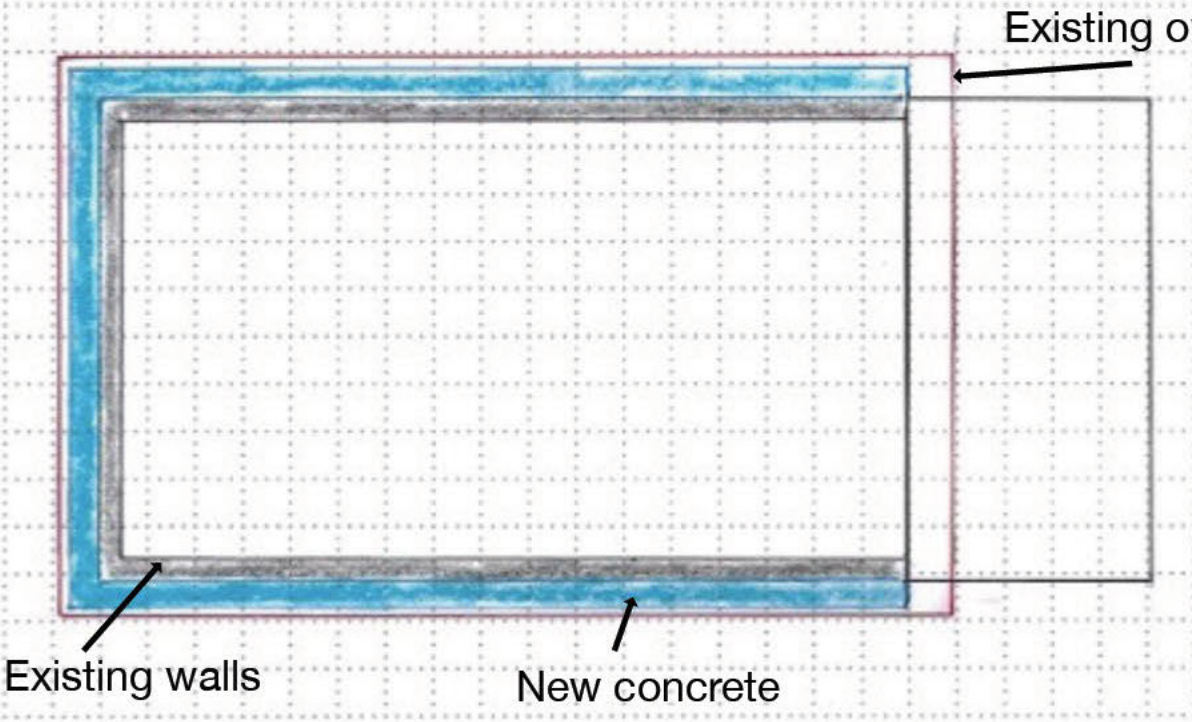


MAR 31 /21

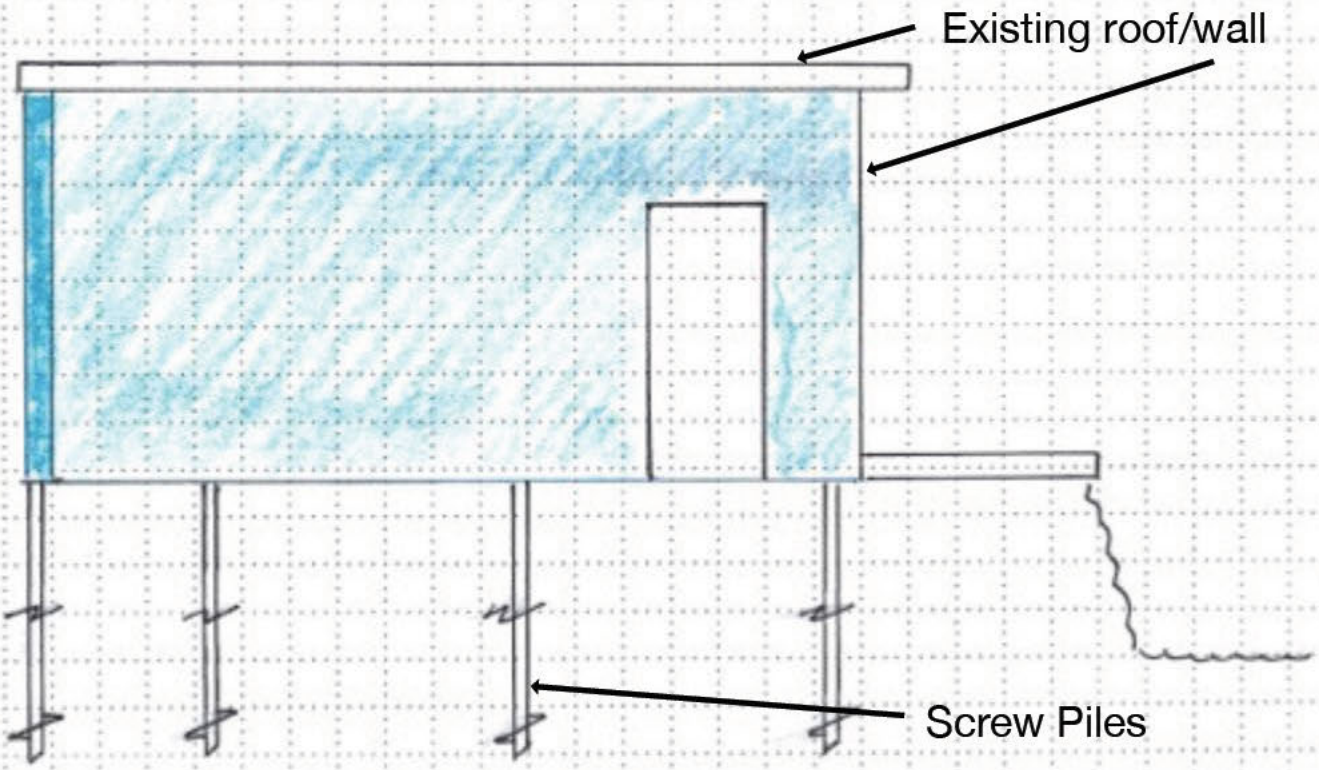
[redacted]

Boathouse Repair

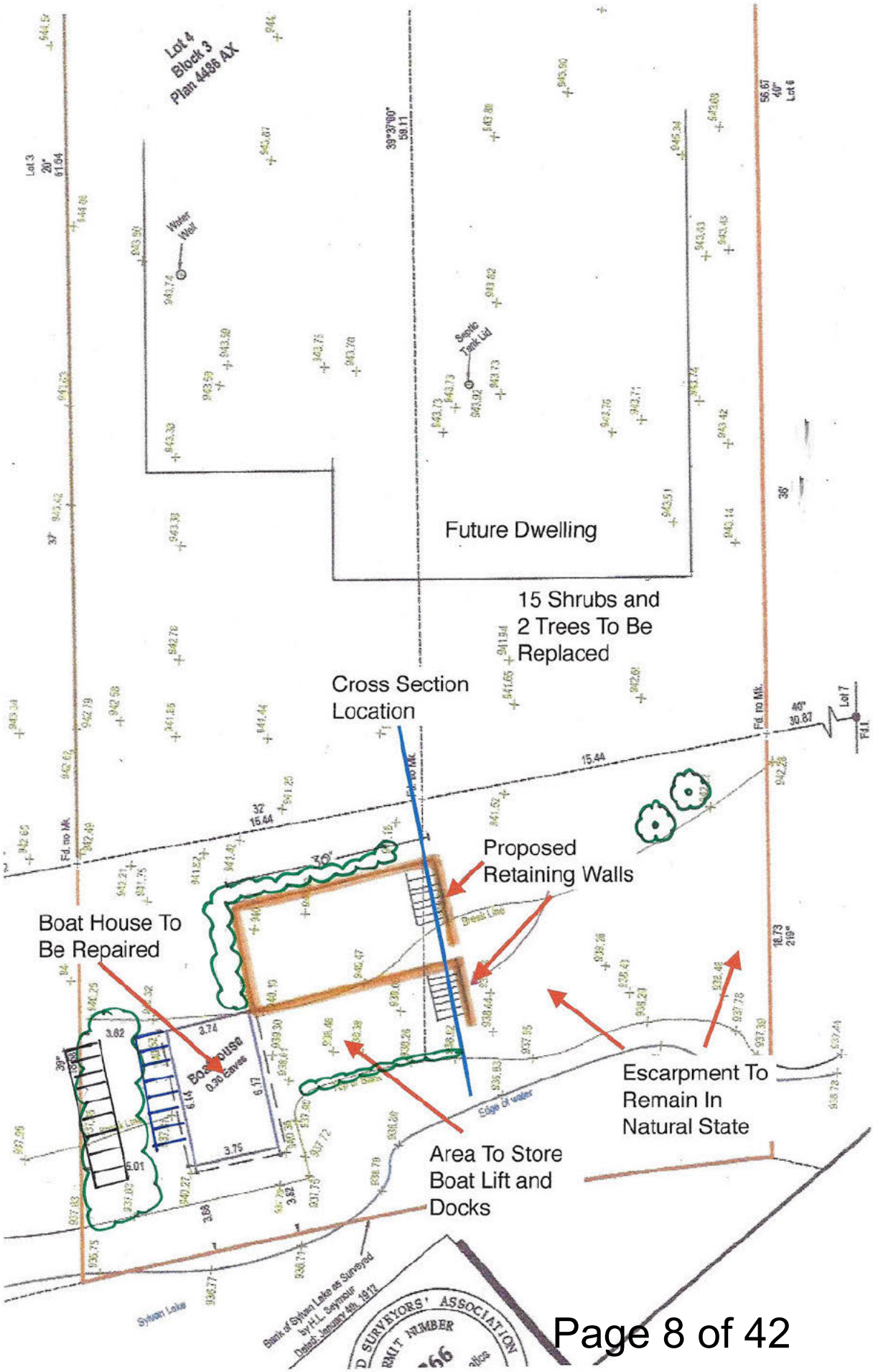
Plan View

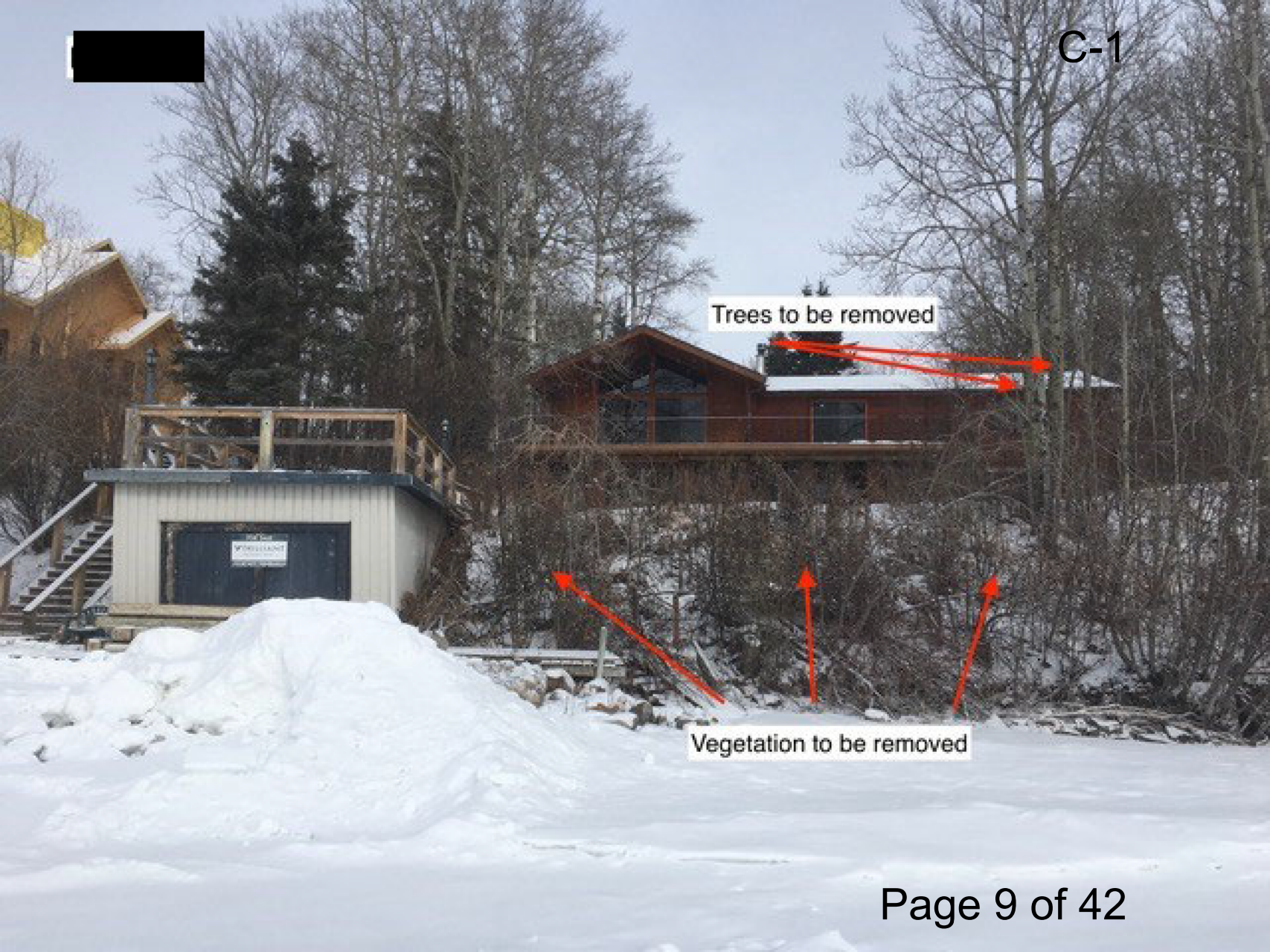


Elevation View



[redacted]
83 Birchcliff Road




C-1
Trees to be removed
Vegetation to be removed


C-1
Loss of vegetation due to erosion
Undercutting of bank due to erosion

[redacted] Extent of Works

Area to be revegetated

Construction Area

A DIVISION OF COGNIDYN INCORPORATED
COGNIDYN ENGINEERING & DESIGN
BUILDING CONSULTANTS
#150, 2810 Bremner Avenue, Red Deer, Alberta T4R 1M9 Phone: 403-342-5757

INSPECTION MEMO

Date: 15 April 2021 **File No: 21-159**

To: Bill Robinson @ Sorento Custom Homes **From: Peter Clow, P.Eng**

Re: Existing Boathouse @ 83 Birchcliff Drive, Birchcliff (Sylvan Lake), AB.

As requested, Cognidyn Engineering & Design, represented by the undersigned engineer, met with you on site at the noted premises last Friday morning. The purpose of the visit was to review and structurally assess the existing conditions and details of the small boathouse that fronts the lake, and give an opinion as to the overall integrity of the building. It is generally understood that a professional opinion regarding the structure is needed to confirm whether or not such buildings can be repaired or be rebuilt.

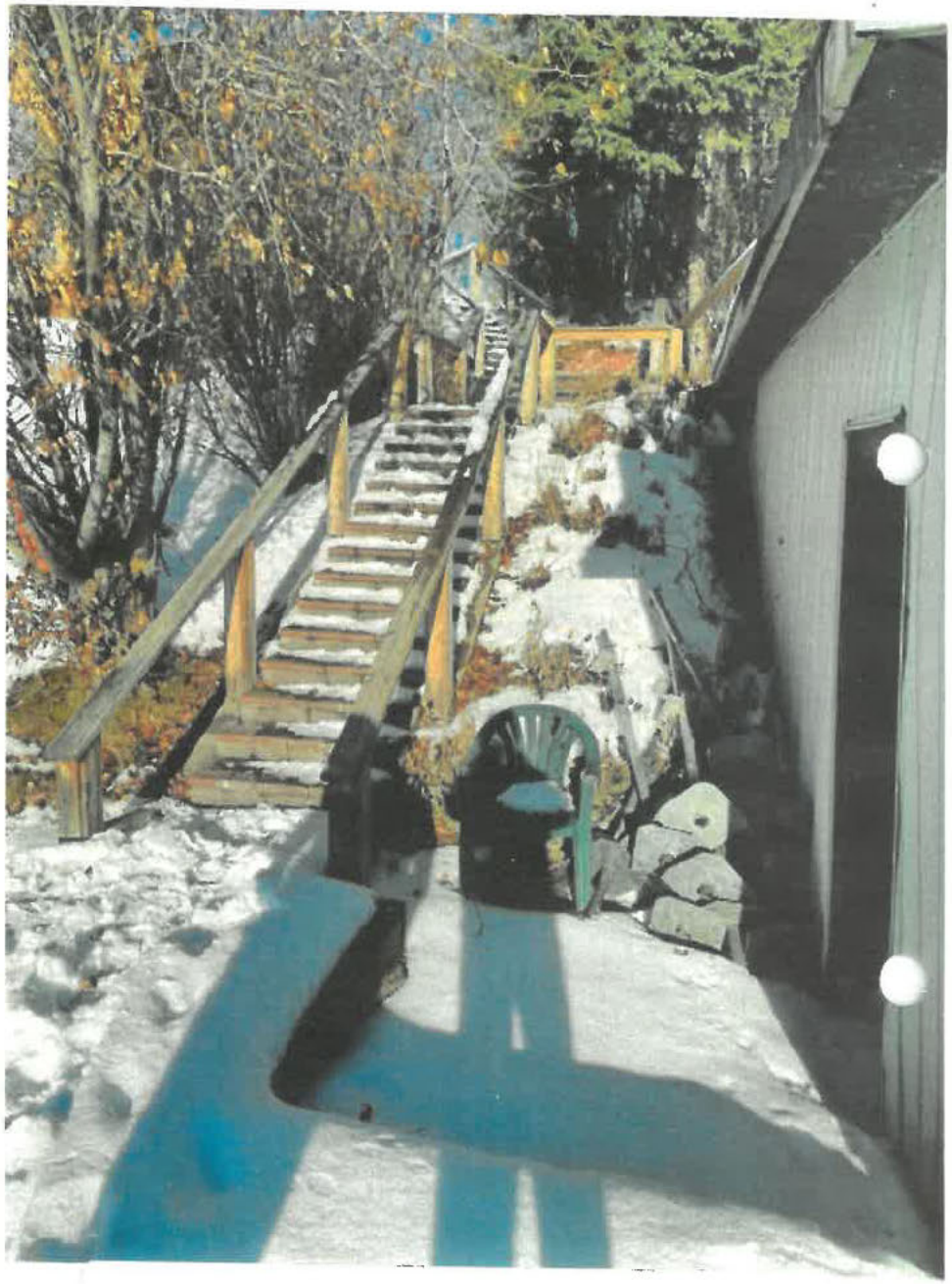
Based on the physical evidence available, it was quite obvious to the undersigned that the main structural elements of the boathouse have been compromised, as significant slab cracking and badly displaced concrete block walls are evident in multiple locations. Given the extent of these damages, 'repair' of those elements is not feasible in our view, and we would suggest that keeping them is unwise and unsafe. Having noted that, the roof and overlying deck system appear to be in much better condition, and could potentially be salvaged if removed from the block walls with 'kit gloves' under care. Upon doing so however, it would not be surprising to find additional damage and possible wood rot in the elements that are not currently visible. If that were the case, the entire structure should be rebuilt from scratch.

In summation, we would formally support the plan to rebuild the boathouse from the foundation level up, including the walls and doors, yet reuse the roof and deck framing if possible. Let us know if you require any further help from an engineering perspective.

Regards:
COGNIDYN ENGINEERING & DESIGN
(APEGA Permit #7201)

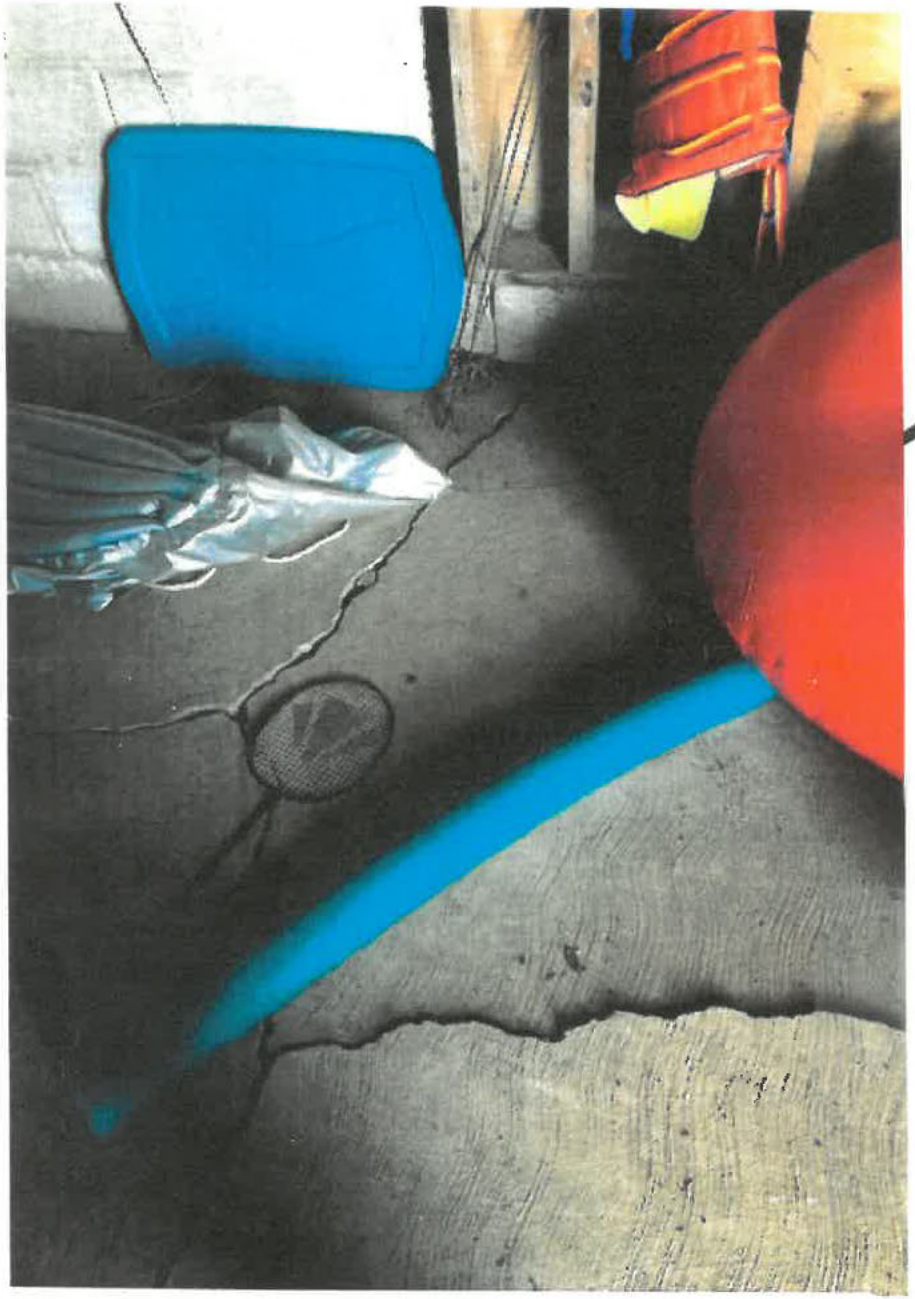
Peter J. Clow, B.Sc., P.Eng, D.C.E.
Senior Partner

Boat House - Lake Side

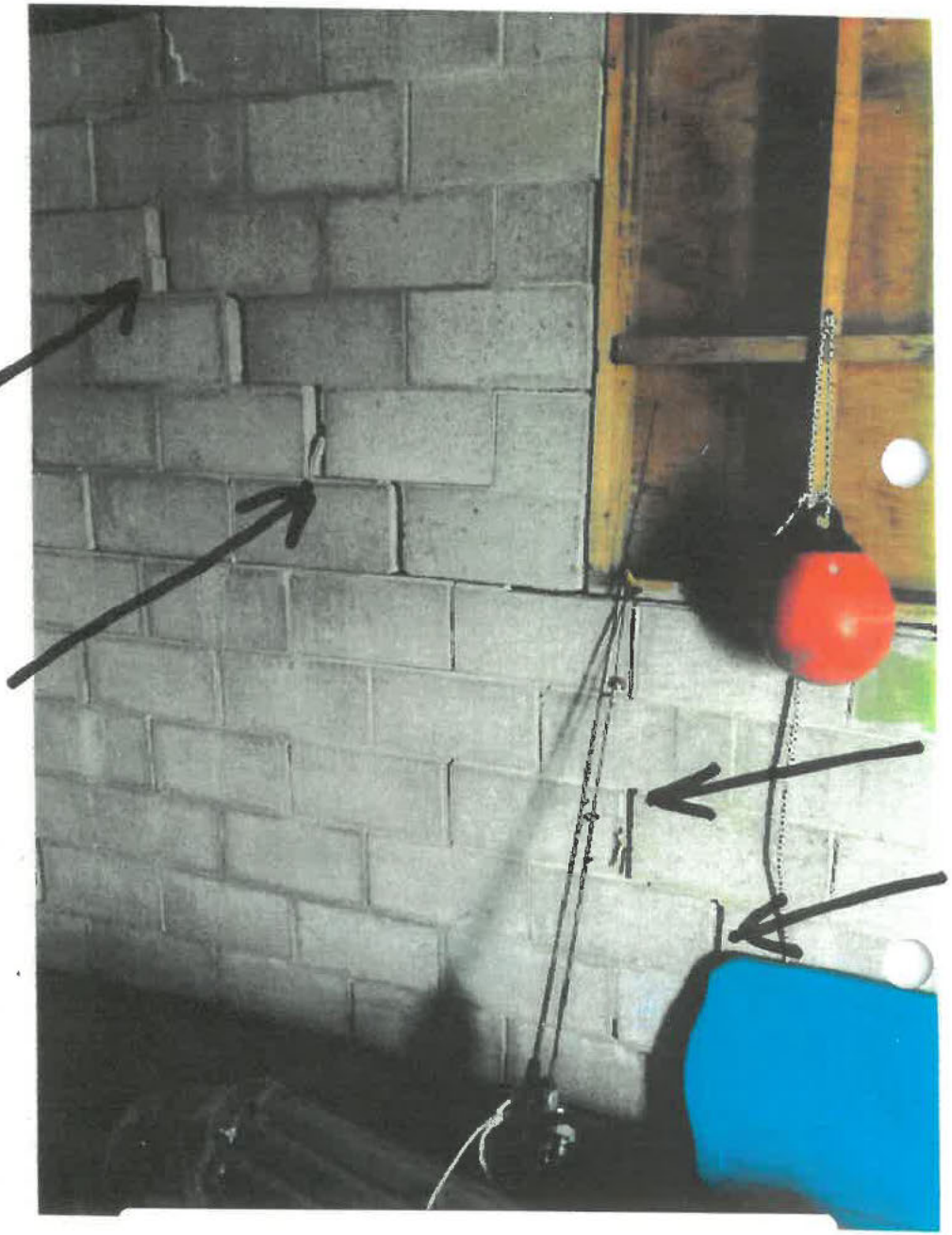


West Side of Boat House
- stairs

Bill



Existing Concrete Floor Cracks



Existing Boat House
- cinder blocks shifted

Existing Boat House
- cinder blocks shifted

Existing Boat House
- cinder blocks shifted

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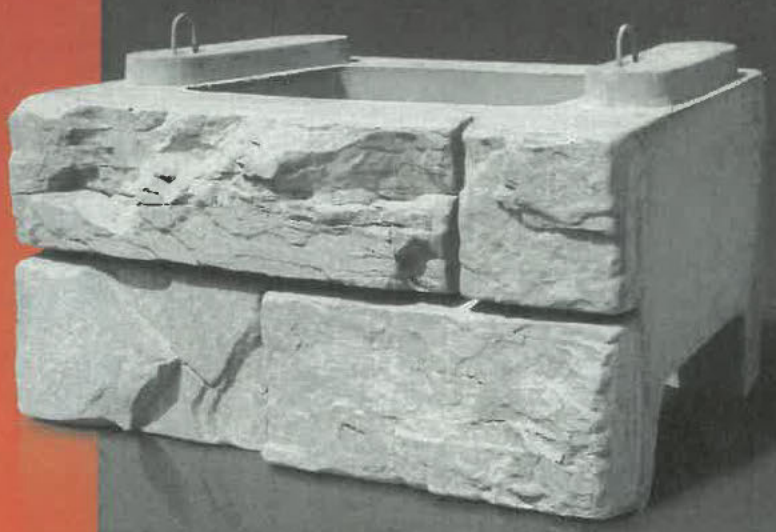

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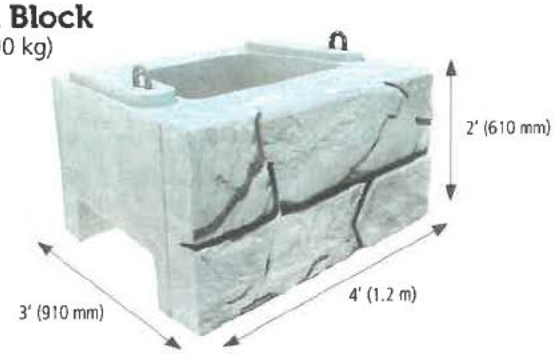


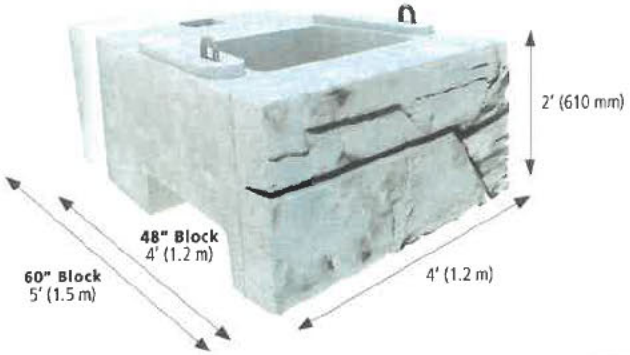
Top Block
1,308 lbs. (590 kg)

Half Block
1,066 lbs. (480 kg)

Half Step Block
973 lbs. (440 kg)

Corner Block
1,596 lbs. (720 kg)

Mass Extender
48" Block 2,674 lbs. (1,210 kg)
60" Block 3,509 lbs. (1,590 kg)



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Salmon Arm, BC V1E 3K1 (Canada)

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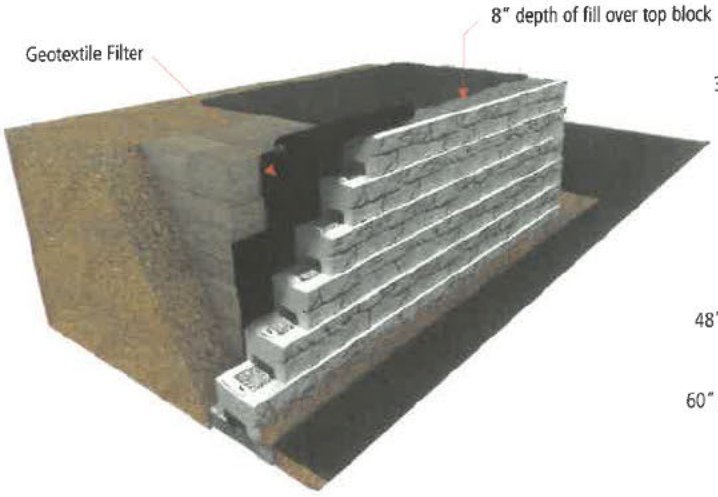
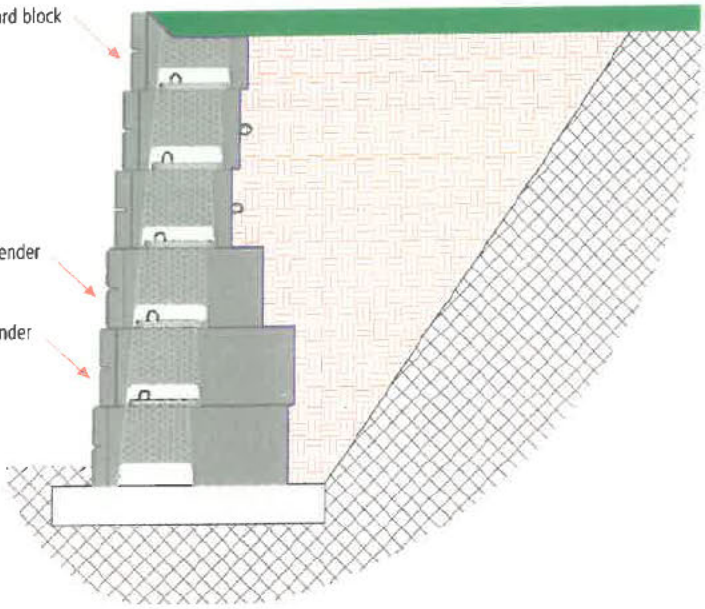


Increase wall height and stability with Mass Extenders



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While the hollow nature of Verti-Block makes it cost effective and easier to handle, it also improves its ability to retain earth. Even in poor soil conditions, Verti-Block can be stacked higher than other blocks without the use of tiebacks or geogrid.

The male-and-female design of Verti-Block adds a stronger connection than blocks relying on friction alone. The crushed stone fill also interlocks and creates a continuous mass for greater strength.

Smith Dow & Associates Ltd.

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

New Residence
83 Birchcliff Road
Summer Village of Birchcliff, Alberta

File No: 83 Birchcliff Road

December 23, 2020

4632 - 62 Street, Red Deer, Alberta T4N 6T3 Phone : (403) 343 - 6888 Fax: (403) 341 - 4710

SmithDow

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

December 23, 2020

Sorento Custom Homes
#106, 179 Clearview Drive
Red Deer County, AB.
T4E OA1

File: 83 Birchcliff Road

Attn: Bill Robinson

Re: New Residence
83 Birchcliff Road
Summer Village of Birchcliff , Alberta

As requested, we conducted a geotechnical investigation for the proposed residence with attached garage at the above referenced location on December 21, 2020.

The existing site sloped from north to the south. It is our understanding that the proposed new development will consist of a residential structure with basement and attached garage. The subject slope to the south was covered with mixed vegetation. The south to south-west facing downward slant contained a few different gradients in the slope as per our general profile cross-sectional drawing.

The south to southwest facing slope starting from Birchcliff Road, consisted of a relatively flat to gentle gradient up to the edge of the existing house. The slope began to decline at various gradients from the north portion of the existing house then to the walkout area leading to a lower crest then to the toe of the slope.

The existing house will be soon demolished to give space for the new structure.

Fill material was encountered in both borehole locations. The on-site fill material layer varied from 1.5 to 2.1 meters in thickness at the two borehole locales. Any exterior flatwork, patios or structures resting on the existing fill could experience movement. Beneath the fill material the soil was mostly a silty clay till deposit.

Snow cover blanketed the site and slope. Our observation was limited. Any observed localized erosional features associated with the slope appeared to be part of a very slow process and posed no immediate threat to the existing slopes. No visible evidence of current or previous slope failure was observed within most part of the slopes. However, this should be re-verified at a later date when snow and ice have melted.

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 boreholes were required at this site. The test holes were opened near the vicinity of the existing building, as it had not been demolished at this time. Test hole #1 was near the northwest corner of the existing building and west of the old water well and test hole #2 was centered just north of the existing garage which was located northeast of the existing house. The new structure's footprint will be located in a similar place. A drilling rig with continuous flight auger set up 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 and 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 some topsoil, fill material and a native silty clay till deposit. The geotechnical report should be read in conjunction with information provided in the attached soil logs.

Fill

Fill material thickness ranged from 1.5 to 2.1 meters between the two boreholes locations. The fill material was overlain with topsoil in the test hole #2 locale and an asphalt and gravel structure in the hole #1 locale. The fill was comprised of silt with some varying amounts of clay, with more clay present in the test hole #1 location. It appeared to be tan to olive / dark brown in color, medium in plasticity and soft to loose / compact in consistency.

One should be noted that the thickness and characteristics of the fill material may vary across the site. This is especially significant in the area of the existing house and water service locale in the northwest portion of the future excavation. More accurate fill levels can be determined after demolition and further excavation for the new structure by our personnel.

It should be noted that exterior flatworks, brick / stone-works, etc. resting on the on-site fill soil could experience differential movement. Any soft / loose fill placed near the slope crest will reduce the stability of the slope. All excavated soil during construction should be removed from the property.

Silty Clay Till

The natural silty clay till deposit underlying the fill material was golden brown to olive brown in color, medium to low in plasticity and firm to stiff in consistency. This silty clay till deposit was encountered at both borehole locations.

The native silty clay till was primarily characterized with occasional rootlets, organics, coal traces, silt / sand specks to lenses, pebbles to stones, rusting, bedrock fragments, cream mineral traces. Damp to wet sandy silt lenses were noted at deeper elevations within the native silty clay deposit.

The on-site clayey soil could have 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.

As well, all soil backfill against the foundation walls should be moderately compacted to 95% Standard Proctor Maximum Dry Density to prevent surface water seeping into the ground and building. Soil compaction of backfill soil against the walls must proceed with caution to prevent damaging the walls. Compaction tests should be conducted by our personnel during backfilling to confirm the soil compaction achieved. Finished site grade should be properly sloped to direct all surface runoff away from buildings.

4632 - 62 Street, Red Deer, Alberta T4N 6T3 Phone : (403) 343 - 6888 Fax: (403) 341 - 4710

B) Groundwater

Underground water was detected in each of the boreholes in the midst of site testing on December 21, 2020. The highest signs of seepage were noted at 7.3 meters below the existing ground surface level in the borehole #1 location.

One slotted PVC standpipe was installed in borehole #1 location for monitoring the groundwater level. On December 23, 2020, the water table measurement was recorded and summarized as follows in the table below.

Hole	Water Table Measurement Below Existing Grade (m)
1	7.1

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 erosion within the subject property. 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/m3)	Cohesive Strength (kPa)	Angle of Internal Friction (degree)
Fill Material	15	0	10
Silty 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 approximately 7 meters from the slope crest - the stability of the existing south facing slope 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 2.988 for the cross-section at hole #1. This means the construction of the new building at about 10 meters from the slope crest as shown on the survey plan is deemed stable. The calculated F.S of 2.988 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 hole #1 cross-section area. The second stage of the slope stability assessment also confirmed a long-term factor of safety (FS) of 2.793 can be achieved. This estimated F.S. of 2.793 exceeds the minimum required FS = 1.5.

It is advisable proper drainage and site grading must be provided at all times in order to maintain the stability of the slope. Confirmation of the exact building setback distance from the slope crest of about 10 meters has to be confirmed by our personnel during site preparation.

The following sections regarding recommendations for foundation construction, slab construction, soil compaction, the slope developments, 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) An existing septic tank could to be located within the subject property and on the north side of the existing house. This existing underground septic tank must be removed to expose the underlying natural silty clay till deposit. The exposed over-excavated area must be inspected and approved by our personnel.

   Upon our approval, the over-excavated septic tank area must be backfilled with clay compacted to 95% standard proctor maximum dry density (S.P.M.D.D) to help lessen any foundation movement. Compaction tests must be performed one each lift of 200 m.m of unfrozen clay fill soil.

2) All footings must be directly supported by the firm native silty clay till deposit.

3) Footing founded on the firm to stiff native silty 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	200	100	70

   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 silty clay till deposit. The exposed native silty clay must be inspected and approved by our personnel in writing. Any over-excavation that requires replacement material should be in organic clay compacted to 98% S.P.M.D.D.

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.

2) Proper preparation of the subgrade soil for the floor slab includes the following:

- removal of all vegetation, organic soil and fill material to expose the firm, native silty clay till 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 or septic tank areas 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 approved crushed gravel (minus 20 mm) or radon rock as required must be placed directly beneath the entire slab and above the re-compacted sandy 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 sub-slab water away from the building and towards positive outlets.

9) The above recommendations are for a continuously heated building with light floor loading.

C) 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 compaction 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/m^3)
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 retaining wall foundation systems can be supported by properly designed footing system or piles. The selected foundation systems must be inspected and approved by our personnel during installation of the foundation system, to ensure the existing slope is protected and to prevent any slope failure.
2) 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.
3) Applicable surcharge loading should be applied if applicable.
4) 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.

D) Ground Water- Drainage

a) Around House Perimeters

An adequate permanent subdrainage system (weeping tile drain) is recommended for the residential structure to prevent water seeping into the basement. 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 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 also 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 all backfill soil of about 0.3 meter 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 cracking. 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.

E) 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.

8) Any excavation along the existing slope including the boathouse area must be inspected and approved by our personnel to ensure the stability of the slope is not undermined

F) Foundation Concrete

Water soluble sulphate concentration tests were completed on two soil samples one from test hole #1 location and one from test hole #2 locale. The water-soluble sulphate concentration was 0.020% in both locales. 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 determination should be completed on any imported fill to verify sulphate resistant requirements for concrete element in contact with fill material.

Air-entrainment should be provided for all concrete exposed to freeze-thaw cycles. The concrete should also be designed in accordance with CSA Standard CSA A23.1-19, in conjunction with a maximum water to cement ratio of 0.45. The concrete should possess a minimum 28-day compressive strength of 25 MPa.

G) 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 and pile 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.

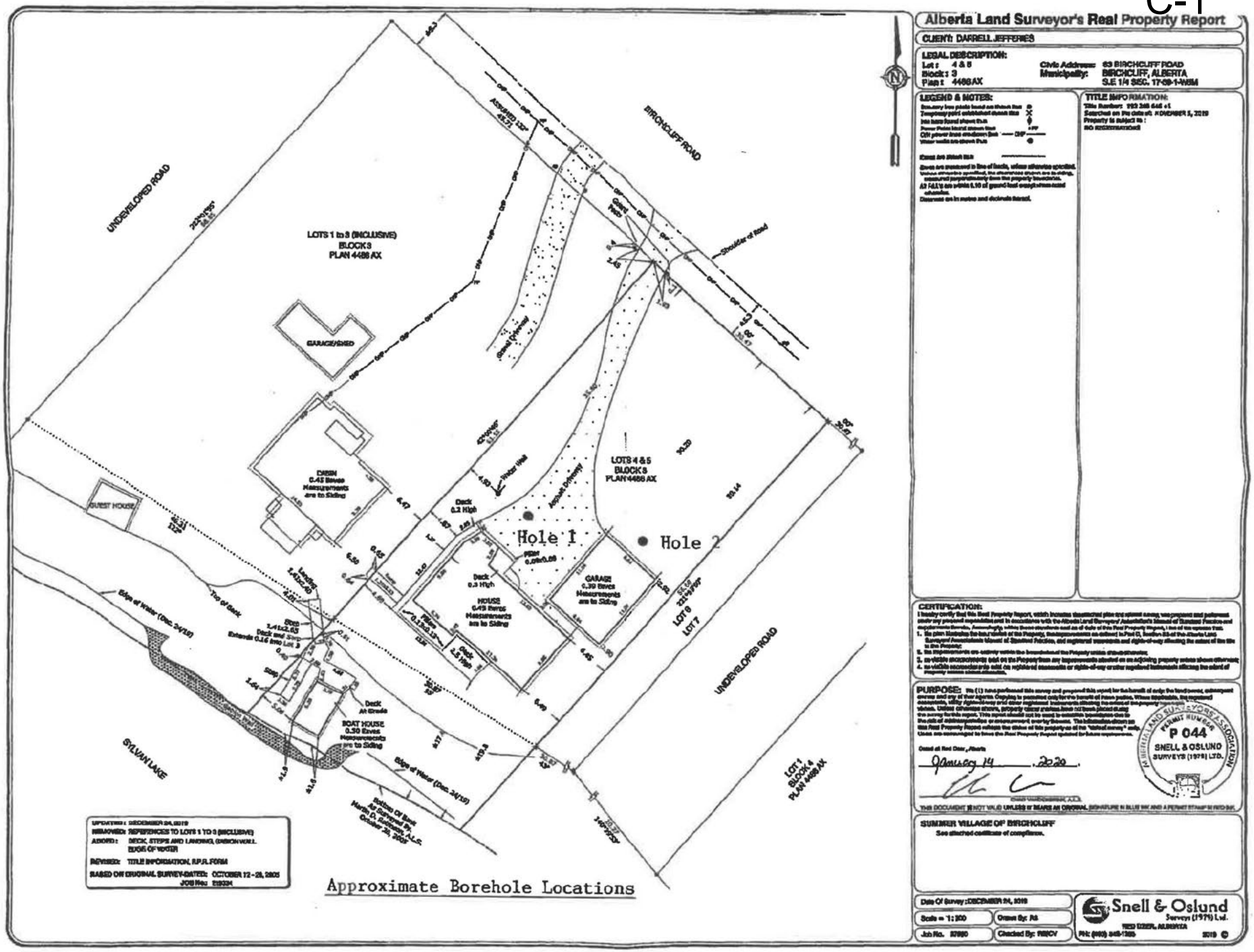
This report has been prepared for the exclusive use of Mr. Bill Robinson of Sorento Custom Homes and his agents, for specific application to the development at 83 Birchcliff Road, Summer Village of Birchcliff, Alberta. Any use that a third party makes of this report, or any reliance or decisions based 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)

4632 - 62 Street, Red Deer, Alberta T4N 6T3 Phone : (403) 343 - 6888 Fax: (403) 341 - 4710

APPENDIX-A



Alberta Land Surveyor's Real Property Report

CLIENT: DARRELL JEFFERIES

LEGAL DESCRIPTION:
Lot: 4 & 5
Block: 3
Plan: 4466 AX

Civic Address: 63 BIRCHCLIFF ROAD
Municipality: BIRCHCLIFF, ALBERTA
SE 1/4 SEC. 17-39-1-W5M

LEGEND & NOTES:

Bearings are grid bearings derived from observations between Alberta Control Monuments 80 and 81 and are referred to the 114° west meridian.

All distances are in metres and decimals thereof.

TITLE INFORMATION:
Title Number: 192 268 646 +1
Search on the date of: NOVEMBER 5, 2019
Property is subject to:
NO ENCUMBRANCES

CERTIFICATION:
I hereby certify that this Real Property Report, which includes sketch(es) and attached notes, was prepared and performed under my personal supervision and in accordance with the Alberta Land Surveyors' Association's Manual of Standard Practice and requirements thereto. Accordingly, within these standards and as of date of this Real Property Report, I am of the opinion that:
1. the plan illustrates the true, correct and complete extent of the Property, measurements as defined in Part 21, Section 33 of the Alberta Land Surveyors' Association's Manual of Standard Practice, and registered easements and rights-of-way affecting the extent of the title to the Property;
2. the improvements are entirely within the boundaries of the Property unless otherwise shown;
3. no visible encroachments exist on the Property from any improvements situated on an adjoining property unless shown otherwise;
4. no visible encroachments exist on registered easements or rights-of-way or other registered instruments affecting the extent of Property unless shown otherwise.

PURPOSE: This (1) new) performed this survey and prepared this report for the benefit of only the landowner, subsequent owners and any of their agents. Copying is permitted only for the benefit of these parties. Where applicable, this registered easements, utility rights-of-way and other registered instruments affecting the extent of the property have been shown. Unless otherwise shown, property corner markers have not been placed during the survey for this report. This report should not be used to establish boundaries due to the risk of misinterpretation or encroachment over by fences. The information shown on this Real Property Report reflects the status of this property as of the "dated survey" date. Users are encouraged to have the Real Property Report updated for future requirements.

Dated at Red Deer, Alberta
January 14 2020

ALBERTA LAND SURVEYORS' ASSOCIATION
PERMIT NUMBER
P 044
SNELL & OSLUND
SURVEYS (1979) LTD.

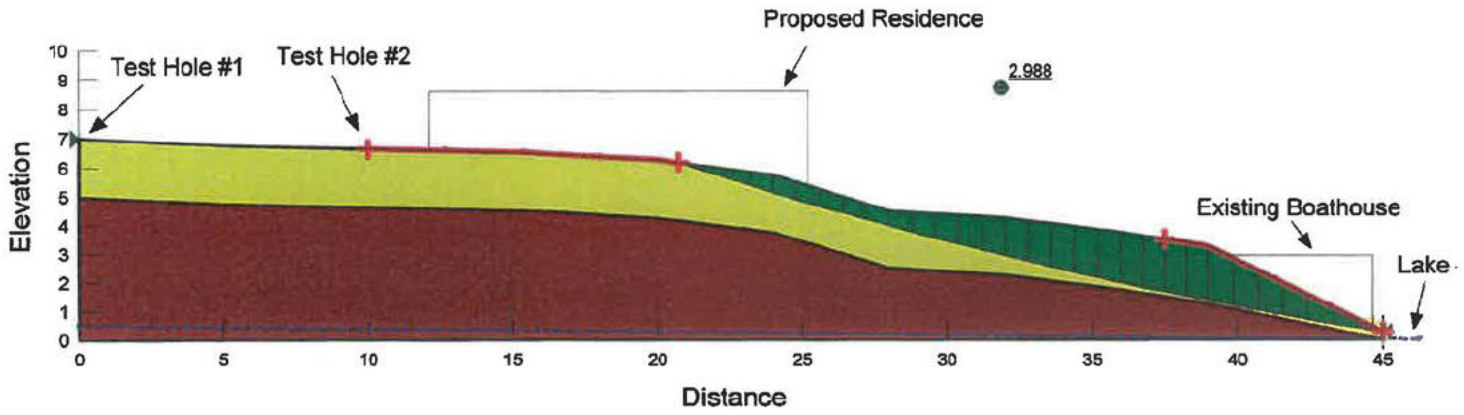
THIS DOCUMENT IS NOT VALID UNLESS IT BEARS AN ORIGINAL SIGNATURE IN BLUE INK AND A PERMIT STAMP IN RED INK.

SUMMER VILLAGE OF BIRCHCLIFF
See attached certificate of compliance.

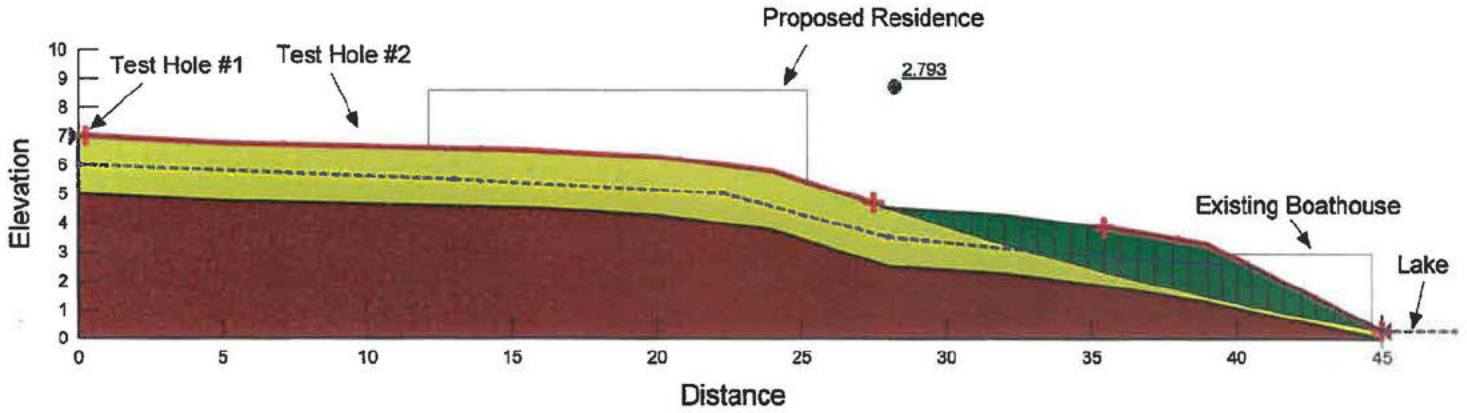
Date Of Survey: DECEMBER 24, 2019
Scale = 1:200
Drawn By: AS
Job No. 21990
Checked By: RWCV

Snell & Oslund
Surveys (1979) Ltd.
RED DEER, ALBERTA
PH: (403) 343-7305
2019 ©

83 Birchcliff Road
Summer Village of Birchcliff



83 Birchcliff Road
Summer Village of Birchcliff
(Simulated High Water Table)



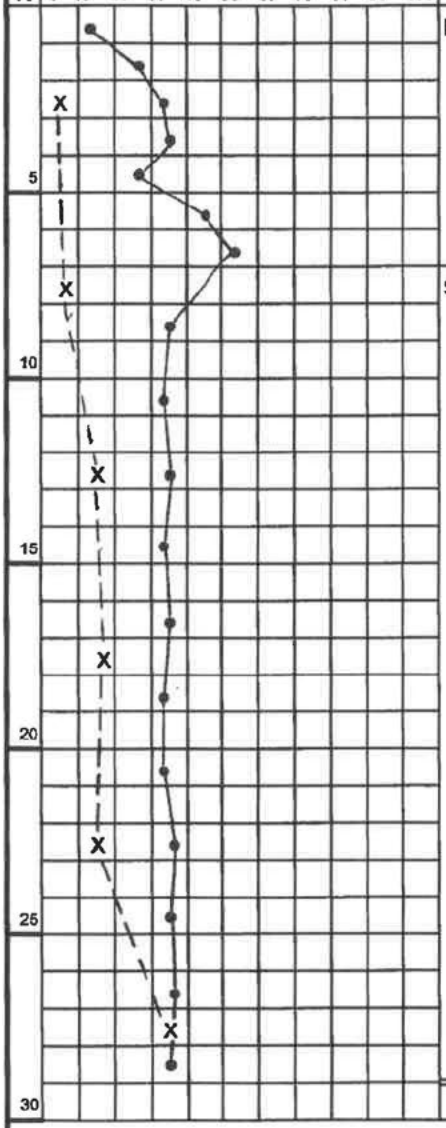
SMITH DOW & ASSOCIATES LTD.
--------Engineering Consultants-------

Project: 83 Birchcliff Road
Summer Village of Birchcliff, AB.

DWN MK.	CKD PK.	DATE December 21, 2020	FILE #	HOLE 1

STRENGTH----------
MOISTURE----------
PENETRATION----------

▲ 100 200 300 400 500
● 10 20 30 40 5
X 0 10 20 30 40 50 60 70 80 90 100



DATUM
GROUND ELEV-

Depth feet	Depth metres	CLASSIFICATION	SYMBOL	TEST DATA	SAMPLE
1		**Fill** asphalt (50mm), base gravel (150mm)			
2		gravelly (~250mm) brown, non-pl.			
3		light brown, pebbles, sandy		N=4	X
4	1	firm, rootlets, pebbles to stones			
5		topsoil interspersed, coal fragments			
6		organics w/ topsoil traces, stones			
7	2	black plastic water line encountered			
8		**Silty Clay Till** slightly silty, coal / bedrock fragments		N=7	X
9		tan to brown			
10	3	sand lenses, pebbles			
11		rusting, low plastic, firm			
12		silt lenses			
13	4	coal fragments, firm to stiff		N=16	X
14		silty stringers, shale fragments			
15		olive/brown, low plastic			
16	5	tan / brown			
17		stiff, low plastic, pebbles			
18	6	varying bedrock fragments sizes		N=18	X
19		coal fragments, very stiff			
20		light brown			
21		moist to damp			
22	7	stiff			
23		pebbles to stones		N=14	X
24		low to non-plastic, damp			
25		medium to fine grained, sandy			
26	8	water, med.dense, sandstone traces			
27		low plastic to non-plastic, wet			
28		weathered sandstone layers		N=34	X
29		coal traces, tan/yellow brown			
30	9	End of Hole (Standpipe In)			

FILL	CLAY	TILL	Q - Unconfirmed Strength, kN/m2
TOPSOIL	PEAT	COAL	d - Dry Unit Weight, kN/m3
SAND	GRAVEL	WATER	S - Sulphate Concentration, %
SILT	SILTSTONE	LIMITS	N - Penetration Resistance, blows

Tube	/
Penetrometer	X
No Recovery	

TEST HOLE LOG AND LAB DATA

DWG #2

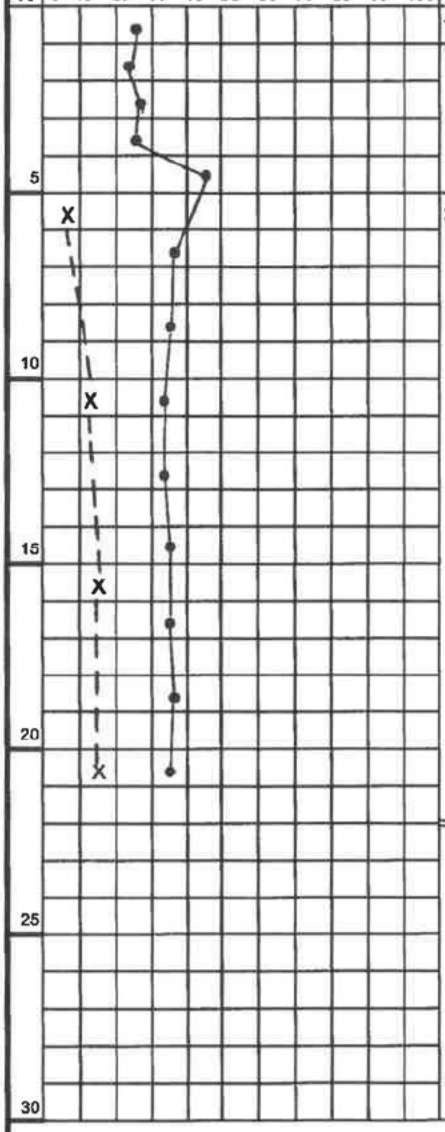
SMITH DOW & ASSOCIATES LTD.
-------Engineering Consultants-------

Project: 83 Birchcliff Road
Summer Village of Birchcliff, AB.

DWN MK.	CKD PK.	DATE December 21, 2020	FILE #	HOLE 2

STRENGTH----------
MOISTURE----------
PENETRATION----------

▲ 100 200 300 400 500
● 10 20 30 40 5
X 0 10 20 30 40 50 60 70 80 90 100



DATUM
GROUND ELEV-

CLASSIFICATION		SYMBOL	TEST DATA	SAMPLE	Depth feet	Depth meters
Topsoil	80mm, organic silt, dark brown				1	
Fill	tan, sandy silt, non-plastic				2	
	frozen, silty, low to non-plastic				3	
	frost, medium to low plastic				4	1
	olive / brown, organics, rusting				5	
Silty Clay Till	coal, silt / sand specks		N=9	X	6	
	firm to stiff, olive brown				7	2
	white mineral traces				8	
	rusting, fissures				9	
	low to non-plastic				10	3
	very stiff to stiff		N=13	X	11	
	low plastic, olive brown				12	
	stone sized bedrock fragments				13	4
	stiff, white mineral traces				14	
	low plastic, silt lenses, yellow				15	
	stones, bedrock fragments		N=15	X	16	5
	moist, stiff				17	
	stones				18	
	rust traces				19	6
	low plastic, stiff, moist to damp				20	
	pebbles		N=14	X	21	
	silt / coal specks, stiff				22	7
End of Hole					23	
(Backfilled w / auger cuttings)					24	
					25	
					26	8
					27	
					28	
					29	
					30	9

FILL	CLAY	TILL	Q - Unconfirmed Strength, kN/m2
TOPSOIL	PEAT	COAL	d - Dry Unit Weight, kN/m3
SAND	GRAVEL	WATER	S - Sulphate Concentration, %
SILT	SILTSTONE	LIMITS	N - Penetration Resistance, blows

Tube	/
Penetrometer	X
No Recovery	

TEST HOLE LOG AND LAB DATA

DWG #3

April 27, 2021

Summer Village of Birchcliff
Bay 8 - 14 Thevenaz Industrial Trail
Sylvan Lake, AB T4S 2J5

Re: April 15, 2021- Letter of Intent for [redacted] of 83 Birchcliff Rd. ("LOI")

Hello,

I am [redacted], the owner of 87 Birchcliff Rd., and the immediate neighbor to the west of Mr. Bjornson. I am writing to confirm my support of the proposed lakefront and shoreline development, including to the existing boathouse, on 83 Birchcliff Rd., all as outlined in the LOI as presented by Lakeview Contracting Inc. on April 15, 2021.

I would be happy to answer any questions you may have.

Sincerely,

[redacted]

Summer Village of Birchcliff – Municipal Planning Commission

Agenda Item

383 Birchcliff Road (Lot 10, Block 1, Plan 7089MC)

Development Permit Application

Background:

The homeowners of 383 Birchcliff Road (Lot 10, Block 1, Plan 7089MC) in the Summer Village of Birchcliff submitted an application for asphalt paving in front of their property on Municipal Land within the carriageway. This property is in the R1 District (Lakeshore Residential).

The driveway width shall be measured within the carriageway, the existing driveway is currently gravel and is a width of 19.2m (63ft.)

Discussion:

This application is before MPC for the following reason:

- The maximum width of a driveway shall be 10m (32.80ft.), with the proposed 19.2m (63ft.) a variance of 9.2m (30ft.) is required, therefore the decision must come from the Municipal Planning Commission.

Recommendation:

In the case of a Land Use Bylaw,
a. “shall” and “must” means mandatory compliance;
b. “should” means compliance in principle, but is subject to the discretion of the Development Authority where compliance is impracticable or undesirable because of relevant planning principles or circumstances unique to a specific application; and
c. “may” means discretionary compliance or a choice in applying regulation. The regulation can be applied, enforced or implemented if the Development Authority chooses to do so, depending on site specific circumstances.

The Land Use Bylaw is clear that the maximum width of a driveway "shall” be 10m (32.80ft.)

5.3.5. of the Municipal Development Plan states that the continuance of the country lane ambiance in Birchcliff is very important such that:

- Development be set back from Birchcliff Road and Birch Way to accommodate landscaping so the view along these roads is more of a natural setting than a row of residential buildings.

After reviewing the application and all relevant planning documents, it is the recommendation of administration to deny the width variance requested and for the paved driveway width to be reduced to 10m (32.80ft.), the Summer Village will then sod the extra gravel area within the carriageway.

Conditions:

If approved, Administration would recommend the following conditions:

- Completions Deposit of $500.00
- Driveways shall be constructed in such a manner not to interfere with the natural flow or absorption of water.
- The maximum width of a driveway shall be 10m (32.80ft.).

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.

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).*

[redacted]
383 Birchcliff Road
Birchcliff Summer Village
Sylvan Lake, AB T4S R6

Kara Kashuba
Junior Development Officer
Birchcliff Summer Village
Bay 8, 14 Thevenaz Industrial Trail
Sylvan Lake, AB T4S 2J5
development@sylvansummervillages.ca

Dear Kara,

RE: Request for approval to pave the roadway in front of our property

I am formally writing to request approval to pave a small section of Birchcliff Summer Village roadway in front of our property. The section in question is at the side of the main road coming into the cul-de-sac in front of our parking pad in front of our garage. We have supplied a site plan with drawings of the area for your reference.

We would like it paved as this area is very hard to maintain with issues such as weed growth, snow removal problems, and unwanted gravel spreading on the road, our property and our neighbour's driveway, plus it's an eyesore to our property and the lots nearby.

We also want to replace a gravelled parking spot on our property at the end of this region with grass and landscaping to 'green it up' and improve the natural aesthetics of our lot. Leaving the small gravelled area in question just works against our intentions.

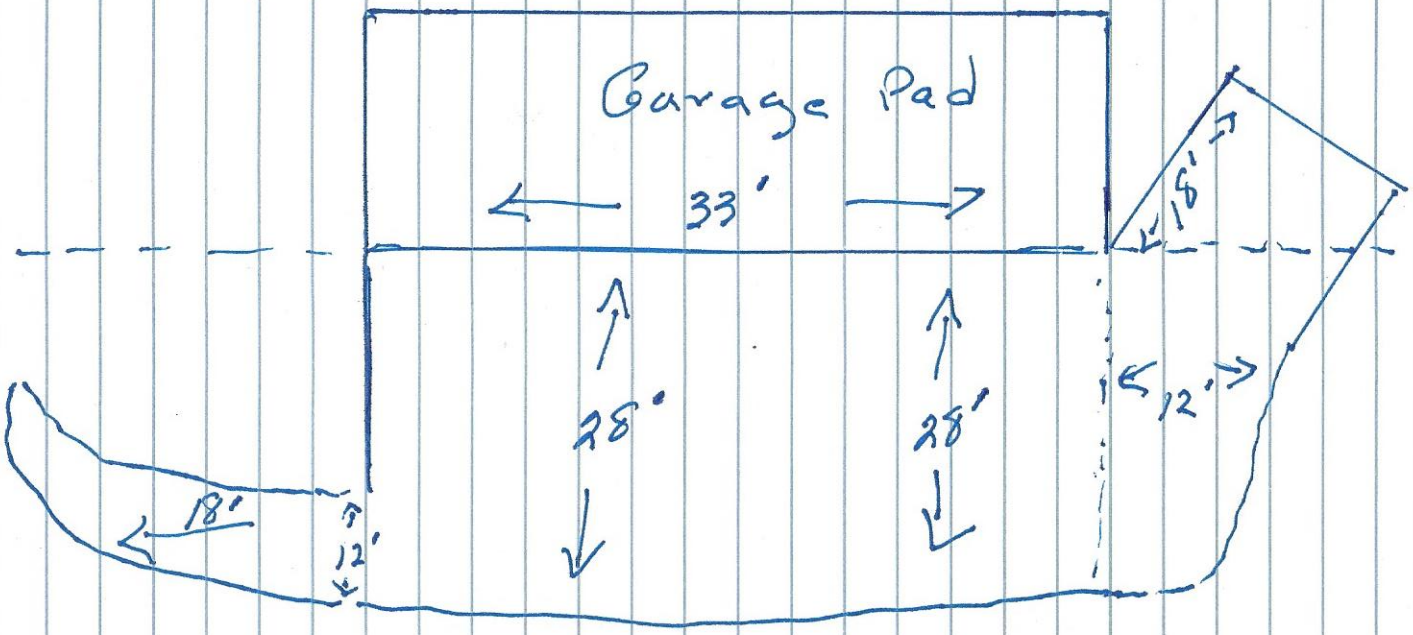
We have received quotes from a reputable contractor who has worked extensively in the area before and plan to have the job done in the next couple of months at our own expense. As the majority is on Birchcliff Summer Village property, we would appreciate receiving approval to go ahead.

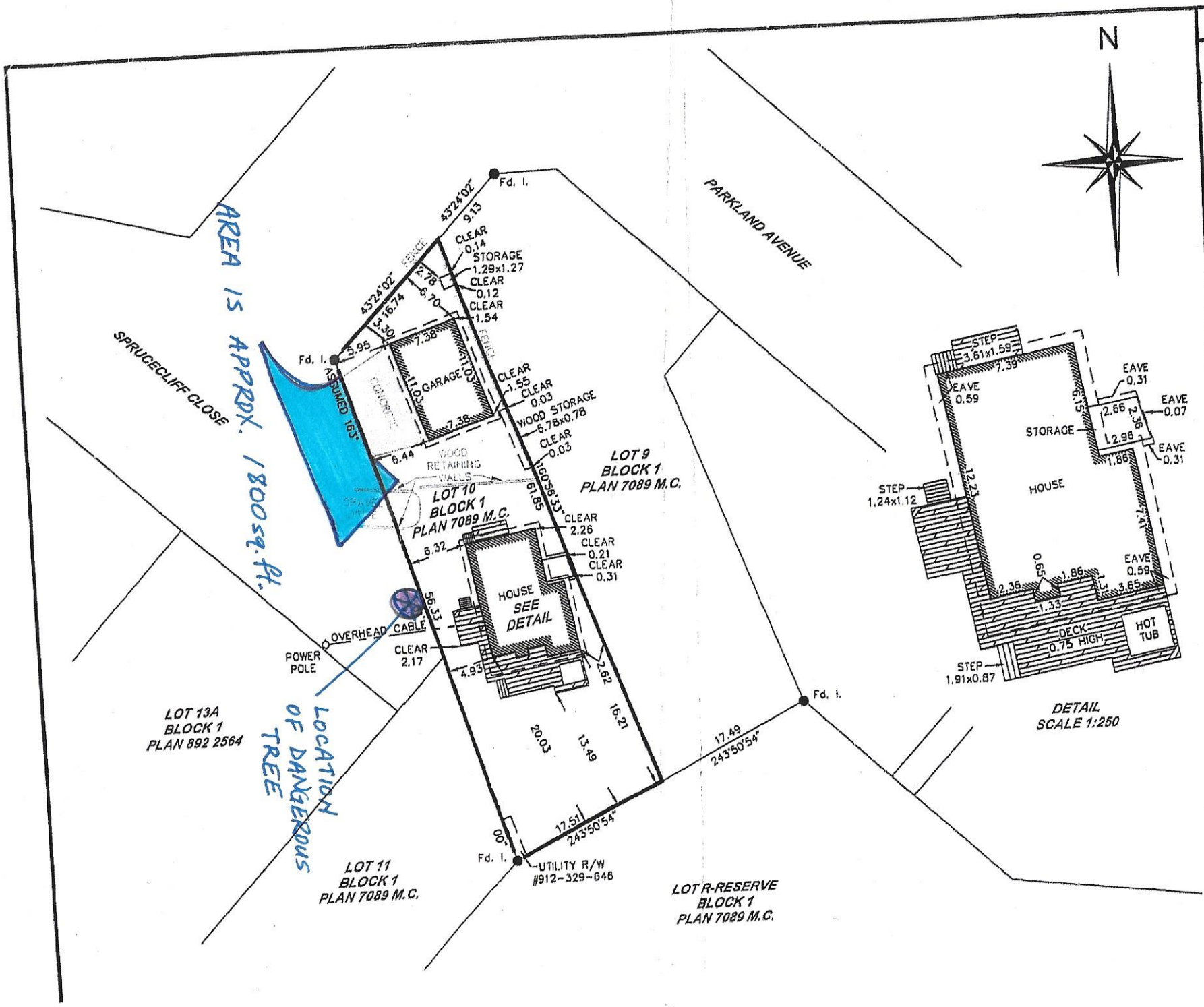
Please contact me at [redacted] if you have any questions or concerns.

We look forward to a positive response.

[redacted]

383 Birch Cliff Rd





Alberta Land Surv

Lot(s) 10 Block

#383 Birchcliff Road

I, Leonard Olson, Alberta Land
which includes the attached
under my personal supervisi
Practice of the Alberta Lan
Accordingly within those sta
I am of the opinion that:

1. the Plan illustrates the bou
visible improvements situat
rights of way, and other re
of title to the Property.
2. the improvements are enti
3. no visible encroachments e
situated on an adjoining p
4. no visible encroachments
or other registered instrun

Purpose: This Report has be
of the Client, the Client's pur
a sale) and any of their lega
permitted only for the benefi
easements, rights of way, an
of the property have been st
have not been placed during
be used to establish propert
of the user making an error

Dated at Lacombe, Alberta
this 21st day of Marc

(Leonard R. Olson, A.L.
(copyright reserved)
This document is not valid
and an Olson Surveys Ltd.

-Distances to buildin
unless shown other
-Date of Survey: Ma
-Date of Title Searc
-Unless otherwise s
the greatest extent
-Eaves are dimensio
-Distances are in m
-Fences are shown
-Statutory Iron pos
-Unless shown othe
of the property lin
-Area referred to b
-Property is subjec
Utility Right of Wa

Drawn By: P
Date: March 21, 2
Scale:
File No.: RPR-3161


C-2
XTR

Google Maps Birchcliff, Alberta

Image capture: Jun 2014 © 2021 Google

Google

Street View