

**A PUBLIC HEARING AND REGULAR MEETING
OF THE TOWN OF LADYSMITH COUNCIL
AGENDA
5:00 P.M.**

Tuesday, June 15, 2021

This meeting will be held electronically as per Ministerial Order No. M192

Pages

1. CALL TO ORDER

Call to Order 5:00 p.m. in Open Session, in order to retire immediately into Closed Session.

Members of the public are welcome to attend all Open Meetings of Council, but may not attend Closed Meetings.

2. APPOINTMENT OF DEPUTY MAYOR

Mayor Stone, at the request of Councillor Johnson who currently holds the title, has appointed Councillor Jeff Virtanen as Deputy Mayor for the term June 15, 2021 to October 31, 2021.

3. CLOSED SESSION

Recommendation

That, in accordance with section 90(1) of the *Community Charter*, Council retire into closed session in order to consider items related to the following:

- the acquisition, disposition or expropriation of land - section 90(1)(e);
- the receipt of advice that is subject to solicitor-client privilege - section 90(1)(i); and
- negotiations and related discussions respecting the proposed provision of a municipal service - section 90(1)(k).

4. OPEN MEETING AND ACKNOWLEDGEMENT (6:00 P.M.)

The Town of Ladysmith acknowledges with gratitude that this meeting takes place on the traditional, unceded territory of the Stz'uminus First Nation.

Residents are encouraged to "virtually" attend the meeting by registering here:

https://zoom.us/webinar/register/WN_I7eZV1qJRAC9Rb5wdvlyRA

Instructions on how to join the meeting will be sent immediately after you register.

View the livestream on YouTube:

<https://www.youtube.com/channel/UCH3qHAExLiW8YrSuJk5R3uA/featured>.

5. AGENDA APPROVAL

Recommendation

That Council approve the agenda for this Public Hearing and Regular Meeting of Council.

6. PUBLIC HEARING

- 6.1. "Road Closure and Dedication Removal Bylaw 2021, No. 2067"; "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068" and "Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069"

(1130 Rocky Creek Road)

- 6.1.1. Outline of Public Hearing Process - Mayor Stone
- 6.1.2. Introduction of Bylaw and Statutory Requirements - Senior Planner, Development Services
- 6.1.3. Submissions
- 6.1.4. Call for Submissions to Council (Three Times) - Mayor Stone
- 6.1.5. Declaration that the Public Hearing for Bylaw Nos. 2067, 2068 and 2069 is Closed - Mayor Stone

10

7. BYLAWS - OFFICIAL COMMUNITY PLAN AND ZONING (SUBJECT OF PUBLIC HEARING)

7.1. “Road Closure and Dedication Removal Bylaw 2021, No. 2067”

11

Recommendation

That, subject to any additional matters raised at the Public Hearing, Council:

1. Proceed with third reading of "Road Closure and Dedication Removal Bylaw 2021, No. 2067"; and
2. Direct staff to refer Bylaw 2067 to the Ministry of Transportation and Infrastructure pursuant to section 41(3) of the *Community Charter*.

7.2. “Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068”

13

Recommendation

That, subject to any additional matters raised at the Public Hearing, Council proceed with third reading of “Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068”.

7.3. “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069”

16

Recommendation

That, subject to any additional matters raised at the Public Hearing, Council:

1. Proceed with third reading of “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069”; and
2. Direct staff to refer Bylaw No. 2069 to the Ministry of Transportation and Infrastructure pursuant to section 52 of the *Transportation Act*.

8. RISE AND REPORT- Items from Closed Session

Items from the Closed Meeting of Council held May 4, 2021:

CE 2021-075

That Council:

1. Direct the Mayor and Corporate Officer to execute the License of Occupation and Use Agreement with the Ladysmith Community Gardens Society for use of the Ladysmith Community Garden located on a portion of High Street Park for a 5-year period from June 1, 2021 until May 31, 2026;
2. Direct staff to give notice of the Town's intent to grant a License of Occupation and Use Agreement to Ladysmith Community Gardens in accordance with the *Community Charter*, and
3. Rise and report on this item once public notice has been provided and the agreement is signed by both parties.

CE 2021-076

That Council:

1. Appoint Shirley Louie as the Stz'uminus First Nation representative to the Public Art Task Group for a term ending September 2022; and
2. Rise and report on this item once the representative has been notified.

Items from the Closed Meeting of Council held June 1, 2021:

Community Planning Advisory Committee appointments for terms ending June 30, 2023 (Resolution CE 2021-083)

- Jason Robertson;
- Abbas Farahbakhsh;
- Brian Childs;
- Jennifer Sibbald;
- Stephen (Steve) Frankel;
- Tamara Hutchinson; and
- Jason Harrison.

Parks, Recreation & Culture Advisory Committee appointments for terms ending June 30, 2023 (Resolution CE 2021-084)

- Bruce Mason;
- Lucy Partington (youth);
- Geoff Dean; and
- Lynda Baker.

CE 2021-085

That Council direct staff to re-advertise for applications to the Parks, Recreation and Culture Advisory Committee in order to fill one remaining position.

9. MINUTES

9.1. Minutes of the Public Hearing and Regular Meeting of Council held June 1, 2021 20

Recommendation

That Council approve the minutes of the Public Hearing and Regular Meeting of Council held June 1, 2021.

10. DEVELOPMENT APPLICATIONS

10.1. Development Variance Permit Application – 614 Brown Drive 30

Recommendation

That Council:

1. Issue Development Variance Permit 3090-21-05 to vary the front parcel line setback from 6.0m to 3.3m for an unenclosed balcony attached to an existing dwelling at Lot 45, District Lot 96, Oyster District, Plan 28585 (614 Brown Drive); and
2. Authorize the Mayor and Corporate Officer to sign Development Variance Permit 3090-21-05.

10.2. Development Variance Permit and Development Permit Applications – 6-245 Oyster Cove Road

39

Recommendation

That Council:

1. Issue Development Variance Permit 3090-21-06 to allow two 2-storey accessory buildings in a front yard, and to increase the permitted height of the accessory buildings from 3.5m to 5.1m and 4.1m respectively, at Strata Lot 6, District Lot 56, Oyster District, Strata Plan 2009 Together with an Interest in the Common Property in Proportion to the Unit Entitlement of the Strata Lot as Shown on Form 1 (6-245 Oyster Cove Road);
2. Issue Development Permit 3060-21-01 to allow the construction of a dwelling, two accessory buildings, and retaining walls at 6-245 Oyster Cove Road; and
3. Authorize the Mayor and Corporate Officer to sign Development Variance Permit 3090-21-06.

10.3. Development Variance Permit Application – 350 Chemainus Road

77

Recommendation

That Council deny Development Variance Permit Application 3090-20-06 for 350 Chemainus Road.

11. BYLAWS- OFFICIAL COMMUNITY PLANNING AND ZONING

11.1. Zoning Amendment to Permit Existing Single Unit Dwellings in the C-2, C4 and R-3 Zones.

128

Recommendation

That Council:

1. Give first and second readings to “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 40) 2021, No. 2078”;
2. Direct staff to proceed with scheduling and notification of a Public Hearing for Bylaw No. 2078 pursuant to the *Local Government Act*, and
3. Direct staff to refer Bylaw No. 2078 to the Ministry of Transportation & Infrastructure following third reading of the bylaw pursuant to the *Transportation Act*.

12. COMMITTEE MINUTES

- 12.1. **Arts and Heritage Hub Steering Committee - March 30, 2021** 134

Recommendation

That Council receive for information the minutes of the March 30, 2021 meeting of the Arts and Heritage Hub Steering Committee.

- 12.2. **Parks, Recreation and Culture Advisory Committee - May 19, 2021** 137

Recommendation

That Council receive for information the minutes of the May 19, 2021 meeting of the Parks, Recreation and Culture Advisory Committee.

- 12.3. **Official Community Plan Steering Committee - May 20, 2021** 141

Recommendation

That Council receive for information the minutes of the May 20, 2021 meeting of the Official Community Plan Steering Committee.

- 12.4. **Community Planning Advisory Committee - June 2, 2021** 143

Recommendation

That Council receive for information the minutes of the June 2, 2021 meeting of the Community Planning Advisory Committee.

13. REPORTS

- 13.1. **Town of Ladysmith 2020 Statement of Financial Information** 146

Recommendation

That Council approve the Town of Ladysmith Statement of Financial Information for the fiscal year ended December 31, 2020.

- 13.2. **Subdivision Land Agreement – Drakensburg Development Corporation – Thetis Drive Subdivision** 192

Recommendation

That Council authorize the Mayor and the Corporate Officer to sign the Land Transfer Agreement between the Town and Drakensburg Development Corporation for the transfer of lands associated with the 11 lot subdivision on Thetis Drive.

- 13.3. **Forward Road Watermain Replacement** 209

Recommendation

That Council:

1. Direct staff to facilitate the replacement of 48m of watermain on Forward Road for an estimated cost of \$58,000, with funds to come from the Water Utility Reserve, and amend the 2021 - 2025 Financial Plan accordingly.
2. Authorize the developer's contractor, Graf Concrete & Iron Inc., to complete the works while they construct the developer's portion of the Forward Road watermain as part of the development of the former Dalby's site.

13.4. Retaining Wall – Ladysmith Community Marina Parking Lot 212

Recommendation

That Council direct staff to proceed with remediation of the Ladysmith Community Marina retaining wall as outlined in Option A of the staff report dated June 15, 2021.

14. BYLAWS

14.1. Bylaw Status Sheet 293

15. CORRESPONDENCE

15.1. Referral from Ministry of Forests, Lands, Natural Resource Operations & Rural Development dated June 3, 2021 294

Crown Land Tenure Application for private moorage at 303 Chemainus Road.

Recommendation

That Council recommend that the Ministry of Forests, Lands, Natural Resource Operations & Rural Development approve Crown Land Tenure Application 100305736 for private moorage at 303 Chemainus Road, provided that adequate measures are put in place to protect fisheries and aquaculture in the area.

16. NEW BUSINESS

16.1. Incentive to Property Owners for Graffiti Removal

Council will discuss the potential use of Grant in Aid funds as a one-time incentive to property owners to remove graffiti.

Recommendation

That Council allocate up to \$2,500 from the Grant in Aid budget to provide an incentive to property owners to remove graffiti in a timely manner by offering a one-time \$50 rebate to property owners from June 16 to July 15, 2021 and that staff be directed to facilitate the rebate program.

17. UNFINISHED BUSINESS

18. QUESTION PERIOD

Residents are encouraged to "virtually" attend the meeting and ask their questions live by registering here:

https://zoom.us/webinar/register/WN_I7eZV1qJRAC9Rb5wdvlyRA

Instructions on how to join the meeting will be sent immediately after you register.

Alternately, questions can be submitted via email at info@ladysmith.ca during the meeting.

- Persons wishing to address Council must be Town of Ladysmith residents, non-resident property owners, or operators of a business.
- Individuals must include their name and address for identification purposes.
- Questions put forth must be on topics which are not normally dealt with by Town staff as a matter of routine.
- Questions must be brief and to the point.
- No commitments shall be made by the Chair in replying to a question. Matters which may require action of the Council shall be referred to a future meeting of the Council.

19. ADJOURNMENT

Received June 9, 2021

To: Town of Ladysmith – Council

I would like to support the project that is being considered for the corner of Ludlow Road and Rocky Creek Road.

My name is Barrie Aldrich, I am a retired businessman and have been involved with many developers in the Town of Ladysmith over the past couple of decades and owning and paying taxes on several addresses.

Past developers I have worked with have built apartments, homes and a subdivision.

I tell you this because I think this proposed development will increase and generate a favorable tax base for the town and its citizens for many years to come.

I understand that the proposed tenants are national and recognizable companies that will stay for many years and be beneficial to the residents and will create many new jobs.

The proposed corner is a gateway corner on the highway with control traffic lights, and as such the proposed development will enhance and beautify this corner greatly.

Please support and vote in favor of this proposal.

Sincerely,

Barrie Aldrich

TOWN OF LADYSMITH

BYLAW NO. 2067

A Bylaw to Close and Remove the Dedication of a Highway

The Council of the Town of Ladysmith, in open meeting assembled, enacts as follows:

1. Those portions of road shown as “road to be closed” on Reference Plan EPP110196, prepared by Ryan J. Turner, B.C.L.S., a copy of which is attached as Schedule 1 and forms a part of this bylaw, is closed to all traffic.
2. The dedication as highway of that part of the road referred to in Section 1 is removed.
3. The Mayor and Corporate Officer are hereby authorized to execute all necessary documents as may be required to carry out the purpose of this bylaw.

Citation

4. This Bylaw may be cited for all purposes as “Road Closure and Dedication Removal Bylaw 2021, No. 2067”.

READ A FIRST TIME on the 1st day of June, 2021

READ A SECOND TIME on the 1st day of June, 2021

Notice of intention to proceed with this bylaw was published on the 3rd day of June, 2021 and the 10th day of June, 2021 in the Ladysmith Chronicle newspaper, circulating in the Town of Ladysmith, pursuant to section 94 of the *Community Charter*.

READ A THIRD TIME on the day of ,

APPROVED by the Ministry of Transportation and Infrastructure on the

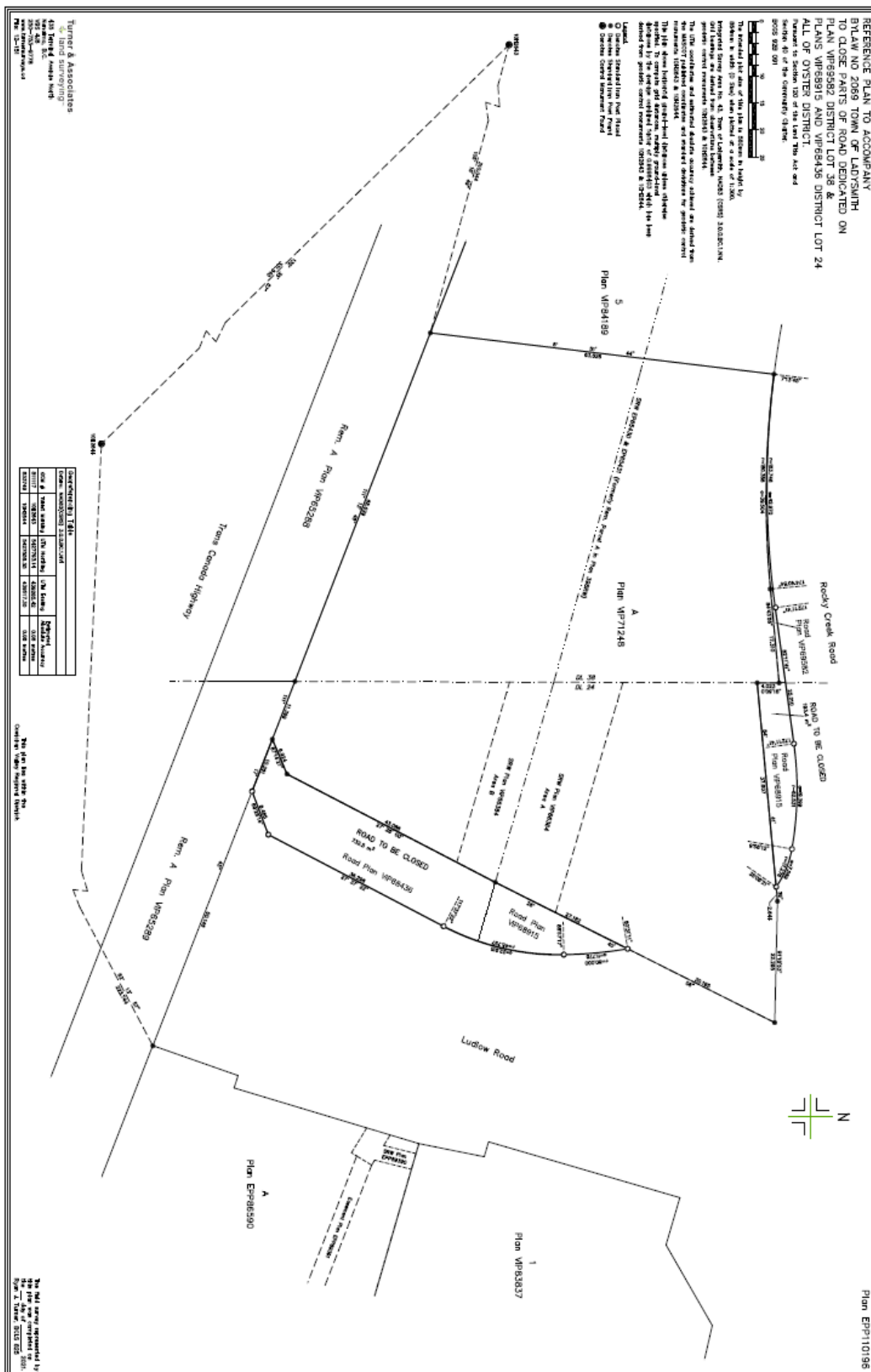
day of ,

ADOPTED on the day of ,

Mayor (A. Stone)

Corporate Officer (D. Smith)

Schedule 1 Road Closure Plan



TOWN OF LADYSMITH

BYLAW NO. 2068

A Bylaw to amend "Official Community Plan Bylaw 2003, No. 1488"

The Council of the Town of Ladysmith in open meeting assembled enacts the following amendments to "Schedule A" entitled "Town of Ladysmith Community Plan" of "Official Community Plan Bylaw 2003, No. 1488":

1. Delete the first sentence of the General Commercial paragraph of section 3.8.1:

"The General Commercial designation is applied to the commercial area located at Coronation Mall and is intended for commercial uses that serve a market area both within and beyond the local community, and to function as a secondary commercial focus to the downtown core."

and replace with:

"The General Commercial designation is applied to the commercial areas located at Coronation Mall and at 1130 Rocky Creek Road, and is intended for commercial uses that serve a market area both within and beyond the local community, and to function as commercial concentrations that are secondary to the downtown core."

2. "Map 1 – Land Use":
 - (a) Change "Industrial" designation to "General Commercial" for Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) as shown in Schedule 1 which is attached to and forms a part of this bylaw.
3. "Map 2 – Development Permit Areas":
 - (a) Delete "DPA 5 – Industrial" from Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) as shown in Schedule 1 which is attached to and forms a part of this bylaw.

Citation

4. This Bylaw may be cited for all purposes as "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068".

READ A FIRST TIME on the 1st day of June, 2021

READ A SECOND TIME on the 1st day of June, 2021

PUBLIC HEARING held pursuant to the provisions of the *Local Government Act* on the

day of ,

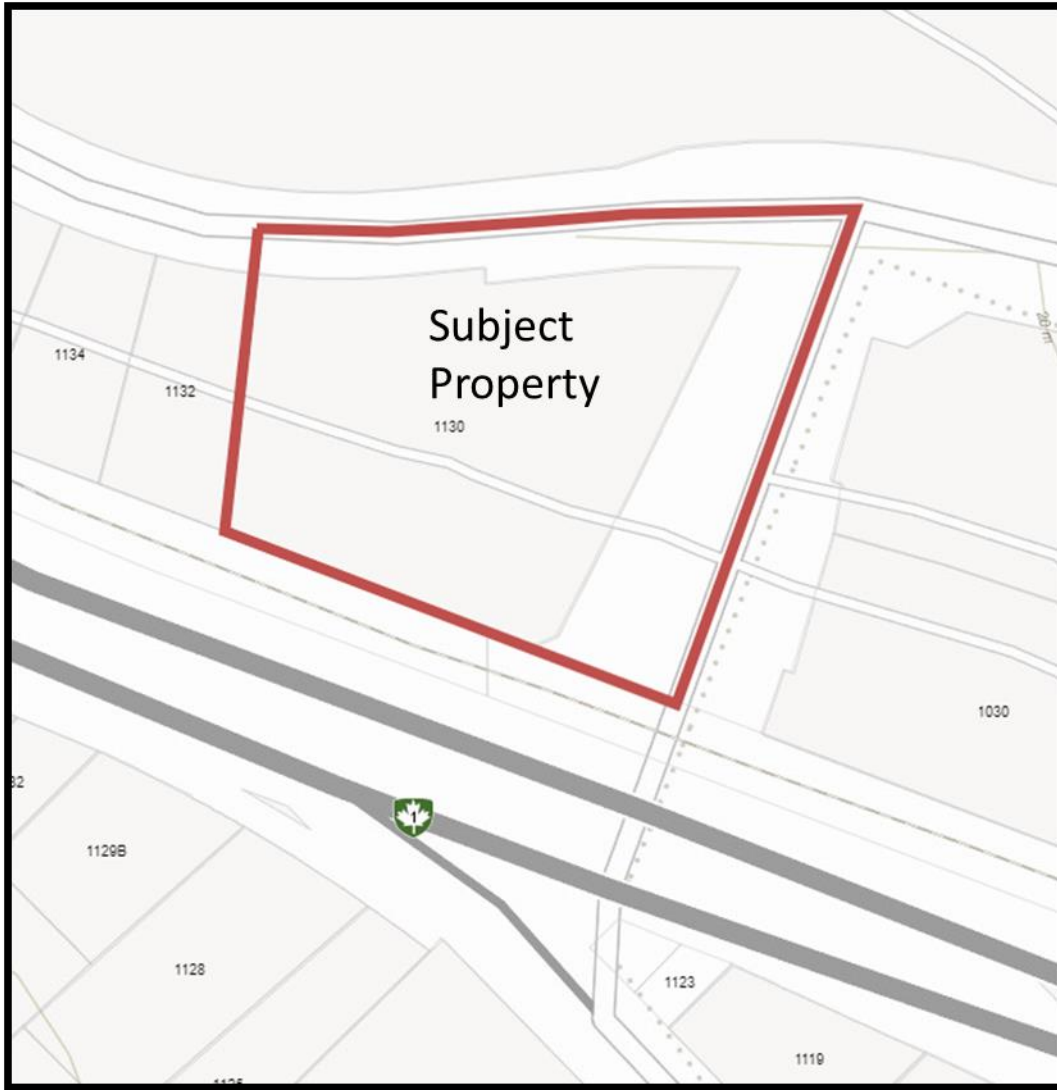
READ A THIRD TIME on the day of ,

ADOPTED on the day of ,

Mayor (A. Stone)

Corporate Officer (D. Smith)

**Schedule 1
Subject Property**



TOWN OF LADYSMITH

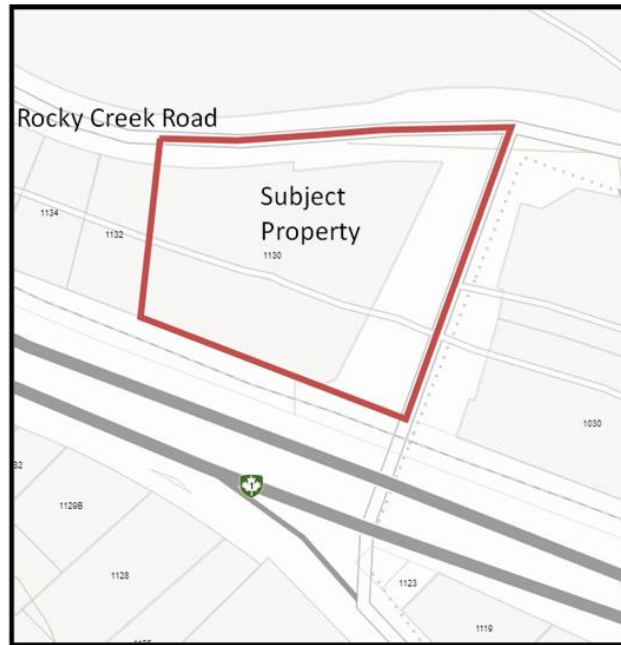
BYLAW NO. 2069

A Bylaw to amend “Town of Ladysmith Zoning Bylaw 2014, No. 1860”

The Council of the Town of Ladysmith in open meeting assembled enacts the following amendments to “Town of Ladysmith Zoning Bylaw 2014, No. 1860”:

1. “Schedule A – Zoning Bylaw Text”:
 - a) Delete “Tourist Service” “CD-1” from Section “9.1 Creation of Zones”;
 - b) Replace subsection 1. p) of section “11.5 Shopping Centre Commercial (C-5)” with the following:
 - p) *Cannabis Retail Sales* but in the parcels contained within the shaded areas identified on Figures 11.5 and 11.6;
 - c) Add Figure 11.6 following Figure 11.5 in section “11.5 Shopping Centre Commercial (C-5)” as shown below:

Figure 11.6



- d) Add a new Section 7 “Site Specific Regulations” to section “11.5 Shopping Centre Commercial (C-5)” as follows:
 7. Site Specific Regulations
 - a) For the *Parcel* legally described as Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) all *Buildings* must

meet or exceed Step 1 of the British Columbia Energy Step Code.

- b) Notwithstanding section 6.3 subsection a)vi) a maximum of one *Use* with a *Drive-through* service is permitted on the *Parcel* legally described as Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road), provided that any *Buildings* associated with the *Drive-through Use* meet or exceed Step 2 of the British Columbia Energy Step Code.
 - c) For the *Parcel* legally described as Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) the following additional *Principal Uses* are permitted:
 - i) *Animal Day Care.*
 - ii) *Artist Studio.*
 - iii) *Building Supply Sales.*
 - iv) *Cottage Industry.*
 - v) *Garden Centre.*
 - vi) *Home Improvement Service Industry.*
 - vii) *Micro-Brewery.*
 - viii) *Laboratory.*
 - ix) *Media Production Studio.*
 - x) *Neighbourhood Pub.*
 - xi) *Non-Motorized Recreational Equipment Sales or Rental.*
 - xii) *Print Shop.*
 - xiii) *Re-Store.*
 - e) Delete section “17.1 Comprehensive Development 1 – Tourist Service (CD-1)” in its entirety and replace with “17.1 Comprehensive Development 1 – Reserved for Future Use”.
2. “Schedule B – Zoning Bylaw Map”:
- a) Change the zone from “CD-1 Tourist Service” to “C-5 Shopping Centre Commercial” for Lot A, District Lots 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) as shown in Schedule 1 which is attached to and forms a part of this bylaw; and,
 - b) Delete “CD-1 Tourist Service” from the legend.

Citation

3. This Bylaw may be cited for all purposes as “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069”.

READ A FIRST TIME on the 1st day of June, 2021

READ A SECOND TIME on the 1st day of June, 2021

PUBLIC HEARING held pursuant to the provisions of the *Local Government Act* on the
day of ,

READ A THIRD TIME on the day of ,

APPROVED by the Ministry of Transportation and Infrastructure on the

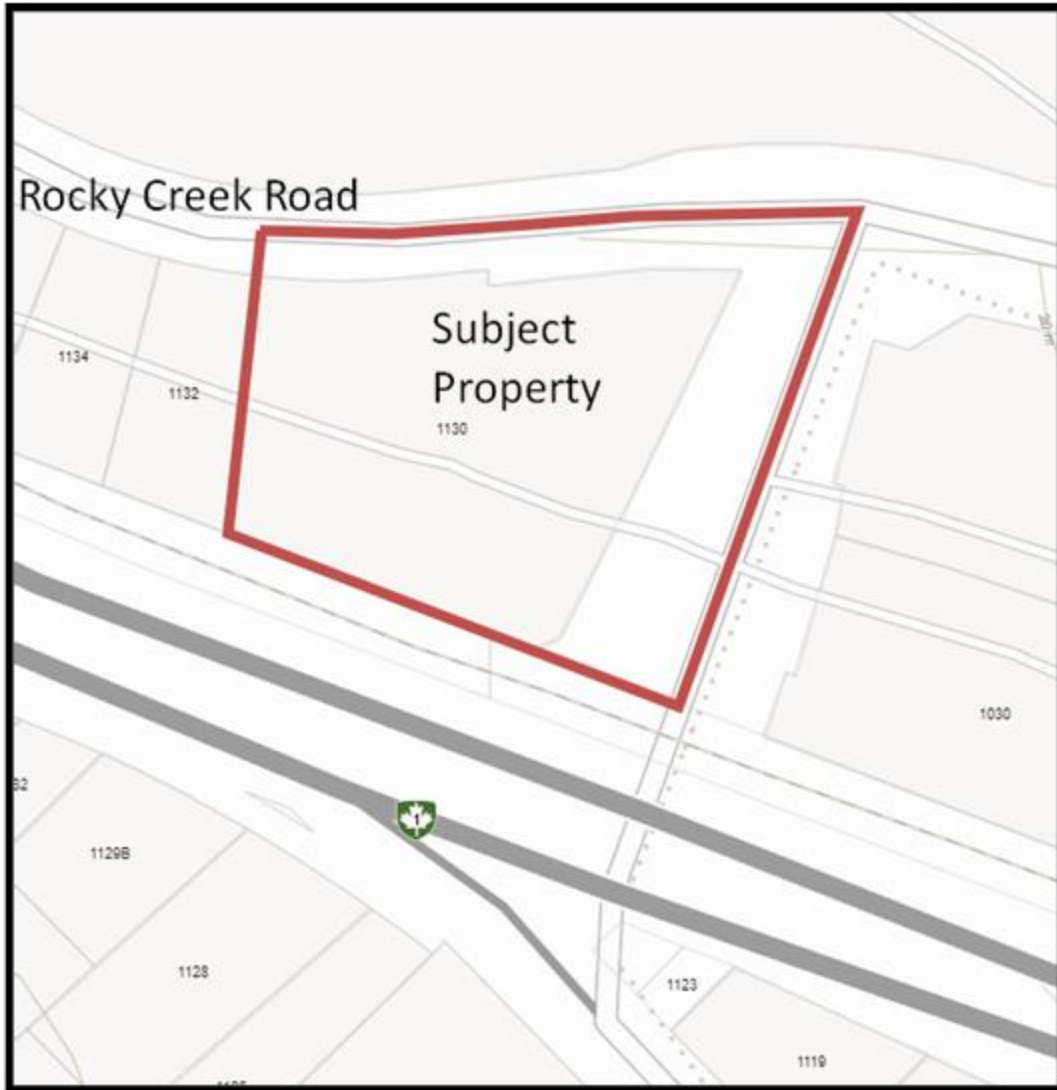
day of ,

ADOPTED on the day of ,

Mayor (A. Stone)

Corporate Officer (D. Smith)

Schedule 1
Subject Property





MINUTES OF A REGULAR MEETING OF COUNCIL

Tuesday, June 1, 2021

6:00 P.M.

This meeting was held electronically as per Ministerial Order No. M192

Council Members Present:

Mayor Aaron Stone
Councillor Amanda Jacobson
Councillor Rob Johnson
Councillor Tricia McKay

Councillor Duck Paterson
Councillor Marsh Stevens
Councillor Jeff Virtanen

Staff Present:

Allison McCarrick
Erin Anderson
Chris Barfoot
Jake Belobaba
Geoff Goodall
Donna Smith

Ryan Bouma
Christina Hovey
Julie Thompson
Mike Gregory
Sue Bouma

1. CALL TO ORDER

Mayor Stone called this Regular Meeting of Council to order at 5:31 p.m., in order to retire immediately into Closed Session.

2. CLOSED SESSION

CS 2021-172

That, in accordance with section 90(1) of the *Community Charter*, Council retire into closed session in order to consider items related to the following:

- personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the municipality - section 90(1)(a).

Motion Carried

3. **OPEN MEETING AND ACKNOWLEDGEMENT (6:00 P.M.)**

Mayor Stone called the Public Hearing and Regular Meeting of Council to order at 6:01 p.m., recognizing with gratitude that it was taking place on the traditional unceded territory of the Stz'uminus People.

Mayor Stone addressed the recent discovery of the remains of 215 children at a residential school site in Kamloops and expressed his deep condolences to all the First Nations communities throughout the province. Mayor Stone confirmed the Town's commitment to support the reconciliation process.

4. **AGENDA APPROVAL**

CS 2021-173

That Council approve the agenda for this Public Hearing and Regular Meeting of Council for June 1, 2021.

Motion Carried

5. **PUBLIC HEARING**

5.1 "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No.62) 2021, No. 2047" and "Town of Ladysmith Zoning Bylaw 2014, No.1860, Amendment Bylaw (No.31) 2021, No. 2049".

Members of the public present: 5

5.1.1 Outline of Public Hearing Process - Mayor Stone

Mayor Stone outlined the Public Hearing process and stated that the public would have the opportunity to provide their comments to Council about Bylaw Nos. 2047 and 2049, which relate to the filming industry.

He advised that staff would introduce the proposed bylaw amendments, followed by public submissions. He reminded the public that the content of submissions would be made public and form a part of the public record for the Hearing, and that the function of Council at a Public Hearing is to listen rather than to debate the merits of the proposed Bylaws, although they may ask clarifying questions. He advised that once everyone had an opportunity to be heard, the Public Hearing would be closed and no further submissions or comments could be accepted by members of Council.

5.1.2 Introduction of Bylaw and Statutory Requirements - Director of Development Services

Jake Belobaba, Director of Development Services, introduced the following bylaws as the subjects of the Public Hearing:

1. "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No.62) 2021, No. 2047" (hereafter referred to as Bylaw No. 2047)
2. "Town of Ladysmith Zoning Bylaw 2014, No.1860, Amendment Bylaw (No.31) 2021, No. 2049" (hereafter referred to as Bylaw No. 2049)

Mr. Belobaba advised Council that Bylaw No. 2047 would amend the Official Community Plan to exempt temporary works, structures and alterations to building exteriors for the purposes of filming and for which a valid film permit has been issued, from the requirement to obtain a development permit. He advised that Bylaw No. 2049 would amend the Zoning Bylaw to allow the temporary use of land and temporary structures for the purposes of filming and for which a valid film permit has been issued, as a permitted use in all zones.

Mr. Belobaba also confirmed the Public Hearing notification and engagement process. Notice of this Public Hearing was published in the Ladysmith-Chemainus Chronicle on May 20 & 27, 2021, and was posted on the Town's website as well as various community notice boards. A copy of the Notice, the proposed bylaws, and background information was made available at the front counter of City Hall and Development Services, and on the Town's website for the Notice period. Staff in the Development Services office were available to respond to questions prior to the Public Hearing. The Town received no written submissions relating to Bylaw Nos. 2047 and 2049.

5.1.3 Submissions

5.1.4 Call for Submissions to Council (Three Times) - Mayor Stone

Mayor Stone called for submissions to Council.

Chad Torunchuk, of the Microtel Inn & Suites in Oyster Bay, spoke in support of the bylaws, noting that the film industry has made a positive impact on their business, allowing them to hire more staff and to increase staff hours.

Mayor Stone called for submissions to Council a second time.

Mayor Stone called for submissions to Council a third and final time.

Mayor Stone asked the Corporate Officer, D. Smith, if any submissions had been received via email. The Corporate Officer advised that no submissions had been received.

5.1.5 Declaration that the Public Hearing for Bylaw Nos. 2047 and 2049 is Closed - Mayor Stone

Hearing no comments and receiving no submissions, Mayor Stone called the Public Hearing for Bylaw Nos. 2047 and 2049 closed and stated that no further submissions or comments from the public or interested persons could be accepted by members of Council.

6. BYLAWS - OFFICIAL COMMUNITY PLAN AND ZONING (SUBJECT OF PUBLIC HEARING)

6.1 "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No.62) 2021, No. 2047"

CS 2021-174

That Council proceed with third reading of "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 62) 2021, No. 2047".

Motion Carried

6.2 "Town of Ladysmith Zoning Bylaw 2014, No.1860, Amendment Bylaw (No.31) 2021, No. 2049"

CS 2021-175

That Council:

1. Proceed with third reading of "Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 31) 2021, No. 2049"; and
2. Direct staff to refer "Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 31) 2021, No. 2049" to the Ministry of Transportation and Infrastructure pursuant to section 52 of the *Transportation Act*.

Motion Carried

7. RISE AND REPORT- Items from Closed Session

Council rose from Closed Session at 5:55 p.m. without report.

8. MINUTES

8.1 Minutes of the Regular Meeting of Council held May 18, 2021

CS 2021-176

That Council approve the minutes of the Regular Meeting of Council held May 18, 2021.

Motion Carried

9. DELEGATIONS

9.1 Ladysmith & District Historical Society Annual Update to Council

Quentin Goodbody presented Council with an update of the activities of the Ladysmith & District Historical Society and responded to Council's questions.

Council commended the Society for the work they do in the community and thanked Mr. Goodbody for his presentation.

10. DEVELOPMENT APPLICATIONS

10.1 Development Variance Permit and Development Permit Applications at 287 Gill Road

CS 2021-177

That Council:

1. Issue Development Variance Permit 3090-21-01 to vary:
 - a. the front parcel line setback from 6.0m to 0.8m for a dwelling addition;
 - b. the side setback for an unenclosed swimming pool from 3.0m to 2.4m; and
 - c. the setback from the top of slope on a parcel adjacent to the sea from 8.0m to 7.2m for an unenclosed swimming pool; at Amended Lot 1 (DD 60489N) District Lot 42, Oyster District, Plan 4670 (287 Gill Road);
2. Issue Development Permit 3060-21-03 to allow the construction of an addition to the dwelling, retaining walls, and a swimming pool with

fence enclosure at Amended Lot 1 (DD 60489N) District Lot 42, Oyster District, Plan 4670 (287 Gill Road); and

3. Authorize the Mayor and Corporate Officer to sign Development Variance Permit 3090-21-01.

Motion Carried

Councillor Stevens declared a conflict of interest related to Agenda item 10.2 as he is a contiguous property owner and friend of the applicant and vacated the meeting at 6:50 p.m.

10.2 Liquor Lounge Endorsement – Bayview Brewing Company at 202 Dogwood Drive

CS 2021-178

That Council, in response to the referral from the Liquor and Cannabis Regulation Branch for a lounge endorsement application for the Bayview Brewing Company located at 202 Dogwood Drive, opt in to the local government comment process and direct staff to provide written notification to residents within 60 metres of the subject property inviting them to submit written comments about the application.

Motion Carried

Councillor Stevens returned to the meeting at 6:58 p.m.

10.3 Application to Extend Term of Winter Shelter at 631 1st Avenue

CS 2021-179

That Council renew Temporary Use Permit 3340-18-02.

Motion Carried

OPPOSED: Mayor Stone and Councillor Virtanen

11. COMMITTEE MINUTES

11.1 Public Art Task Group - May 6, 2021

CS 2021-181

That Council receive for information the minutes of the May 6, 2021 meeting of the Public Art Task Group.

Motion Carried

CS 2021-180

By unanimous consent Council recessed at 7:15 p.m. to allow for a five minute break.

Council reconvened the meeting at 7:20 p.m.

12. BYLAWS- OFFICIAL COMMUNITY PLANNING AND ZONING

12.1 OCP & Zoning Amendment Application – 1130 Rocky Creek Road

CS 2021-182

That Council:

1. Give first and second readings to “Road Closure and Dedication Removal Bylaw 2021, No. 2067”;
2. Direct staff to deliver notice to the Ministry of Transportation and Infrastructure, Island Corridor Foundation, BC Hydro, Fortis BC, Shaw Communications and Telus, of Council’s intention to adopt Bylaw No. 2067, in accordance with section 40(4) of the *Community Charter*;
3. Give first and second readings to “Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068”;
4. Consider Bylaw No. 2068 in conjunction with the Town’s Financial Plan, the Town’s Liquid Waste Management Plan, and the Cowichan Valley Regional District Solid Waste Master Plan in accordance with section 477(3) of the *Local Government Act*;
5. Give first and second readings to “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069”;
6. Direct staff to proceed with scheduling and notification for a Public Hearing for Bylaw Nos. 2067, 2068 and 2069 in accordance with section 40(3) *Community Charter* and section 464 of the *Local Government Act*;
7. Subject to adoption of Bylaw No. 2067, authorize the sale of the lands that are the subject of that bylaw to the developer for appraised market value; and,
8. Require that the developer, at their cost, complete the following prior to adoption of Bylaw Nos. 2068 and 2069:
 - a. Consolidate the subject property, legally described as Lot A, Districts 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) with the area shown as “road to be closed” in Reference Plan EPP110196, shown in Schedule 1 of Bylaw No. 2067;

- b. Dedicate to the Town for road, the area shown as “road” on Reference Plan EPP110197, included in the May 18, 2021 staff report to Council as Attachment D;
- c. Pursuant to Section 507 of the *Local Government Act*, enter into an agreement with the Town to provide a median on Ludlow Road and a roundabout at the intersection of Rocky Creek Road and Ludlow Road to be built in accordance with the standards established by the Town, with the Town contributing \$1 million to the project in accordance with “Town of Ladysmith Development Cost Charges Bylaw 2019, No. 2008”;
- d. Update Covenant FB234682, registered to the title of the subject property, legally described as Lot A, Districts 24 and 38, Oyster District, Plan VIP71248 (1130 Rocky Creek Road) as follows:
 - i. Replace Sections 2.a) (Green Building Standards and Practices) and b) (Landscaping) with a requirement that the rain water management be designed in accordance with “Stormwater Planning: A Guidebook for British Columbia”, requiring that the development be designed to accommodate “HandyDART” buses and that the development include a minimum of two “quick charge” electric vehicle charging stations;
 - ii. Amend Section 2.c) to require landscaping, including a local historical artifact or a public art installation, in the centre of the Ludlow/Rocky Creek Road roundabout;
 - iii. Delete Section 3; and
 - iv. Add a new section requiring that the development and adjacent boulevards be provided with an outdoor electrical supply and outlets which can be used by the Town for special events; and
- e. Register an easement or statutory right-of-way in favour of BC Hydro on the subject property.

Motion Carried

OPPOSED: Councillor Stevens

13. BYLAWS

13.1 "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 64) 2021, No. 2062"

CS 2021-183

That Council adopt "Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 64) 2021, No. 2062".

Motion Carried

13.2 "Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 34) 2021, No. 2063"

CS 2021-184

That Council adopt "Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 34) 2021, No. 2063".

Motion Carried

14. CORRESPONDENCE

14.1 Correspondence from Ladysmith Kinsmen Club dated May 10, 2021

CS 2021-185

That Council provide a letter in support of the Ladysmith Kinsmen's Club proposal to include both Hul'q'umi'num and English wording on the public restroom located on 1st Avenue as outlined in their letter dated May 10, 2021.

Motion Carried

15. NEW BUSINESS

15.1 Task Force to Promote Tourism Events

Mayor Stone advised that he would reach out to the Tourism Partnership Group and return to the next Council meeting with a response from the group regarding the Town's offer to provide assistance via a task force to promote tourism events in Ladysmith.

16. QUESTION PERIOD

There were no questions submitted by the public.

17. ADJOURNMENT

CS 2021-186

That this Regular Meeting of Council adjourn at 8:19 p.m.

Motion Carried

CERTIFIED CORRECT:

Mayor (A. Stone)

Corporate Officer (D. Smith)

STAFF REPORT TO COUNCIL

Report Prepared By: Julie Thompson
Reviewed By: Jake Belobaba, Director of Development Services
Meeting Date: June 15, 2021
File No: DVP 3090-21-05
Re: Development Variance Permit Application – 614 Brown Drive

RECOMMENDATION:

That Council:

1. Issue Development Variance Permit 3090-21-05 to vary the front parcel line setback from 6.0m to 3.3m for an unenclosed balcony attached to an existing dwelling at Lot 45, District Lot 96, Oyster District, Plan 28585 (614 Brown Drive); and
2. Authorize the Mayor and Corporate Officer to sign Development Variance Permit 3090-21-05.

EXECUTIVE SUMMARY:

The applicant is proposing to construct an unenclosed balcony at the front of the existing dwelling at 614 Brown Drive, and has applied for a Development Variance Permit (DVP; Attachment A) to vary the front parcel line setback for the balcony. Staff recommend approval of the DVP based on the analysis of the impacts.

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

The subject property, 614 Brown Drive, is located within a predominately single-family residential neighbourhood and contains an existing dwelling with an attached balcony on the front. The existing balcony is narrow and the applicant is proposing to extend it in order to allow wheelchair access. Stairs with a chairlift from the balcony to the ground are also proposed. The applicant has provided a letter of rationale for the proposal (Attachment B).



Figure 1: Subject property

DISCUSSION:

The subject property is designated Single Family Residential in Official Community Plan (OCP) Bylaw No. 1488 and is zoned Single Dwelling Residential (R-1) in Zoning Bylaw No. 1860. The proposal is consistent with the OCP designation and permitted uses in the R-1 zone.

Variance Proposal:

Unenclosed balconies are permitted to encroach into a front parcel line setback by 1.5m in accordance with the Zoning Bylaw. The front parcel line setback for a principal building in the R-1 zone is 6m, with the exemption allowing a minimum 4.5m setback for an unenclosed balcony. The proposed unenclosed balcony will be located 3.3m from the front parcel line, requiring a setback variance. The proposed balcony is shown in DVP 3090-21-05 (Attachment A)¹. It is noted that the existing dwelling also encroaches into the front parcel line setback.

The siting of the dwelling and proposed balcony close to the front parcel line is not out of character with neighbouring parcels on Brown Drive (see Figure 1). As such, the proposed setback variance for the balcony is not expected to have a negative impact on the surrounding neighbourhood and it is therefore recommended that DVP 3090-21-05 be approved.

ALTERNATIVES:

Council can choose to:

1. Refuse to issue DVP 3090-21-05.
2. Refer the application back to staff for further review, as specified by Council.

FINANCIAL IMPLICATIONS:

N/A

LEGAL IMPLICATIONS:

The *Local Government Act* allows Council to vary zoning regulations through issuance of a DVP excluding regulations of use, density and rental tenure.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Notice of the proposed variance was issued on June 4, 2021 in accordance with the requirements of the *Local Government Act* and Development Procedures Bylaw No. 1667. The notice was delivered to property owners/residents within 60m of the subject property. At the time of writing, no submissions have been received.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

The application has been referred to the Engineering and Building Inspection Departments and the Fire Chief. No concerns were noted.

¹ While the setback exemption allows a minimum setback of 4.5m from the front parcel line for the unenclosed balcony, DVP 21-05 is drafted such that the variance is to the 6m setback, rather than to the setback exemption, to avoid confusion in interpretation of the DVP.

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input checked="" type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

- | | |
|---|--|
| <input type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
| <input type="checkbox"/> Community | <input checked="" type="checkbox"/> Not Applicable |
| <input type="checkbox"/> Waterfront | |

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENT(S):

- A. Draft DVP 3090-21-05
- B. Applicant Letter of Rationale



TOWN OF LADYSMITH DEVELOPMENT VARIANCE PERMIT

(Section 498 *Local Government Act*)

FILE NO: 3090-21-05

DATE: June 15, 2021

Name of Owner(s) of Land (Permittee): Deena Beeston

Applicant: Deena Beeston

Subject Property (Civic Address): 614 Brown Drive

1. This Development Variance Permit is issued subject to compliance with all of the bylaws of the Town of Ladysmith applicable thereto, except as specifically varied or supplemented by this Permit.
2. This Development Variance Permit applies to and only to those lands within the Town of Ladysmith described below and any and all buildings, structures and other development thereon:

Lot 45, District Lot 96, Oyster District, Plan 28585
PID: 000-820-512
(614 Brown Drive)
(referred to as the “Land”)
3. Section 10.2.e) of the “Single Dwelling Residential (R-1)” zone of the “Town of Ladysmith Zoning Bylaw 2014, No. 1860”, as amended, is varied for the Land by reducing the *Front Parcel Line* setback from 6.0 metres to 3.3 metres for an unenclosed balcony, attached to the existing dwelling, as shown in **Schedule A – Site Plan** and **Schedule B – Elevation Plan**.
4. The land described herein shall be developed strictly in accordance with terms and conditions and provisions of this Permit and any plans and specifications attached to this Permit which shall form a part thereof.
5. The following plans and specifications are attached:
 - a) **Schedule A – Site Plan**
 - b) **Schedule B – Elevation Plan**
6. Notice of this Permit shall be filed in the Land Title Office at Victoria under s.503 of the *Local Government Act*, and upon such filing, the terms of this Permit (**3090-21-05**) or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.

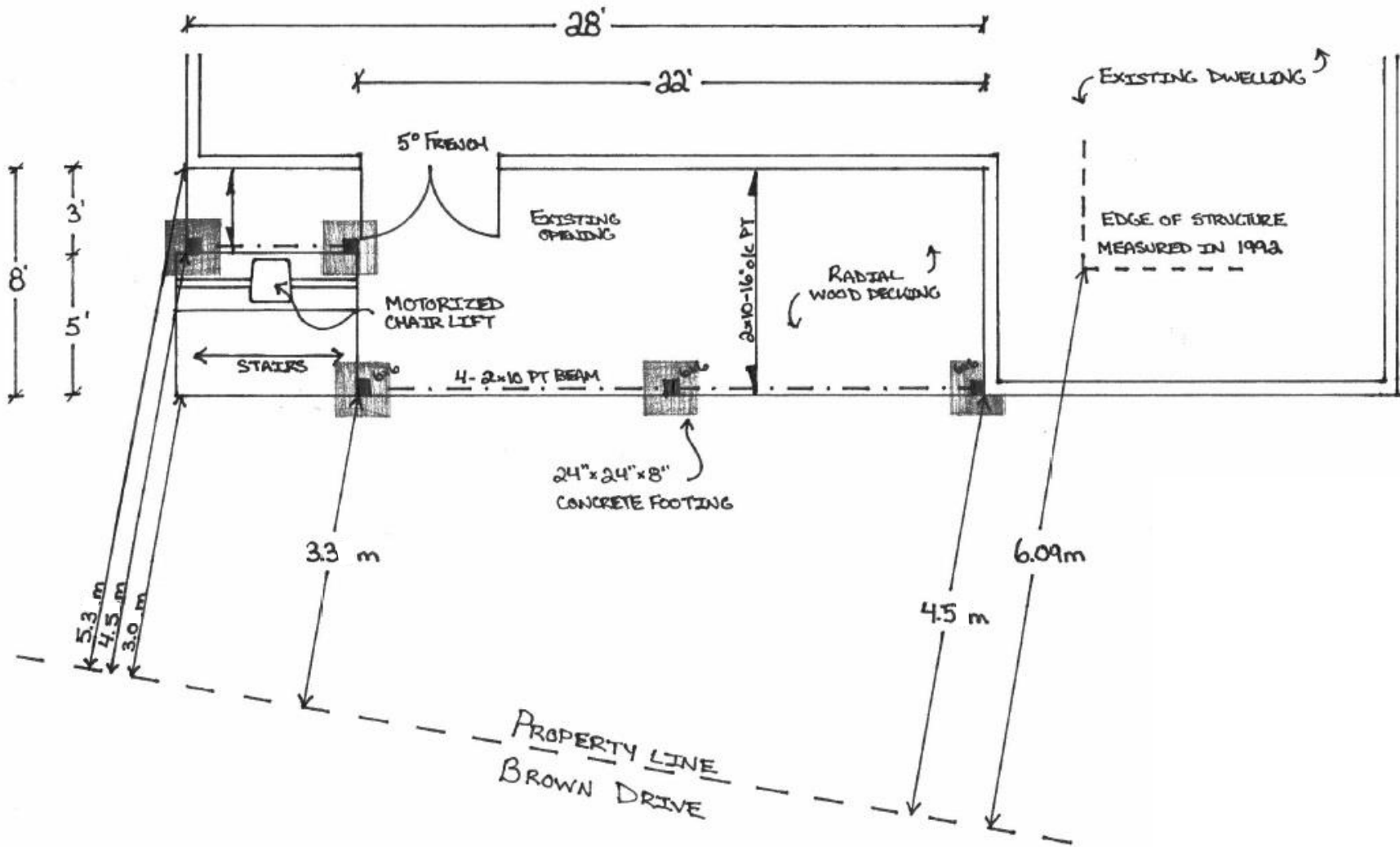
7. THIS PERMIT IS NOT A BUILDING PERMIT. No occupancy permit shall be issued until all items of this Development Variance Permit have been complied with to the satisfaction of the Corporate Officer.

AUTHORIZED BY RESOLUTION NO. _____ PASSED BY THE COUNCIL OF THE TOWN OF LADYSMITH ON THE ____ DAY OF _____ 202__.

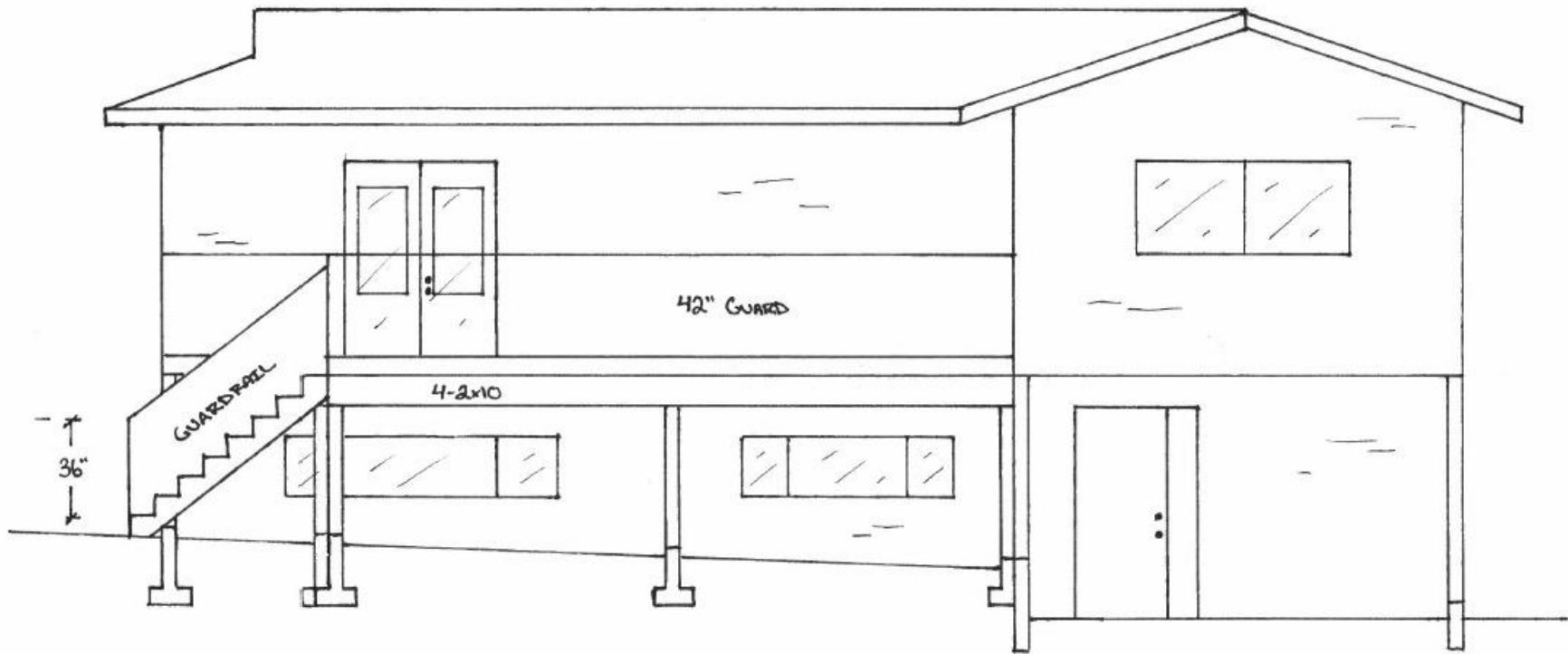
Mayor (A. Stone)

Corporate Officer (D. Smith)

DRAFT



Schedule A - Site Plan
 DVP 3090-21-05
 614 Brown Drive



Schedule B - Elevation Plan
DVP 3090-21-05
614 Brown Drive

Deena Beeston
614 Brown Drive
Ladysmith BC
V9G 1P3

Town of Ladysmith
Planning Department

April 23, 2021

To Whom It May Concern

I am applying for a variance to allow me to make my home safe and accessible for my Mother, Audrey Beeston, who has recently come to live with me.

I have a home built in the 70's with the main living area on the second floor. The interior staircase was built to minimum standards with an 8 1/2 inch rise and an 8 1/4 inch run. My Mother has numerous health issues including COPD, Asthma, and very restricted and limited mobility as she spent 2 years in a wheelchair while having knee surgeries. She is recently walking but finds the stairs extremely difficult to manoeuvre as they are steep and shallow. On occasion she is required to use her wheelchair. She needs to make frequent stops to rest and catch her breath as she tries to navigate the stairs. I currently do not prefer her to attempt to use the stairs without assistance.

The architecture of the home makes the staircase less than ideal to have a chair lift installed as it would make it impossible to move anything up or downstairs. Even carrying a laundry basket would be difficult.

My front deck is only 5'6" above the ground due to a sloping yard. If I could enlarge my deck a minimal amount to allow access for a wheelchair from the house onto the deck I could have a more accessible set of stairs go down from the deck with sufficient room for a chairlift. I have spoken to my builder to make sure the stairs are built to the most recommended rise/run for accessibility.

The deck also needs to be slightly larger to enable the doors to swing out as there is insufficient room inside to have them open in (due to fireplace).

This is a safety issue as I am currently afraid to leave my Mother alone in the house in case of emergency as I am afraid she would not be able to safely navigate the stairs if she were anxious or in a hurry, or worse trying to carry anything.

We looked at a wheelchair ramp but as there would need to be a run of 60 feet with 2 – 3 landings it would extend from the house right out to the street taking up the entire front yard.

I believe I am asking for a variance of just over a meter for a portion of the deck (the street curves in front of my home making part of the deck within the legal setback and part of it over.

I have a large deck on the back of my home that I use for entertaining and BBQing etc, the need for this deck is strictly to make my home safe and accessible for my Mother.

Thank you



Deena Beeston

Regarding Rise/Run of residential stairs

The National Building Code of Canada has suggested that stairs need to be a minimum of 21 centimetres (or 8 1/4 inches) when it comes to the treads.

But on average, every day in Canada, nearly one person dies falling on a set of stairs, and more than 270 people end up in the hospital, according to the Canadian Public Health Association. And elderly people make up two-thirds of those cases.

Now, researchers from the Toronto Rehabilitation Institute say that increasing the depth on steps by just five centimetres (or 2 inches) increases foot stability, and significantly lowers the risk of falling.

"We estimate 13,000 falls due to stairs will be reduced, and 39 deaths will be prevented in the first five years of its implementation," said Toronto Rehabilitation Institute scientist Alison Novak.

Geoff Fernie, director of research at the hospital, said the problem is that most stairs aren't deep enough to adequately support the average adult foot.

"When you step onto a step, you expect it to be at least as long as a foot," he said.

"If half of your foot is on the front, it is easy for your foot to slip in front and tumble forward."

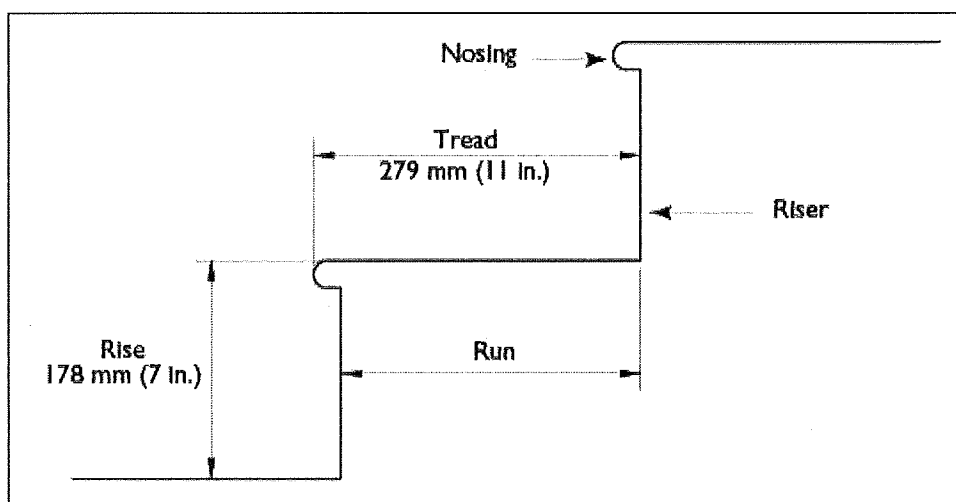
Following a review, the National Building Code of Canada updated its standards for stairs in December.

Some groups, however, go further, including the Canadian Mortgage Housing Corporation which advocates for a tread depth no shorter than 28 centimeters (or 11 inches).

Stair tread depth

Source: Canadian Mortgage Housing Corporation

<https://www.ctvnews.ca/health/increasing-stair-depth-could-save-lives-researchers-1.2693664#:~:text=It's%20a%20small%20step%20towards,it%20comes%20to%20the%20treads.>



STAFF REPORT TO COUNCIL

Report Prepared By: Julie Thompson, Planner
Reviewed By: Jake Belobaba, Director of Development Services
Meeting Date: June 15, 2021
File No: DVP 3090-21-06 & DP 3060-21-01
Re: Development Variance Permit and Development Permit Applications – 6-245 Oyster Cove Road

RECOMMENDATION:

That Council:

1. Issue Development Variance Permit 3090-21-06 to allow two 2-storey accessory buildings in a front yard, and to increase the permitted height of the accessory buildings from 3.5m to 5.1m and 4.1m respectively, at Strata Lot 6, District Lot 56, Oyster District, Strata Plan 2009 Together with an Interest in the Common Property in Proportion to the Unit Entitlement of the Strata Lot as Shown on Form 1 (6-245 Oyster Cove Road);
2. Issue Development Permit 3060-21-01 to allow the construction of a dwelling, two accessory buildings, and retaining walls at 6-245 Oyster Cove Road; and
3. Authorize the Mayor and Corporate Officer to sign Development Variance Permit 3090-21-06.

EXECUTIVE SUMMARY:

The applicant is proposing to construct a single family residence with two detached garages and retaining walls at 6-245 Oyster Cove Road and has applied for a Development Variance Permit (DVP; Attachment A) and a Development Permit (DP; Attachment B) to facilitate the development. Staff recommend approval of the DP based on the geotechnical report provided by the applicant and consistency with the Hazard Lands – Development Permit Area 7 (DPA 7) guidelines. Staff recommend approval of the DVP based on the analysis of the impacts.



Figure 1: Subject property

PREVIOUS COUNCIL DIRECTION:

Table 1: Previous DVPs issued on Oyster Cove Road

File #3090-	Strata Lot #	Variance Approved
16-01	14	Front parcel line setback reduced from 6m to 0.6m for an attached garage
16-06	9	Front parcel line setback reduced from 6m to 0.6m for an attached garage
16-09	40	Front parcel line setback reduced from 6m to 3.05m for an attached garage
16-05	37	Front parcel line setback reduced from 6m to 0.6m for an attached garage
20-05	11	Front parcel line setback reduced from 6m to 0.71m for an attached garage
20-09	37	Front parcel line setback reduced from 6m to 5m for an attached garage

INTRODUCTION/BACKGROUND:

The subject property, Strata Lot 6 at 245 Oyster Cove Road, is located within a bare land strata, single family residential development and is 442.5m² in size. Properties along Oyster Cove Road steeply slope toward the sea, and a seawall is located between the properties and the sea.

The applicant is proposing to construct a single family dwelling on the subject property with two detached garages located at the front of the proposed dwelling, with access off Oyster Cove Road. The applicant has also provided a letter (Attachment C).

DISCUSSION:

The subject property is designated Single Family Residential in Official Community Plan (OCP) Bylaw No. 1488 and is zoned Oyster Cove Residential (R-2-B) in Zoning Bylaw No. 1860. The proposal is consistent with the OCP designation and permitted uses in the R-2-B zone. The subject property is also within DPA 7, so a DP is required.

Variance Proposal:

The proposed detached garages are located in the front yard of the property and are two storeys tall with flat roofs. The siting, height and second storey of the garages do not comply with the Zoning Bylaw, and so the applicant is requesting a DVP. A summary of the proposed variances is provided in Table 2, below.

Table 2: Summary of proposed variances

Zoning Regulation	Permitted	Proposed
Location of accessory buildings	Side or rear yard only; not permitted in a front yard	Two detached garages located in a front yard
Accessory building height	Maximum of 3.5m for accessory buildings with a flat roof ¹	North garage: 5.2m South garage: 4.1m
Number of storeys in an accessory building	Maximum of one storey	Two storeys in each garage

¹ A maximum of 5m in height is permitted for accessory buildings with a pitched roof.

The garages appear as a single storey from Oyster Cove Road but are built into the slope and have a walk-out lower storey facing the front of the proposed dwelling. It is noted that neither of the garages exceed the 60m² gross floor area maximum provided in the Zoning Bylaw. Several properties within the Oyster Cove Road strata contain either attached or detached garages at the front of the property in close proximity to the front parcel line. The proposal is consistent with the existing character of the Oyster Cove Road neighbourhood and is not expected to have any negative impacts. As such, staff recommend that DVP 21-06 be approved.

Development Permit Area:

The subject property is located within DPA 7 under the OCP. DPA 7 applies to areas of the Town with steep slopes and its purpose is to prevent land slippage and sloughing, safeguard private property from potential damage, minimize disruption to slope stability and prevent development in areas where slope instability hazards exist. The issuance of DPs in DPA 7 is delegated to the Director of Development Services, however since there is also a DVP required for the proposal, both permits are presented to Council so they can be considered simultaneously.

The proposed development has been reviewed for consistency with DPA 7 and is generally consistent with the DPA 7 guidelines. Staff recommend that DP 21-01 be approved.

Table 3 provides a summary of the guidelines and staff comments. The geotechnical assessment report submitted with the DP application addresses many of the guidelines.

Table 3: DPA 7 guidelines summary and staff comments

Guideline Summary	Staff Comments
No significant excavation or filling; buildings should not be placed on areas subject to bank instability.	The proposed dwelling will be built into the slope. Some excavation and filling may be required. The proposed retaining walls near the rear of the parcel will create a small yard area, which will require some excavation.
Avoid areas subject to unstable slopes by siting buildings in accordance with recommendations as determined by a geotechnical engineer.	The proposed development will be sited in accordance with the recommendations in the geotechnical assessment.
Provisions for surface and storm water runoff; divert drainage away from areas subject to sloughing.	The geotechnical assessment provides recommendations for surface water.
Where practical, no disturbance to the steep slope shall be permitted.	There is no flat area on the property that would accommodate the development, disturbance to the slope is required to develop the property. Construction is required to follow the recommendations in the geotechnical assessment.

Retaining walls should be terraced with plant material incorporated in the design to soften their appearance and perceived height. Untreated large concrete block walls are not supported.	Some retaining walls are proposed to create a yard/patio area near the rear of the property, but they are terraced and will not exceed the maximum retaining wall height prescribed by the Zoning Bylaw.
Existing trees and vegetation shall be maintained to control erosion and protect banks. Where vegetation is removed as a result of development, it shall be replaced with vegetation which stabilizes the slope and controls erosion.	The parcel was previously cleared of vegetation. The development is required to be constructed in a manner that complies with the recommendations of the geotechnical assessment in order to protect the stability of the slope.
Access improvements over the slope shall be constructed so as not to disturb the slope or natural slope drainage.	Steps are proposed along the side of the residence to provide access to the rear of the property. The geotechnical assessment provides recommendations for surface water.
A report certified by a geotechnical engineer registered as a Professional Engineer of BC may be required to provide information regarding technical requirements for mitigating measures which would be imposed to enable the site to withstand the proposed development and the known hazard.	A geotechnical assessment has been provided by a Professional Engineer of BC. The report determines that the land is considered safe for the use intended (single family residential development) provided the recommendations in the report are followed. The recommendations in the report are captured by DP 21-01.
The timing of the development may be specified in the DP.	N/A

ALTERNATIVES:

Council can choose to refuse issuance of DVP 3090-21-06. (DP 3060-21-01 would also need to be refused. The applicant could reapply for a DP with a proposal that meets the existing zoning requirements.)

FINANCIAL IMPLICATIONS:

N/A

LEGAL IMPLICATIONS:

The *Local Government Act* allows Council to vary zoning regulations excluding regulations of use, density and rental tenure through issuance of a DVP. Council may permit exceptions to the siting and height variances proposed in this application.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Notice of the proposed variance was issued on June 4, 2021 in accordance with the requirements of the *Local Government Act* and Development Procedures Bylaw No. 1667. The

notice was delivered to property owners/residents within 60m of the subject property. At the time of writing, no submissions have been received.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

The applications have been referred to the Engineering and Building Inspection Departments. No concerns were noted from either department.

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input checked="" type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

- | | |
|---|--|
| <input type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
| <input type="checkbox"/> Community | <input checked="" type="checkbox"/> Not Applicable |
| <input type="checkbox"/> Waterfront | |

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENTS:

- A. Draft DVP 3090-21-06
- B. Draft DP 3060-21-01
- C. Applicant Letter



TOWN OF LADYSMITH DEVELOPMENT VARIANCE PERMIT

(Section 498 *Local Government Act*)

FILE NO: 3090-21-06

DATE: June 15, 2021

Name of Owner(s) of Land (Permittee): Barlow Rose & Company Ltd.

Applicant: Colin Amey (CA Costal Construction Ltd.)

Subject Property (Civic Address): 6-245 Oyster Cove Road

1. This Development Variance Permit is issued subject to compliance with all of the bylaws of the Town of Ladysmith applicable thereto, except as specifically varied or supplemented by this Permit.
2. This Development Variance Permit applies to and only to those lands within the Town of Ladysmith described below and any and all buildings, structures and other development thereon:

Strata Lot 6, District Lot 56, Oyster District, Strata Plan 2009 Together with an interest in the common property in proportion to the unit entitlement of the strata lot as shown on Form 1.

PID: 016-664-370

(6-245 Oyster Cove Road)

(referred to as the "Land")

3. Section 5.2.c) of "Number, Location and Siting of Buildings and Structures" of the "Town of Ladysmith Zoning Bylaw 2014, No. 1860", as amended, is varied for the Land by allowing two *Accessory Buildings* to be located in a *Front Yard* as shown in **Schedule A – Site Plan** and **Schedule B – Conceptual Design Renderings**.
4. Section 5.9.g) of "Accessory Buildings, Structures and Uses" of the "Town of Ladysmith Zoning Bylaw 2014, No. 1860", as amended, is varied for the Land by allowing two two-*Storey Accessory Buildings* as shown on **Schedule A – Site Plan** and **Schedule B – Conceptual Design Renderings**.
5. Section 10.8.5.b) of the "Oyster Cove Residential Zone (R-2-B)" zone of the "Town of Ladysmith Zoning Bylaw 2014, No. 1860", as amended, is varied for the Land by increasing the maximum permitted *Height* of two *Accessory Buildings* with a roof pitch less than 4:12 from 3.5 metres to 5.2 metres for the north garage, and 4.1 metres for the south garage, as shown on **Schedule A – Site Plan** and **Schedule B – Conceptual Design Renderings**.

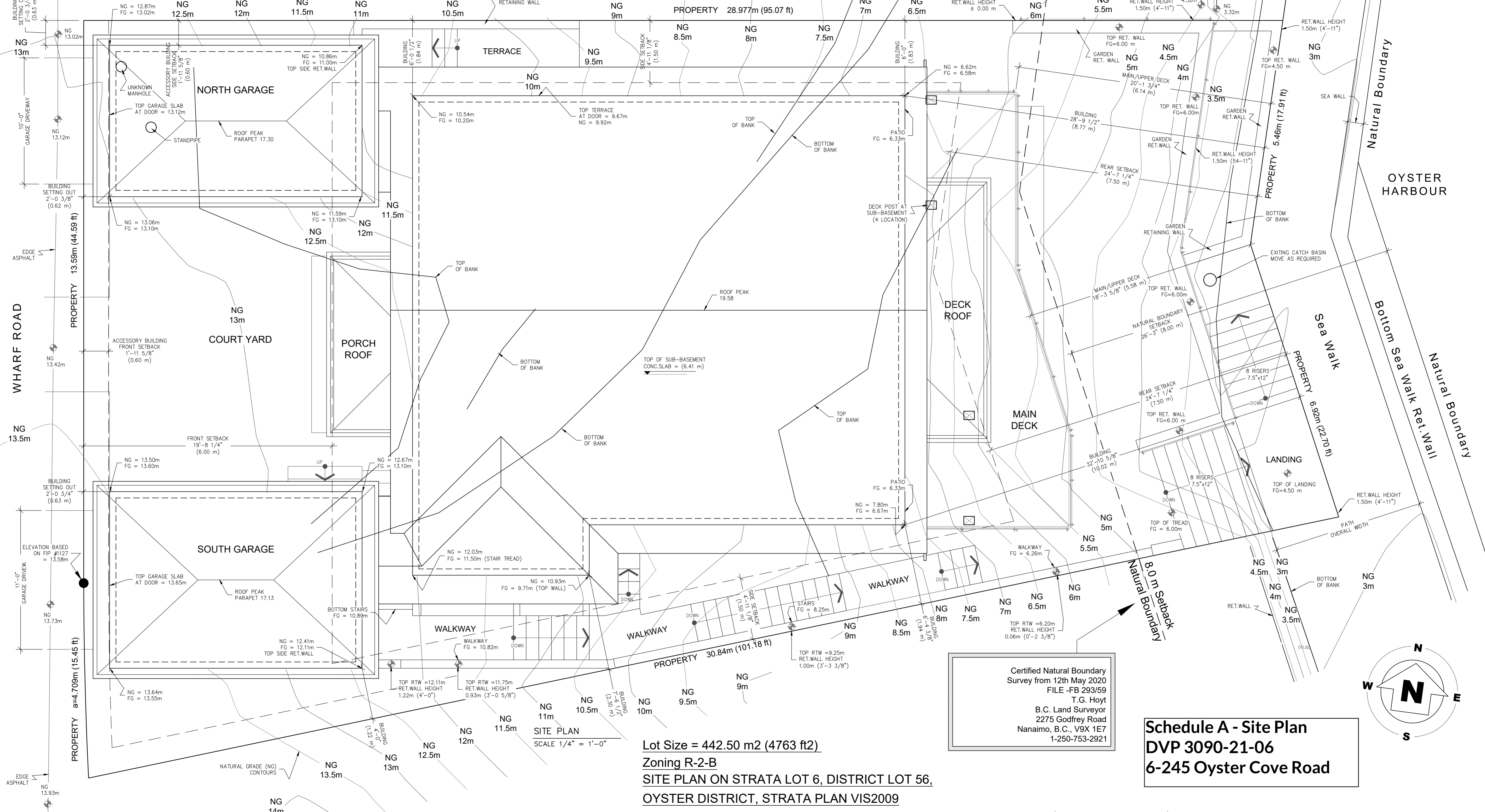
6. The land described herein shall be developed strictly in accordance with terms and conditions and provisions of this Permit and any plans and specifications attached to this Permit which shall form a part thereof.
7. The following plans and specifications are attached:
 - a) **Schedule A – Site Plan**
 - b) **Schedule B – Conceptual Design Renderings**
8. Notice of this Permit shall be filed in the Land Title Office at Victoria under s.503 of the *Local Government Act*, and upon such filing, the terms of this Permit (3090-21-06) or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.
9. THIS PERMIT IS NOT A BUILDING PERMIT. No occupancy permit shall be issued until all items of this Development Variance Permit have been complied with to the satisfaction of the Corporate Officer.

AUTHORIZED BY RESOLUTION NO. _____ PASSED BY THE COUNCIL OF THE TOWN OF LADYSMITH ON THE ____ DAY OF _____ 202__.

Mayor (A. Stone)

Corporate Officer (D. Smith)

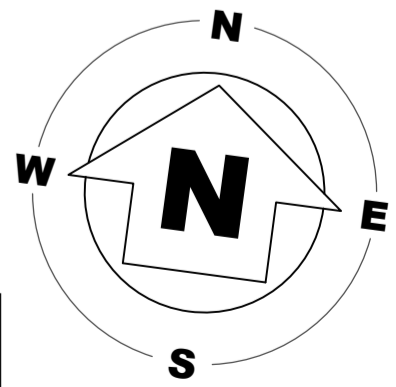
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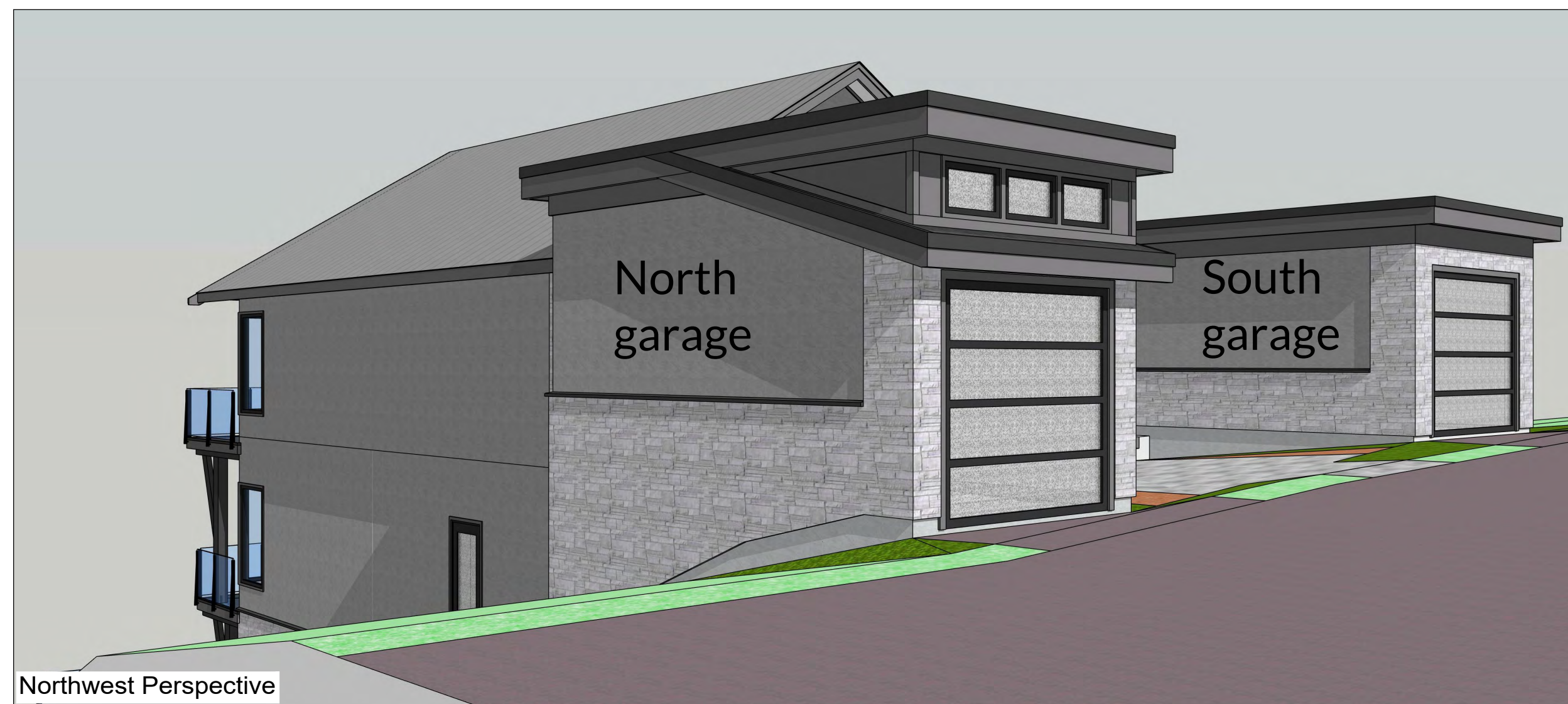
Lot Size = 442.50 m2 (4763 ft2)
Zoning R-2-B
SITE PLAN ON STRATA LOT 6, DISTRICT LOT 56,
OYSTER DISTRICT, STRATA PLAN VIS2009

Certified Natural Boundary
 Survey from 12th May 2020
 FILE -FB 293/59
 T.G. Hoyt
 B.C. Land Surveyor
 2275 Godfrey Road
 Nanaimo, B.C., V9X 1E7
 1-250-753-2921

Schedule A - Site Plan
DVP 3090-21-06
6-245 Oyster Cove Road



SITE PLAN
 SCALE 1/4" = 1'-0"



Northwest Perspective



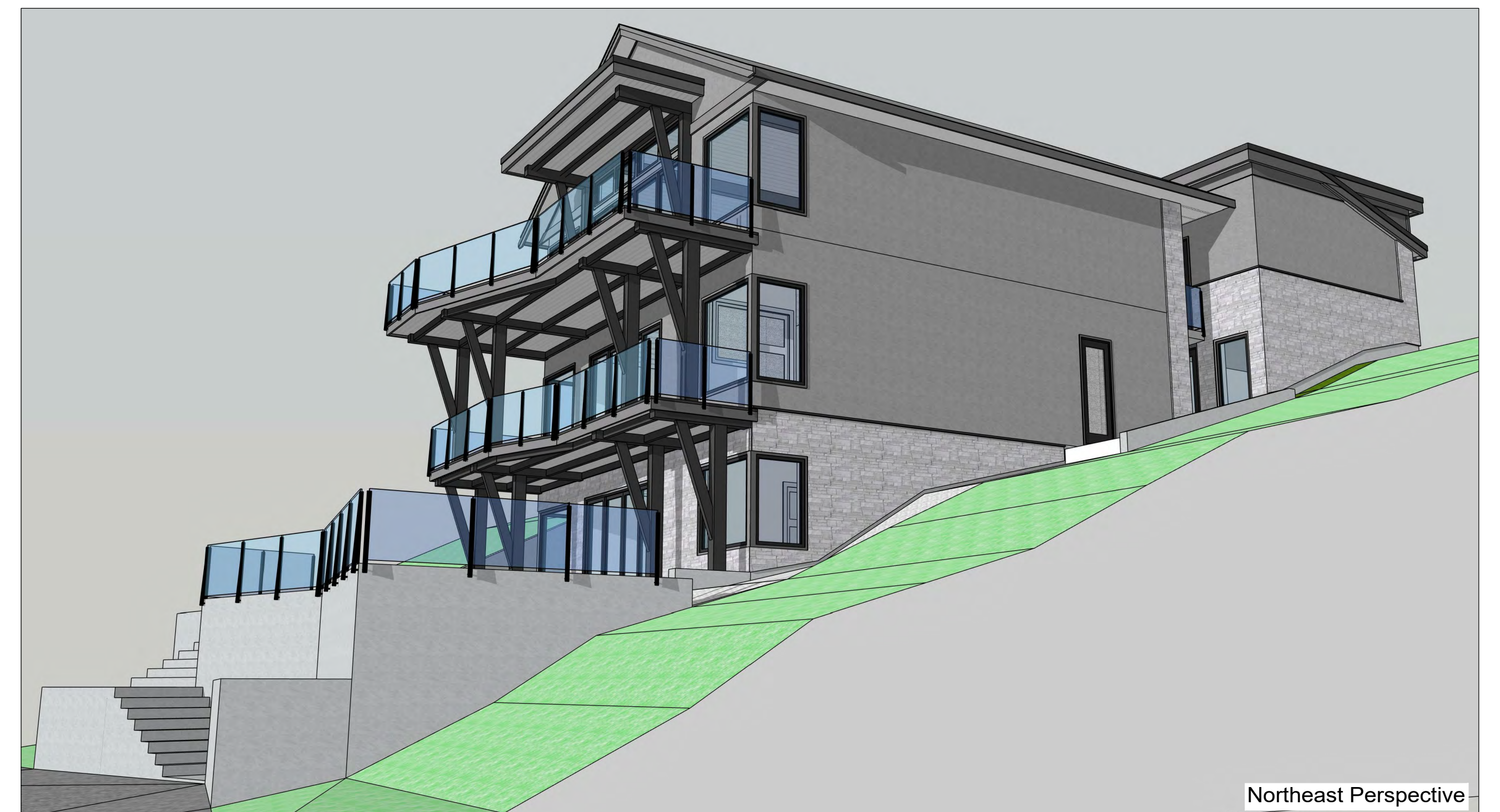
West Perspective



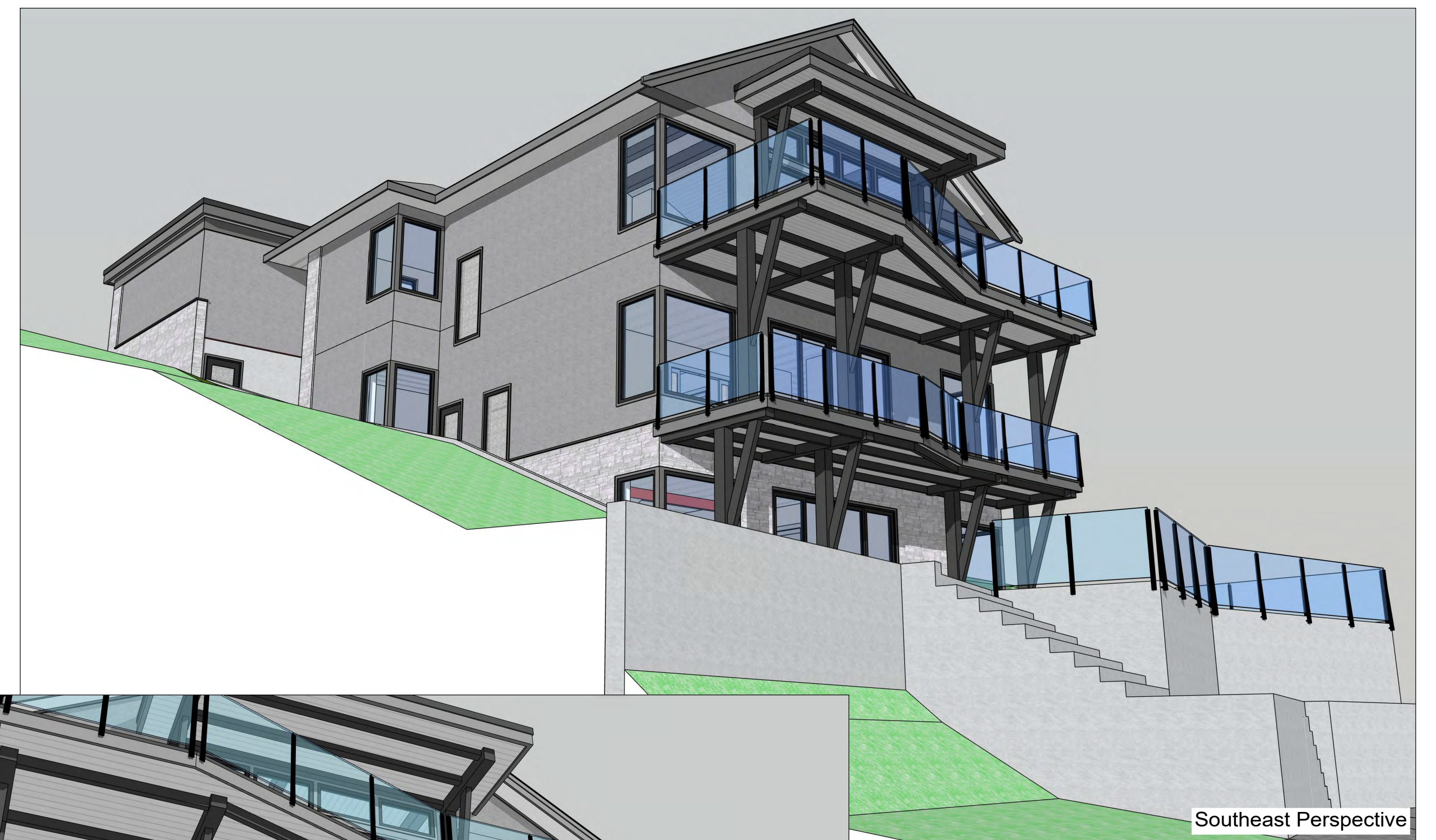
Southwest Perspective

Note: This Schedule applies to the accessory buildings (north and south garages) only. An alternative colour scheme is permitted.

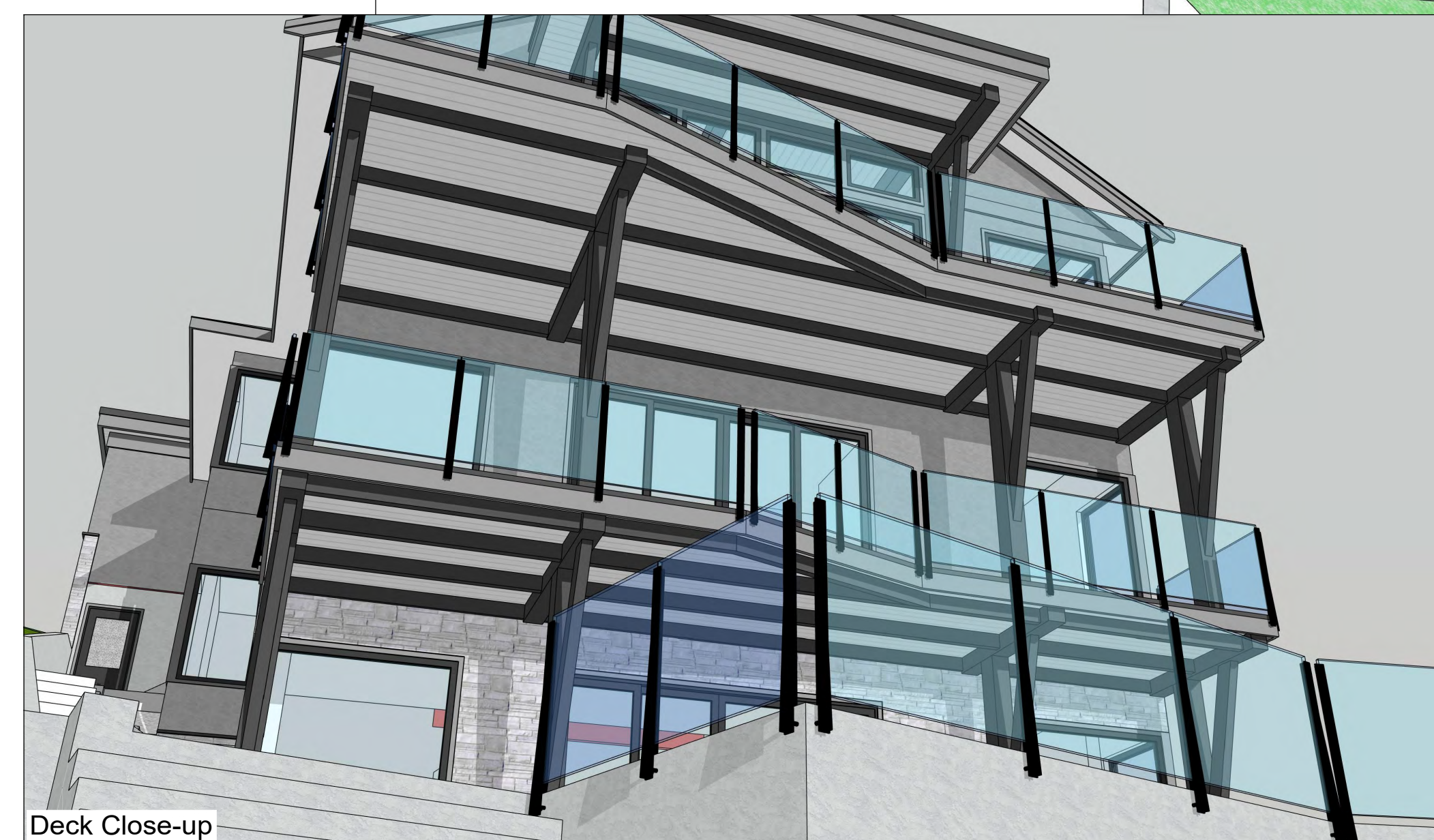
Schedule B - Conceptual Design Renderings
DVP 3090-21-06
6-245 Oyster Cove Road



Northeast Perspective



Southeast Perspective



Deck Close-up

	Nov. 2020	Development/Building Permit	
NO	DATE	REVISION/ISSUE	
3D			
Diron Design & Drafting Services			
915 Island Highway		Sayward BC V0P 1R0	
Tel. 1250 282 3695		3djens@gmail.com web:3djens.com	
New Residence for Linda & James Anderson			
Whart Road, Oyster Cove, Lot 6			
Ladysmith, BC			
Perspectives			
Owner	Date Plotted:	Job No.	
J & L Anderson 1-403-809-3011	17.11.2020	#A2013	
Designed	Drawn:	Dwg	of
JD	JD	2	11
Scale:	as Shown		Sheet No.
			A02



TOWN OF LADYSMITH DEVELOPMENT PERMIT

(Section 489 *Local Government Act*)

FILE NO: 3060-21-01

DATE: June 15, 2021

Name of Owner(s) of Land (Permittee): Barlow Rose & Company Ltd.

Applicant: Colin Amey

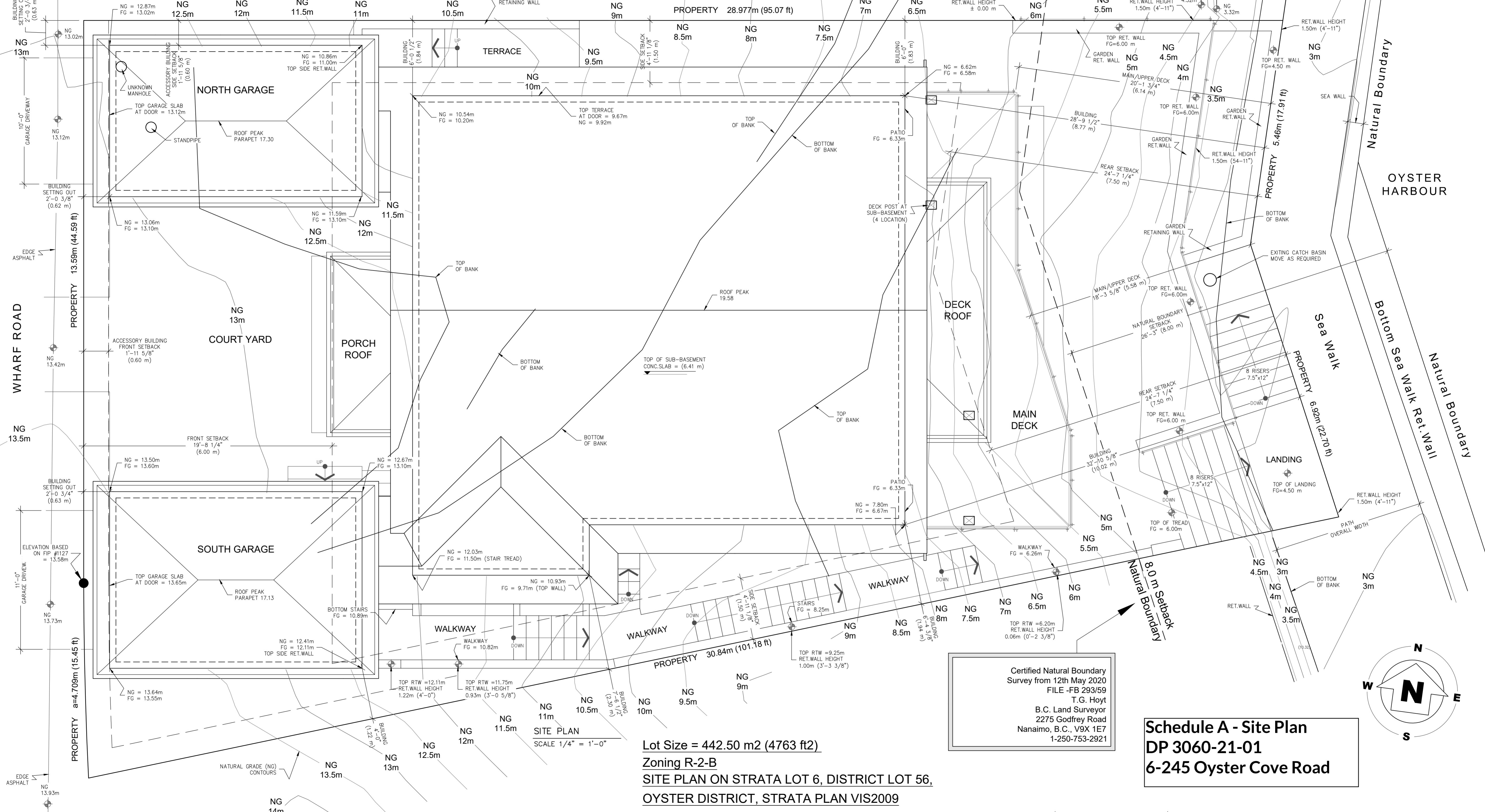
Subject Property (Civic Address): 6-245 Oyster Cove Road

1. This Development Permit is subject to compliance with all of the bylaws of the Town of Ladysmith applicable thereto, except as specifically varied by this Permit.
2. This Permit applies to and only to those lands within the Town of Ladysmith described below, and any and all buildings structures and other development thereon:

Strata Lot 6, District Lot 56, Oyster District, Strata Plan 2009 Together with an Interest in the Common Property in Proportion to the Unit Entitlement of the Strata Lot as shown on Form 1
PID: 016-664-370
(referred to as the "Land")
3. This Permit has the effect of authorizing the alteration of land and issuance of a building permit for the construction of a single unit dwelling and retaining walls on the Land, designated in the Official Community Plan under section 488(1)(b) of the *Local Government Act*, in accordance with the plans and specifications attached to this Permit, and subject to all applicable laws except as varied by this Permit.
4. This Permit does not have the effect of varying the use or density of the Land specified in Zoning Bylaw 2014, No. 1860.
5. The Permittee, as a condition of the issuance of this Permit, agrees to:
 - (a) Develop the Land in accordance with **Schedule A – Site Plan**.
 - (b) Follow all recommendations in **Schedule B – Geotechnical Assessment**, including the following:

- i. A minimum Flood Construction Level of 4.89m GD is required for any development relating to habitable residential construction.
 - ii. Yard areas between the proposed single-family dwelling and the natural boundary of the sea should be sloped as to direct water away from the proposed house and toward to foreshore area.
 - iii. Waters from the hill side should be directed around the building toward the north yard area and foreshore beyond.
 - iv. Any encroachment into the 8m setback from the sea, such as the proposed deck, must not be structurally attached to the main building.
 - v. The foreshore and alignment of the natural boundary and seawall requires regular monitoring annually by the current and future property owners and strata. Any notable regression of the natural boundary or seawall, specifically following a significant storm event or winter season or otherwise, would require reassessment of the foreshore conditions.
6. If the Permittee does not substantially start any construction permitted by this Permit within **two years** of the date of this Permit as established by the authorizing resolution date, this Permit shall lapse.
7. The plans and specifications attached to this Permit are an integral part of this Permit.
8. Notice of this Permit shall be filed in the Land Title Office at Victoria under s.503 of the *Local Government Act*, and upon such filing, the terms of this Permit **(3060-21-01)** or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.
9. This Permit prevails over the provisions of the Bylaw in the event of conflict.
10. Despite issuance of this Permit, construction may not start without a Building Permit or other necessary permits.

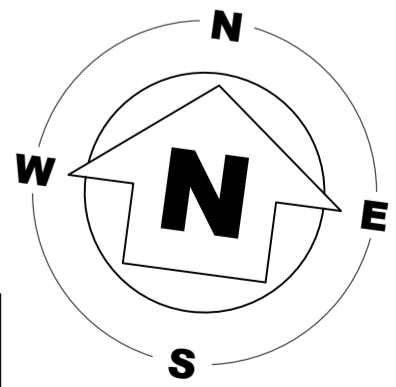
AUTHORIZED BY RESOLUTION NO. _____ PASSED BY THE COUNCIL OF THE
TOWN OF LADYSMITH ON THE ____ DAY OF _____ 202__.



Lot Size = 442.50 m² (4763 ft²)
Zoning R-2-B
SITE PLAN ON STRATA LOT 6, DISTRICT LOT 56,
OYSTER DISTRICT, STRATA PLAN VIS2009

Certified Natural Boundary
 Survey from 12th May 2020
 FILE -FB 293/59
 T.G. Hoyt
 B.C. Land Surveyor
 2275 Godfrey Road
 Nanaimo, B.C., V9X 1E7
 1-250-753-2921

Schedule A - Site Plan
DP 3060-21-01
6-245 Oyster Cove Road



SITE PLAN
 SCALE 1/4" = 1'-0"

GEOTECHNICAL HAZARD ASSESSMENT

Single-Family Residence
Strata Lot 6, 245 Oyster Cove Road,
Ladysmith, BC

Legal Address:
Strata Lot 6, District Lot 56, Oyster
District, Plan VIS2009
PID: 016-664-370

Prepared For:
Jim B. Anderson
andersonjb@shaw.ca

Attention:
Jim B. Anderson

June 3rd, 2021

File No.: F8300.01R1
Revision No.: 00
Prepared by: Darron G. Clark, P.Eng.
Reviewed by: Jeff Scott, P.Eng.

Lewkowich Engineering Associates Ltd.
1900 Boxwood Road
Nanaimo, BC, V9S 5Y2
250-756-0355 (Office)
250-756-3831 (Fax)
www.lewkowich.com



LEA Lewkowich
Engineering
Associates Ltd.

DISCLAIMER

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as “the Report,” may be used by the Town of Ladysmith (ToL) as a precondition to the issuance of a development and/or building permit. This Report and any conditions contained in the Report may be included in a restrictive covenant under Section 919.1(1)(b) of the local government act and registered against the title of the Property at the discretion of the ToL.
2. This report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of Jim B. Anderson. We have not acted for or as an agent of the ToL in the preparation of this report.
3. The conclusions and recommendations submitted in this report are based upon information from relevant publications, a visual site-assessment of the Property, anticipated subsurface soil conditions, available floodplain data, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the structure becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. The conclusions and recommendations issued in this report are valid for a maximum of two (2) years from the date of issue. The 2-year term may be reduced as a result of updated bylaws, policies, or requirements by the authority having jurisdiction, or by updates to the British Columbia Building Code. Updates to professional practice guidelines may also impact the 2-year term. If no application of the findings in this report have been made to the subject development, the conclusions issued in this report become void and re-assessment of the Property will be required.
5. This report has been prepared by Mr. Darron G. Clark, P.Eng., and by Mr. Jeff Scott, P.Eng. Messrs. Clark and Scott are both adequately experienced in geotechnical engineering and hazard assessments and are also members in good standing with the Engineers and Geoscientists of British Columbia (EGBC).

EXECUTIVE SUMMARY

1. The following is a brief synopsis of the Property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The Property, Strata Lot 6, 245 Oyster Cove Road, Ladysmith, BC, from this point forward referred to as “the Property,” is located on the east coast of Vancouver Island (Strait of Georgia). The proposed development for the Property at the time of this report includes the construction of a new single-family dwelling.
3. A site-specific hazard assessment was conducted to identify potential geotechnical hazards for the subject Property. The primary geotechnical hazards identified relates to the Property’s close proximity and height from the Strait of Georgia (oceanic flooding) and close proximity to a steep (main yard) slope.
4. The attached proposed residential development plan has been considered and reviewed and has found not to conflict with this report. Alternate conditions or new information may change the recommendations required for the safe development of this property.
5. The Combined Method (CM) approach was used in order to determine a suitable Flood Construction Level (FCL) for the Property. It was determined that an FCL of 4.89m geodetic datum be used for any future development relating to habitable residential construction. The slope analysis indicated that the footings for the new residence must be founded below a 2H:1V plane emanating from the toe of the slope (near the east property line).
6. Implications for future development as they relate to steep slope protection, erosion, resultant shift of the oceanic natural boundary, and set back from this boundary are also discussed. The design and implementation of mitigation measures are beyond the scope of this report.

List of Abbreviations Used in the Report

Abbreviation	Title
CM	Combined Method
DDDS	Diron Design & Drafting Services. Ltd.
EGBC	Engineers and Geoscientists of British Columbia
FB	Free Board
FCL	Flood Construction Level
FHA	Flood Hazard Assessment
FNB	Future Natural Boundary
GD	Geodetic Datum
MALS	McElhanney Associates Land Surveying Ltd..
LEA	Lewkowich Engineering Associates Ltd.
MFLNRO	Ministry of Forests, Lands, and Natural Resource Operations
PNB	Present Natural Boundary
RA	Regional Adjustment for Isostatic Rebound
SLR	Sea Level Rise
SS	Storm Surge
ToL	Town of Ladysmith
WE	Wave Effect



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1.0 INTRODUCTION

1.1 Background

- a. The Property is located on the east coast of Vancouver Island and borders the Strait of Georgia. See Figure 1.1 below.

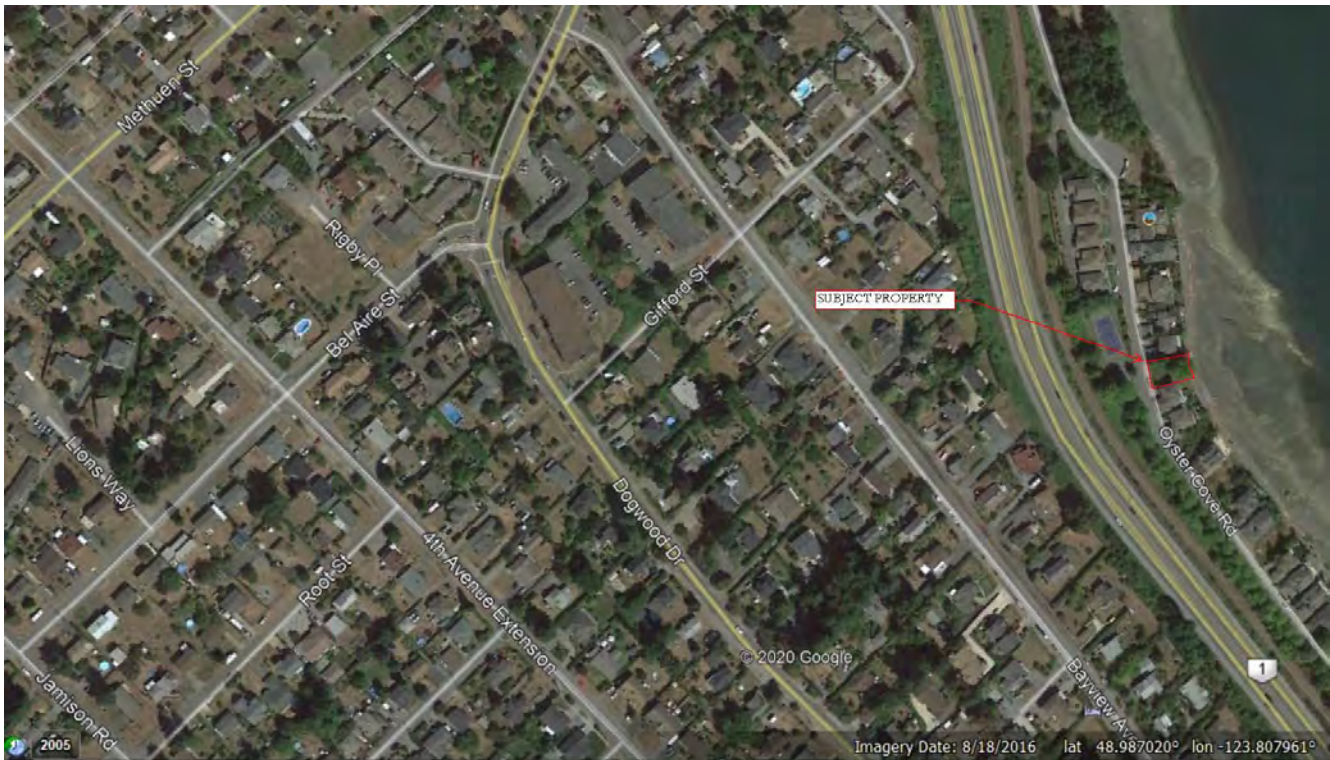


Figure 1.1 – Site Location (Satellite Imaging from Google Earth®)

- b. The proposed development for the Property at the time of this report includes the construction of a new single-family dwelling.
- c. We (LEA) understand that future development of the subject Property requires a geotechnical report stating what (if any) natural hazards exist that may impact the proposed development and make comment and recommendations for those hazards. The primary geotechnical hazard of concern for the Property relates to its proximity to the steep slope (DP Area 7) and potential oceanic flooding.
- d. Following EGBC's Professional Practice Guidelines for Legislated Flood Assessments¹, this FHA would be categorized as a Class 0 assessment, applicable for developments related to:
- Renovations
 - Expansions
 - New single-family residence
 - New duplex residence

- e. In preparation of this report, we have reviewed the most current and relevant technical documents provided by EGBC, MFLNRO, along with historical air photo data and the attached site-specific survey information provided by TALS.
- f. The landslide risk analysis follows the “Guidelines for Legislated Landslide Assessments for Residential Development in BC” (APEGBC, 2010).⁵

1.2 Covenant Review

- a. As part of our assessment, we have reviewed the documents registered on the legal title of the Property, specifically, any restrictive covenants registered against the Property that may relate to the conclusions and recommendations provided in this report.
- b. Current to the date of this Report, there are no restrictive covenants registered against the Property.

2.0 SITE CONDITIONS

2.1 Physical Setting

- a. The Property is located in the central area of the ToL at its eastern extent (Ladysmith Harbour) and within DPA 7 ‘steep slope’ area. The site is situated on the northeast side of Oyster Cove Road, approximately 900m southeast of the Highway 1 and Transfer Beach Road intersection. The site is accessed via the Oyster Cove Road frontage. The Property location is shown below in Figure 2.1, as well as in the attached Site Plan prepared by DCD Services Ltd.



Figure 2.1 – Airphoto of Subject Property

2.2 Terrain and Features

- a. LEA visited the Property on May 13th, 2020, and conducted a visual hazard assessment. At the time of our assessment, the Property was undeveloped. The properties on either side are developed with single family homes.
- b. The topography of the Property is generally described as rectangular in shape with a trail incised into a 10m high slope off the beach to Oyster Cove Road. The slope is ocean facing with a relatively consistent inclination of 19 to 22 degrees. Below the property there is a sidewalk and seawall, which is about 2m tall. The intertidal zone is flat and has a gentle gravelly pebble slope seaward approximately 25m between the seawall and water at low tide.
- c. The lot's surface is covered in berry vines, some smaller boulders and woody debris and some mature trees. Developed areas nearby are landscaped with small trees, gardens and paved driveways and parking areas. The Property's surface is shown in Figure 2.2.



Figure 2.2 – Site Conditions

2.3 Soil Conditions

- a. A subsurface investigation was not included as part of this assessment. Generally, subsurface soil conditions, as encountered by this office in similar investigations in the area, consist of a layer of topsoil, underlain by compact, naturally deposited sand and gravel. Some areas of fill soil and reworked soil were noted but their depth is unknown.
- b. Published surficial geology mapping identifies the area as part of the Bowser formation, a soil formation consisting of marine, gravelly, loamy sands.²

2.4 Surface and Groundwater Conditions

- a. There was no ponded or surface water observed during our field review nor any evidence of abnormal groundwater conditions.
- b. Groundwater flows may fluctuate seasonally with cycles of precipitation. Groundwater conditions observed at other times may differ from those observed during our assessment. We would expect that groundwater movement would be rapid, given the coarse nature of the site soil conditions.

2.5 Foreshore Conditions

- a. The foreshore can be characterized as a low-medium bank intertidal zone facing the Ladysmith Harbour (Strait of Georgia) to the northeast. A common seawall and sidewalk fronts the entire development. The total height of the foreshore slope, including the 2.0m high seawall, was approximately 3-4 m at the time of our assessment. Evidence of scouring or undermining of the seawall was not observed during the site visit.
- b. Foreshore soil conditions consist of loose to compact sand and gravel with some cobbles. Vegetation along the foreshore consisted of sea grasses, other small grasses and/or small plants. Large pieces of woody debris were observed. The foreshore conditions, at the time of our assessment, are shown below in Figure 2.5.



Figure 2.5 – Foreshore Condition

3.0 COASTAL FLOOD COMPONENTS

3.1 Tides

- a. For a summary of published January 2020 tide elevations related to the Property, see Table 3.1 below.

Table 3.1 – Summary of Ladysmith Tide Elevations. Station ID: 7460

Tidal Condition	Tide Elevation (local tide datum)
HHWLT	4.09m
HHWMT	3.67m
MWL	2.53m
LLWMT	0.95m
LLWLT	-0.08m

The Design HHWLT calculated as follows:

$$\text{Tidal HHWLT (4.09m)} - \text{MWL (2.53m)} = \text{Design HHWLT (1.56m) GD}$$

3.2 Sea Level Rise

- a. Information prepared by the provincial government in 2011 regarding policy for coastal floodplain mapping assumes a 1.0m rise in sea level from the year 2000 to 2100³. See Figure 3.2 below.

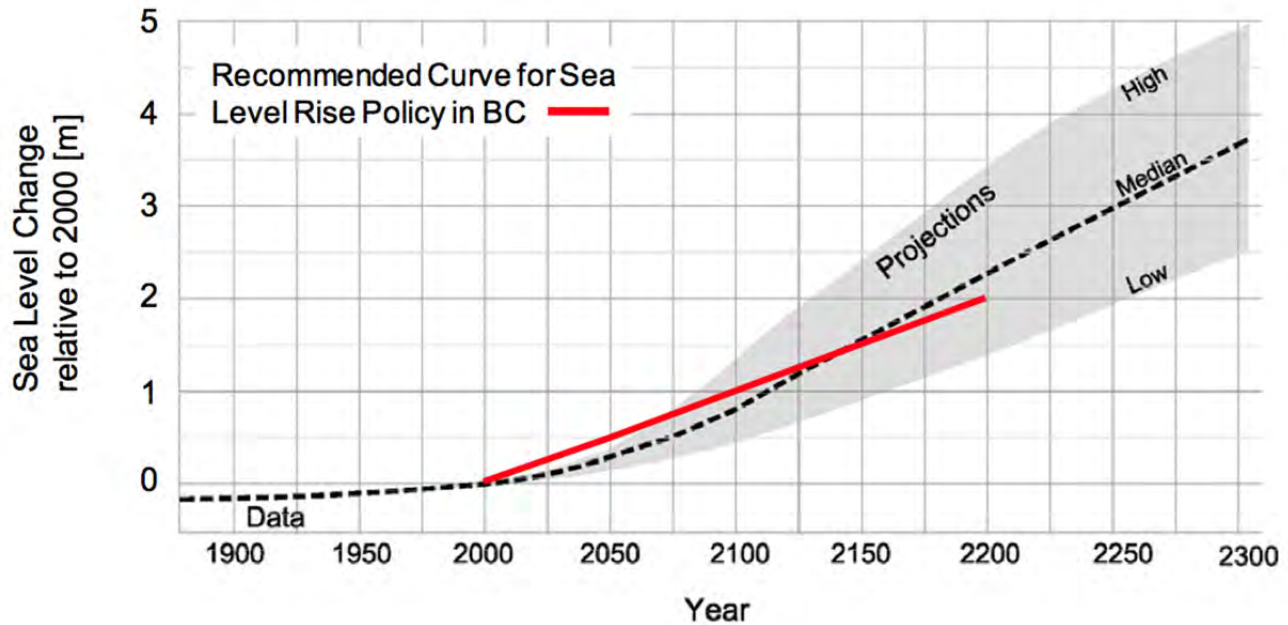


Figure 3.2 – Recommended Global SLR Curve for Planning and Design in BC

- b. The assumed amount of SLR is based on current information and will be evaluated in the future as more information becomes available. It should be noted that a 1.0m SLR estimate by the year 2100 is a conservative projection and has been used in the preparation of this report. Whereas the 2.0m SLR estimate by the year 2200 would be considered a mid to low range projection.
- c. Forecasting this far into the future carries significant uncertainties. Monitoring changes of SLR is beyond the scope of this report. We expect local authorities to remain informed in order to adjust their flood management plans/guidelines accordingly.

3.3 Regional Adjustment – Isostatic Rebound

- a. Future sea level is also affected by vertical land movement due to tectonic shifting. Calculations in SLR reflect changes in the regional rebound or subsidence of the land surface. Areas where the land elevation is increasing (rebound) should decrease the allowance for SLR, while areas where the land elevation is decreasing (subsidence) should increase the allowance for SLR. An RA value of -0.17m was derived from Figure 2-3 of the MFLNRO report prepared by KWL³. This value accounts for the 100-year design requirement for the Property.

3.4 Storm Surge

- a. Sea levels along the BC coast are not only affected by astronomical tide cycles but also by storms. Storms may affect water levels due to:
 - Changes in atmospheric pressure.
 - Strong winds acting on the water surface generating waves.
 - Changes in ocean currents or temperature.
- b. The combined effect of all these factors is termed “storm surge” (SS).
- c. The 1:200-year design SS value of 1.25m GD was derived from Table 2-1 of the MFLNRO report prepared KWL.³

3.5 Wave Effect

- a. Breaking waves during the design storm event must also be considered, as breaking waves may further increase the depth of water along the shoreline as well as increase risk of runup and overtopping leading to flooding.
- b. We note that wave effect is site specific and dependent on local bathymetry, oceanic currents, wind conditions, the presence of shoreline structures (revetment, dikes, etc.), as well as water levels at the time of the designated storm, which all contribute to estimated wave runup and/or wave overtopping. Wave effects are limited to the area immediately adjacent to the shoreline, and it is generally accepted that the wave effect does not extend more than 15 to 30m inland from the shoreline for relatively level areas, and even less so for steeply inclining areas.
- c. For this property, the shoreline consists of a 2m tall vertical seawall, followed by a steep coastal slope. Vertical seawalls in the Strait of Georgia can elevate the estimated wave runup height by a factor of 2.0 to 3.0 times over typical values for a gently sloping beach. In these scenarios, volume of wave overtopping is generally considered for flood mitigation measures.
- d. Considering the development will be setback a minimum 8m from the Natural Boundary, as discussed further below, nominal WE values as presented in the MFLNRO report prepared by KWL⁷ can be safely used for this development without further analysis. Therefore, a WE value of 0.65m was used during the preparation of this Report.

3.6 Freeboard

A nominal FB value is typically added when calculating an FCL. The FB value accounts for uncertainties associated with value estimations used. Following recommendations from the MFLNRO report prepared by KWL, a FB value of 0.60m was used during preparation of the Report.

4.0 FLOOD CONSTRUCTION LEVEL

4.1 Combined Method

- a. We have used the CM approach in order to determine a suitable FCL for the Property. The CM was established by KWL as part of the MFLNRO report on Coastal Floodplain Mapping Guidelines and Specifications.⁷ At the time of this report, it is the recommended method for determining an FCL for this Class of assessment and is supported by EGBC.
- b. The CM takes into account the cumulative effects of tides HHWLT, SLR, RA, SS, WE, and FB. The equation for Calculating the FCL using the CM is as follows:

$$\text{FCL} = \text{HHWLT} + \text{SLR} + \text{RA} + \text{SS} + \text{WE} + \text{FB}$$

- c. Table 4.1 shows the calculation based on a projected 100-year design life for subject development.

Table 4.1 – FCL Determination using the CM to the year 2120

FCL Components	Year 2120
HHWLT	1.56m GD
SLR	1.00m
RA	(-0.17m)
SS	1.25m
WE	0.65m
FB	0.60m
Calculated FCL:	4.89m GD

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Recommended FCL

- a. We recommend that an FCL of 4.89m GD be used for any future development relating to habitable residential construction.

5.2 Floodwater and Inundation

- a. In the event of a design flood event (1 in 200-year), it is possible that floodwater from the Strait of Georgia would inundate the Property. The general risk of flooding increases as the sea level rises.
- b. Provided any construction within the Property satisfies the minimum recommended FCL, we do not anticipate any damage to the structure or its contained goods as a result of floodwater. However, any areas constructed below the recommended FCL, could be subject to flooding during less than design flood

events.

5.3 Scour and Erosion Protection

- a. If structural fill materials are used for foundation support, and include structural fills above existing site grades, further assessment may be required. Structural fills above existing grades may require protective measures from scour and erosion.
- b. Additional information related to flood proofing and constructability of the proposed development is beyond the scope of this report and will need to be addressed in a construction specific geotechnical report.

5.4 Site Grading

- a. Yard areas between the proposed single-family dwelling and the Natural Boundary should be sloped as to direct water away from the proposed house and toward the foreshore area.
- b. Waters from the hill side should be directed around the building toward the north yard area and foreshore beyond.

5.5 Steep Slope

- a. Detailed slope stability analyses are generally required when building development is proposed near a slope that is steeper than a 2 Horizontal to 1 Vertical (2H:1V) slope above the toe (referred to as the "2H:1V intersection"). Building below the 2H:1V intersection is generally considered a safe setback due to the fact that the internal angle of friction of most soils is appreciably greater than 26.6°, or 2H:1V.
- b. Therefore, in the case where proposed development is located below the 2H:1V intersection, a detailed slope stability analysis is generally not required. We have reviewed the 10 to 11m tall slope which is well vegetated and show no signs of global stability (cracking fissures etc.). Based on our observations and experience, slope movement would be confined to surficial sliding of the vegetated mat during extreme weather or seismic events.

5.6 Foreshore Set back – Future Natural Boundary

- a. The ToL has set a minimum set back from the natural boundary of 8.0m, which we note, the proposed design adheres to. Any encroachment into this set back, such as the proposed deck, must not be structurally attached the main building.
- b. Over the required 100-year design life of the development, SLR will likely expose the existing shoreline to increased wave action that may result in erosion of the foreshore area.
- c. Evaluation of the rate and/or extent of erosion along the foreshore area of the Property is beyond the scope of this Report. It should be noted however, that intertidal zones consisting of sand and gravels are

typically susceptible to erosion or accretion by wave action and flooding, and we expect the alignment of the PNB will slowly shift over time. The common seawall showed no sign of undermining or distress, during the site visit.

- d. SLR is expected to be 1.0m over the next 100 years. Provincial guidelines require that the foreshore setback from the NB be maintained for the lifespan of the building⁴. This is referred to as the future natural boundary (FNB). Given the 2m high foreshore bank, the FNB in a 100-year timeframe that considers 1.0m of SLR would end up near the same location as it is today, barring any accretion or recession of the bank or modification of the seawall.
- e. If the Client wishes to address the issue of potential erosion along the NB within the foreshore area, then further investigation and analysis into the use and installation of mitigative measures is required.
- f. As a minimum, we recommend the foreshore and alignment of the NB and seawall be regularly monitored annually by the current and future property owners and strata. Any notable regression of the NB or seawall, specifically following a significant storm event or winter season or otherwise, would require a reassessment of the foreshore conditions.
- g. LEA can provide recommendations for design of mitigative works for foreshore erosion if requested.

5.7 Local Government Conformance Statement

- a. LEA confirms that the recommendations made in this report conform to the guidelines and objectives expressed under ToL OCP and DPA 7 Hazard Lands⁶.
- b. The Ladysmith Harbour (Strait of Georgia) is a defined watercourse located to the north of the Property. All construction/development shall be carried out in conformance within the requirements of any jurisdictional limitations. Any jurisdictional limitations applicable to the Property and proposed development shall supersede the geotechnical recommendations made in this report.

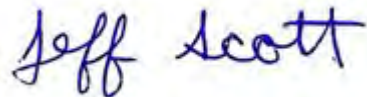
6.0 CONCLUSION

- a. Based on our review of the relevant publications and site-specific field assessment, it is the opinion of LEA that slope stability and oceanic flooding from the Strait of Georgia are the only significant aspects, or potential geotechnical hazards within the subject Property.
- b. Provided the recommendations in this report are followed, we (LEA) confirm that from a geotechnical point of view the site is considered safe and suitable for the permanent sitting of a permanent single-family residence, with the probability of a geotechnical failure resulting in property damage of less than:
 - 2% in 50 year for seismic events,
 - 1 in 200-year return flood event, and considering 100 years of sea level rise,
 - 10% in 50 years for all other geotechnical hazards,and that the proposed development will not result in a detrimental impact on the environment, subject Property or adjoining properties.
- c. The attached development plan has been reviewed and is considered not to be in conflict with this report. Any potential conflicts will be addressed during the field reviews conducted, as per the Schedule B.
- d. Please refer to the attached EGBC - Appendix I: Flood Assurance Statement and Appendix D: Landslide Assessment Assurance Statement for additional information.

7.0 CLOSURE

Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact the undersigned at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.

A handwritten signature in blue ink that reads 'Jeff Scott'.

Jeff Scottt, P.Eng.
Geotechnical Engineer

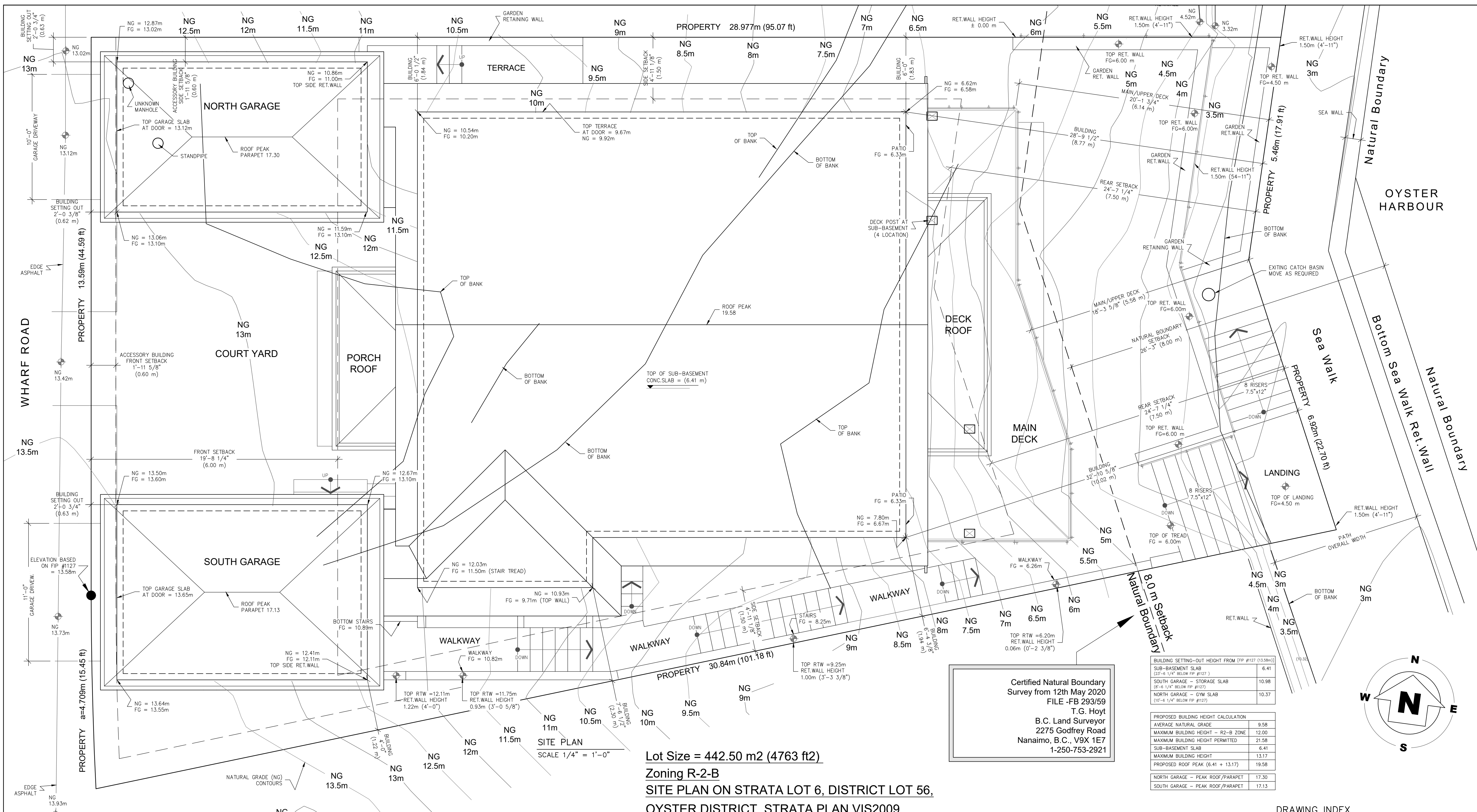
Darron G. Clark, P.Eng.
Senior Geotechnical Engineer

8.0 ATTACHMENTS

1. DDDS “New Residence Site Plan and Specifications” Job: #2013, November 17,,2020
2. MALS. “ Surveyor’s Certificate of proposed Building, Dwg No: 2233-01152-01-V-1 BCL PROP REV3.dwg
3. Engineers and Geoscientists British Columbia (EGBC) Appendix I: Flood Assurance Statement, Signed April 16, 2020.
4. Engineers and Geoscientists British Columbia (EGBC) Appendix D: Landslide Assessment Assurance Statement, Signed April 16, 2020.

9.0 REFERENCES

1. Engineers and Geoscientists of British Columbia report titled “Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC,” version 2.1, dated August 28, 2018.
2. Soils of South Vancouver Island, British Columbia, Soil Survey Report No. 44 – Sheet 3
3. Ministry of Forests, Lands and Natural Resource Operations report titled – Coastal Floodplain Mapping – Guidelines and Specifications, 2011. Prepared by Kerr Wood Leidal Associates Ltd.
4. Ministry of Water, Land and Air Protection Province of British Columbia report titled – Flood Hazard Area Land Use Management Guidelines. Amended by: Ministry of Forests, Land, Natural Resource Operations and Rural Development, January, 2018.
5. Guidelines for legislated Landslide Assessment for Proposed Residential Developments in BC, May 2010
6. Town of Ladysmith OCP DPA7 Hazard Lands Guidelines - August, 2018.



- CONSTRUCTION NOTES**
 (UNLESS OTHERWISE NOTED)
 * ALL CONSTRUCTION TO CONFORM TO THE 2018 BRITISH COLUMBIA BUILDING CODES AND ALL OTHER CODES AND LOCAL AUTHORITIES HAVING JURISDICTION
- DRAINAGE**
 CONTINUOUS STORM DRAIN/PERFORATE DRAIN AS PER MUNIC. SPECIFICATIONS
- SILL PLATE/ANCHORS**
 * B.C. BUILDING CODE 2018, 9.23.6.1(2)(3)(4)
 * ANCHORS MUST HAVE A DIAMETER NO LESS THAN 1/2" (12.7mm)
 * ANCHORS MUST BE FASTENED TO SILL PLATE WITH NUTS AND WASHERS, AND EMBEDDED NO LESS THAN 4" (100mm)
 * ANCHORS MUST BE PROVIDED AT A MINIMUM SPACING OF 8 FT. (2.4m), WITH NO LESS THAN 2 ANCHORS PER SILL PLATE.
- BUILDING WITH TO OR MORE FLOOR SUPPORTED BY FRAME WALL
 * ANCHORS MUST HAVE A DIAMETER NO LESS THAN 1/2" (12.7mm) AND MAX. 6"-7" o.c. (1.7m)
 * ANCHORS MUST HAVE A DIAMETER NO LESS THAN 5/8" (15.9mm) AND MAX. 8"-0" o.c. (2.4m)
 * ANCHORS MUST BE LOCATED WITHIN 20 INCH (0.50m) OF END OF FOUNDATION UNLESS NOTED OTHERWISE ON STRUCTURAL ENGINEER DRAWINGS
- ROOF VENTING**
 * B.C. BUILDING CODE 2018, 9.19.1.2
 * ATTIC VENTILATION NOT LESS THAN 1:300 OF INSULATED CEILING AREA
 * ROOF SLOPE LESS THAN 1:10 IN 6 OR IN ROOFS CONSTRUCTED WITH ROOF JOISTS, UNOBSTRUCTED VENT AREA NOT LESS THAN 1:150
- STAIRS**
 * MIN. RISE = 5" (125mm)
 * MAX. RISE = 7-7/8" (200mm)
 * MIN. RUN = 9" (229mm)
 * MAX. RUN = 13" (330mm)
 * MIN. TREAD = 10" (255mm)
 * MAX. TREAD = 14" (355mm)
 * MAX. NOSING = 1" (25mm)
 * MIN. HEADROOM = 6'-5" (1950mm)
 * MIN. HANDRAIL HEIGHT = 34" (865mm)
 * MAX. HANDRAIL HEIGHT = 38" (965mm)
 * MIN. HANDRAIL HEIGHT AT LANDING WHERE ADJACENT GRADE IS LESS THAN 5'-11" (1800mm) BELOW
- * 1 HANDRAIL ON 1 SIDE OF STAIRS WITHIN DWELLING UNIT
 * MIN. WIDTH OF STAIR = 2'-10" (860mm)
 * LENGTH OR WIDTH OF LANDINGS MUST NOT BE LESS THAN THE WIDTH OF THE STAIRS
 * MIN. WIDTH OF STAIR = 2'-11" (900mm) (EXTERIOR STAIRS)
 * RAILING BALUSTER MAX. 4" BETWEEN BALUSTER
 * LENGTH OR WIDTH OF LANDINGS MUST NOT BE LESS THAN THE WIDTH OF THE STAIRS
 * EXT. CONC. STEPS TO HAVE 1/2"(305mm) TREAD & MAX. 7/8"(200mm) RISER
 * FIN. WALL REQUIRED WHEN NUMBER OF RISERS EXCEEDS 2
- EFFECTIVE INSULATION REQUIREMENTS - CLIMATE ZONE 4**
 B.C. BUILDING CODE 2018 - TABLE 9.36.2.6 TO 9.36.2.8
 EFFECTIVE INSULATION (WITH OR WITHOUT HRV)
- | | | | |
|-----------------------------------|-------------------|-------------------------------------|--------------------|
| * CEILINGS BELOW ATTIC | RSI 6.91 (R-39.2) | * SKYLIGHT SHAFTS | RSI 2.78 (R-15.8) |
| * CATHEDRAL CEILINGS & FLAT ROOF | RSI 4.67 (R-26.5) | * WALLS | RSI 2.78 (R-15.8) |
| * FOUNDATION WALLS | RSI 1.99 (R-11.3) | * UNHEATED FLOOR BELOW UN-INSULATED | RSI 1.96 (R-11.1) |
| * UNHEATED FLOOR ABOVE FRONT LINE | RSI 1.96 (R-11.1) | * HEATED FLOOR | RSI 2.32 (R-13.2) |
| * DOOR TO GARAGE | RSI 1.10 (R-6.25) | * ATTIC ACCESS HATCH | RSI 2.60 (R-14.75) |
- REQUIRED THERMAL CHARACTERISTICS OF FENESTRATION AND DOORS**
- | | | | |
|-------------------|-------------------|---------------|-------------------|
| * SKYLIGHTS | USI 2.90 (U-0.51) | * FRONT DOOR | USI 2.60 (U-0.46) |
| * WINDOWS & DOORS | USI 1.80 (U-0.32) | * GLASS BLOCK | USI 2.90 (U-0.51) |
- MISCELLANEOUS**
 * B.C.B.C. 9.32.3.3 VENTILATE DWELLINGS WITH A FAN IN EVERY BATHROOM & KITCHEN INCLUDING ONE TIMED PRINCIPAL FAN TO CAPACITY & SOUND RATINGS
 * B.C.B.C. 9.32.4.1 ADDITIONAL TEMPERED MAKEUP AIR REQUIRED FOR AN APPLIANCE EXHAUST RATE EXCEEDING 0.5 AIR CHANGE/HOUR WHERE THE DWELLING CONTAINS AN APPLIANCE SUBJECT TO BACK DRAFTING
 * WOOD FRAMING MEMBERS SUPPORTED ON CONCRETE, IN CONTACT WITH GROUND OR FILL SHALL BE PRESSURE TREATED OR SEPARATED FROM CONCRETE W/ 6mil POLYETHYLENE OR No.15 ROLL ROOFING
 * PRECAST CONCRETE STEP
 2 RISERS MAXIMUM PERMITTED TO BE LAID ON GROUND
 * B.C.B.C. 9.10.19 SMOKE ALARMS
 INTERCONNECTED LINE VOLTAGE (WITH BATTERY BACKUP)
 SMOKE DETECTORS BACKUP REQUIRED IN ALL BEDROOMS AND HALLWAYS LEADING FROM BEDROOMS AND ON ALL FLOORS
 * CARBON MONOXIDE DETECTOR (CMD), B.C.B.C. 9.32.4.2 (CMD) ARE REQUIRED IN DWELLINGS CONTAINING A FUEL FIRED APPLIANCE OR AN ATTACHED GARAGE
 CARBON MONOXIDE ALARM TO BE INTERCONNECTED WITH SMOKE ALARM
 * B.C.B.C. 9.27.2.2 ENSURE RAINSCREEN NOT LESS THAN 10mm (3/8") CAPILLARY BREAK
 * B.C.B.C. 9.8.8.1
 GLASS GUARDS MUST HAVE A CONTINUOUS TOP RAIL AS PER CAN/CGSB 12.2-M STRUCTURAL DESIGN OF GLASS FOR BUILDING
 * MAIN DOOR TO BE OPENABLE FROM INSIDE W/O KEY
 * PROVIDE A VIEWER WITH A VIEWING ANGLE OF NOT LESS THAN 160 DEG. UNLESS GLAZING IS PROVIDED IN DOOR OR A SIDELIGHT IS PRESENT

Certified Natural Boundary Survey from 12th May 2020
 FILE -FB 293/59
 T.G. Hoyt
 B.C. Land Surveyor
 2275 Godfrey Road
 Nanaimo, B.C., V9X 1E7
 1-250-753-2921

BUILDING SETTING-OUT HEIGHT FROM (FIP #127 (13.50m))	
SUB-BASEMENT SLAB (12'-6 1/4" BELOW FIP #127)	6.41
SOUTH GARAGE - STORAGE SLAB (8'-6 1/4" BELOW FIP #127)	10.98
NORTH GARAGE - CONC SLAB (10'-4 1/4" BELOW FIP #127)	10.37

PROPOSED BUILDING HEIGHT CALCULATION	
AVERAGE NATURAL GRADE	9.58
MAXIMUM BUILDING HEIGHT - R2-B ZONE	12.30
MAXIMUM BUILDING HEIGHT PERMITTED	21.58
SUB-BASEMENT SLAB	6.41
MAXIMUM BUILDING HEIGHT	13.17
PROPOSED ROOF PEAK (6.41 + 13.17)	19.58
NORTH GARAGE - PEAK ROOF/PARAPET	17.30
SOUTH GARAGE - PEAK ROOF/PARAPET	17.13

SPECIFICATIONS

EXTERIOR STRIP FOOTING - TYPICAL
 24"x8" CONCRETE FOOTING
 2-10M CONTINUOUS, 10M DOWELS @ 24" o.c.

INTERIOR STRIP FOOTING - TYPICAL
 24"x8" CONCRETE FOOTING
 2-10M CONTINUOUS, 10M DOWELS @ 24" o.c.

FOUNDATION DIMENSIONS FOR COST ESTIMATE ONLY
 SEE STRUCTURAL DRAWINGS FOR FINAL DESIGN/SPEC.

ICF FOUNDATION WALL
 LOOK ICF-BLOCK WITH "6" G" CONCRETE CORE
 1"-1 1/2" & 11 3/4" WIDE

EXTERIOR FINISHING AT GRADE TRANSITION
 ACRYLIC PARGE COAT EXTEND TO 6" BELOW GRADE

INTERIOR FINISHING AT CONDITIONED SPACE
 1/2" GYPSUM BOARD

ICF FOUNDATION WALL - WATERPROOF
 PEAL & STICK WATERPROOFING MEMBRANE TO MANUFACTURER'S SPECIFICATIONS
 (EXTEND WATERPROOFING 2" ABOVE FINISHED GRADE)
 PROVIDE 6" CLEARANCE BET. STRUCT. WOOD & GRADE

WHERE HYDROSTATIC PRESSURE OCCURS
 FIN WALL TO BE ADDITIONALLY LINED W/ CONTINUOUS WATERPROOF "Delta-Drain" MEMBRANE

CONCRETE PORCH/PATIO (WALKWAYS AS REQUIRED)
 4" CONCRETE SLAB (EXPOSED AGGREGATE)
 W/ FIBERMESH REINFORCEMENT
 6" COMPACTED GRAVEL (JOINT FILLER AT PERIMETER)

DRAINAGE
 4" DIA. PERIMETER DRAIN TAIL
 3" DIA. ROOF DRAIN
 MIN. 6" DRAIN ROCK COVER

SLAB ON GRADE - SUB-BASEMENT - HYDRONIC HEATING
 SLAB FINISH (COLOURED)
 4" (FC) CONCRETE SLAB (JOINT FILLER AT PERIMETER)
 10.10 6#8 MESH REINFORCEMENT & HEATING PIPE
 R13.5 3" EPS "TYPE II" OR "TYPE III" INSULATION
 6 MIL POLY. VAPOUR BARRIER
 6" COMPACT GRAVEL

SLAB ON GRADE - NORTH GARAGE
 SAME AS BEFORE

SLAB ON GRADE - SOUTH GARAGE
 4" CONCRETE SLAB, 10.10 6#8 MESH REINFORCEMENT
 6 MIL POLY. VAPOUR BARRIER
 6" COMPACT GRAVEL (JOINT FILLER AT PERIMETER)

WALL FRAMING

EXTERIOR WALL
 2x6 STUD @ 24" o.c. TYPICAL, EXCEPT SUB-BASEMENT @ 16" o.c.
 5/8" ANCHOR BOLTS AT 4'-0" o.c., MIN. 2 A/B'S PER PLATE

EXTERIOR FINISHING (SEE NOTE BELOW)
 HOUSEWRAP = 1/2" EXTERIOR PLYWOOD SHEATHING
 R-22 (RS3 3.87) INSULATION BATTS (R20 MINIMUM)
 6 MIL POLY. VAPOUR BARRIER, FINISHING TO CONTRACTOR'S SPEC.

EXTERIOR FINISHING
 A) STUCCO FINISHING, WIRE LATH WITH SCRATCH COAT
 RAIN SCREEN MEMBRANE "Delta-Dry Stucco & Stone"
 OR SIMILAR, HOUSEWRAP
 B) THIN STONE VENEER ASSEMBLY
 STONE VENEER ON MORTAR, WIRE LATH WITH SCRATCH COAT
 RAIN SCREEN MEMBRANE "Delta-Dry Stucco & Stone"
 OR SIMILAR, 2 LAYER BUILDING PAPER - HOUSEWRAP AT ICF GARAGES

EXTERIOR WALLS W/ R22 INSULATION (Same R-Value as Exterior Wall)
 INTERIOR FINISHING
 1/2" OR 5/8" TYPE "X" FIREGRAD GYPSUM BOARD
 GREEN OR CEMENT BOARD IN WET AREAS
 (INTERST & CORNER BRACING PER CODE)

INTERIOR WALL 2x4/2x6
 STUDS 16" o.c.
 3" NOISE INSULATION BATTS TO OWNER'S SPEC.
 1/2" OR 5/8" GYPSUM BOARD EACH SIDE

INTERIOR WALLS 2x4/2x6 - WET AREA
 STUDS @ 16" o.c.
 3" NOISE INSULATION BATTS ONE SIDE
 1 LAYER 1/2" TYPE "X" PLASTERBOARD DRY SIDE
 1 LAYER GREEN OR CEMENT BOARD AS REQ'D

FLOOR - BASEMENT & MAIN FLOOR
 1 1/2" CONCRETE SCREED (HYDRONIC IN-FLOOR HEATING)
 ON SEALANT/1/2" CONT. ROOF INSULATION AT PERIMETER, TYP.
 ON 3/4" T&G SUBFLOOR (NAILED & GLUED W/ SEALED JOINTS)
 ON 1.875" JOISTS, SEE MANUFACTURER DWG FOR LAYOUT
 R28 MIN. BATT INSULATION BETWEEN FLOOR JOISTS
 1x3 STRAPPING, CEILING FINISHING TO OWNER'S SPEC

MAIN ROOF - 7 IN 12 & 3.75 IN 12 SLOPE
 STANDING SEAM METAL SHEETING ON ROOFING UNDERLAYMENT
 ON 1/2" PLY SHEATHING ON ENG. TRUSSES @ 24" o.c.

INTERIOR CEILING FINISHING AT CONDITIONED SPACE
 1/2" TYPE "X" CEILING ON VAPOUR BARRIER
 R44 (MIN R40) INSULATION BETWEEN TRUSSES
 AT BREZEWAY
 5/8"x... T&G SOFFIT - VENTED AS REQUIRED

GARAGE ROOF - 1/4 IN 12 SLOPE (MIN.)
 2 PLY MODIFIED BITUMEN ON ROOFING UNDERLAY
 HIDDEN GUTTER
 3/4" T&G SHEATHING ON TOP OF 2x... TAPERED STRAPPING
 ON TOP OF 2x10 SPF #2 @ 16" o.c.

INTERIOR CEILING FINISHING AT CONDITIONED SPACE
 1/2" TYPE "X" CEILING ON VAPOUR BARRIER
 R28 INSULATION BETWEEN RAFTERS

PORCH/DECK ROOF - 1/4 IN 12 SLOPE (MIN.)
 2 PLY MODIFIED BITUMEN ON ROOFING UNDERLAY
 HIDDEN GUTTER
 3/4" T&G SHEATHING ON TOP OF 2x... TAPERED STRAPPING
 ON TOP OF 2x10 SPF #2 @ 16" o.c.

INTERIOR CEILING FINISHING AT CONDITIONED SPACE
 1/2" TYPE "X" CEILING ON VAPOUR BARRIER
 R28 INSULATION BETWEEN RAFTERS

MAIN FLOOR DECK & BASEMENT DECK
 WATERPROOFING MEMBRANE ON 3/4" T&G SUBFLOOR
 ON FINISHING STRIPS (0.25 IN 12 DECK SLOPE)
 ON 2x6 JOISTS @ 16" o.c. ON 3/4"x4 SPACER/NAIL BOARD
 ON 3"x6" HSS PURLINS
 5/8"x... T&G SOFFIT, VENTED AS REQUIRED

FLOOR W/ ALL REQUIRED FLASHING INCLUDING RAKE FLASHING
 AND DRIP EDGE AT EAVES

FASCIA/SOFFIT TYPICAL
 EAVES PROTECTION TO 36" PAST PLATE LINE
 5" CONT. ALUM. GUTTER & 4" DOWN SPOUTS
 FASCIA BOARD W/ ALU FASCIA COVER (SEE ELEVATIONS)
 VENTED ALUMINUM/PVC SOFFITS

NOTE
 * COMBINATION OF CASEMENT & SLIDING & DOUBLE HANG WINDOWS
 W/ INSULATING GLASS UNLESS OTHERWISE STATED

STAIRS - SPECIFICATIONS

SUB-BASEMENT TO BASEMENT
 FLOOR TO FLOOR 134.25" (11'-2 1/4")
 18 RISERS TOTAL

9.25" RUN + 1" NOSING = 10.25" TREAD
 2x12 CUT-OUT STRINGER E/SIDE & 2x12 STRINGER AT CENTRE
 0.75 THICK TREAD + FINISHING
 0.50 THICK CLOSED RISER + 0.625 FINISHING
 HANDRAIL BOTH SIDE

SUB-BASEMENT TO LANDING "A"
 40" WIDE (BETWEEN SLOPED POY WALL)
 FLOOR TO LANDING 67.875" (5'-7 7/8")
 9 RISERS TOTAL

LANDING "A" TO BASEMENT
 40" WIDE (BETWEEN SLOPED POY WALL)
 FLOOR TO LANDING 66.375" (5'-6 3/8")
 9 RISERS TOTAL

BASEMENT TO LANDING "C"
 42" WIDE (OUTER/OUTER FACE STRINGERS)
 FLOOR TO LANDING 75.00" (6'-3")
 10 RISERS TOTAL

LANDING "C" TO MAIN FLOOR
 42" WIDE (FACE STUD TO OUTER FACE STRINGER)
 FLOOR TO LANDING 61.00" (5'-1")
 8 RISERS TOTAL

BASEMENT TO LANDING "B" (SIDE ENTRANCE)
 FLOOR TO FLOOR 22.50" (1'-10 1/2")
 3 RISERS TOTAL

1"x10.5" SOLID TREAD (1" NOSE)
 (EXTEND TREAD BEYOND STRINGER)

2x12 CUT-OUT STRINGER E/SIDE & 2x12 STRINGER AT CENTRE
 0.50 THICK CLOSED RISER + 0.625 FINISHING
 HANDRAIL BOTH SIDE

BASEMENT TO LANDING "B" - 49" WIDE
 FACE STUD (BEDROOM 2) TO OUTER FACE STUD (LANDING "A")

FLOOR AREAS

GARAGE 1	= 280 ft2
GARAGE 2	= 240 ft2
MAIN FLOOR LIVING	= 1392 ft2
BASEMENT LIVING	= 1392 ft2
SUB-BASEMENT LIVING	= 1392 ft2
ENTRY PORCH ROOF	= 60 ft2
MAIN DECK ROOF	= 95 ft2
MAIN DECK	= 359 ft2
BASEMENT DECK	= 269 ft2

ZONING R-2-B

PROPERTY COVERAGE	4763 ft2
MAX. 40% PERMITTED	1905.2 ft2
PROPOSED COVERAGE	1902 ft2

BUILDING HEIGHT
 PRINCIPAL BUILDING
 12.00m (39.37 FEET) PERMITTED
 9.67m (31.73 FEET) PROPOSED

References/Requirements
 Specification for Beams, Joists etc.
 CWC "The Span Book" 2009 Edition
 LP Engineered Wood Products, "Beam Quick Reference Tables"
 Energy & Thermal Performance
 Natural Resources Canada
 Tables of Calculating Effective Thermal Resistance of Opaque Assemblies
 5.0 Thermal Resistance Tables
 5.1 Frame & Cavity Component: Table R1-1 to R1-8
 5.2 Thermal Resistance of Continuous Materials: Table CM-1

Roof Snow Load 41.8 psf (S: 2.4 kPa, S₁: 0.4 kPa) (TABLE C-2)

Refer to Structural Engineer Drawings for Structural Details

ALL PRODUCTS USED MUST BE INSTALLED TO MANUFACTURER'S SPECIFICATION & LAYOUT

ALL DIMENSIONS HAVE TO BE CONFIRMED ON SITE

DRAWING INDEX

A01	Site Plan Specifications & Construction Notes
A02	Perspectives
A03	North & West Elevation
A04	South & East Elevation
A05	Foundation Plan/Basement - Joist Layout Plan ICF-Wall - Elevations
A06	North & South Garage - Foundation Plan Sub-Basement & Basement - Framing Plan
A07	Main Floor - Joist Layout Plan Main Floor Deck - Plan View Cross Section A-A
A08	Main Floor & Garages - Framing Plan
A09	Roof Plan & Engineered Truss Sections Flat Roof - Overhang Details
A10	Section C-C, D-D, E-E & G-G
A11	Section B-B & F-F

BEFORE ORDERING OR CUTTING TRUSSES/BEAMS/POSTS ACCURATE FINAL DIMENSION HAVE TO BE TAKEN ON SITE

REFER TO MANUFACTURER'S TRUSS DRAWINGS FOR APPROVED TRUSS LAYOUT

DRAWING TO BE READ IN CONJUNCTION WITH STRUCTURAL/MECHANICAL & ELECTRICAL DRAWINGS

REFER TO STRUCTURAL ENGINEER DRAWINGS FOR STRUCTURAL DETAILS

ALL PRODUCTS USED MUST BE INSTALLED TO MANUFACTURER'S SPECIFICATION & LAYOUT

ALL DIMENSIONS HAVE TO BE CONFIRMED ON SITE

NOTE:
 GREAT CARE AND EFFORT HAS BEEN TAKEN IN THE MAKING OF THIS DESIGN. 3D DIRON DESIGN & DRAFTING SERVICES CANNOT ASSUME ANY RESPONSIBILITY FOR DAMAGE AS A RESULT OF ERRORS OR OMISSIONS. IT IS RECOMMENDED THAT THE OWNER AND/OR BUILDER CONSULT A LOCAL ENGINEER AND CHECK WITH YOUR LOCAL BUILDING OFFICIALS PRIOR TO THE START OF CONSTRUCTION.

B	14 May 2021	Certified Natural Boundary Shown
A	03 May 2021	Site Plan Amended to Reflect Updated Site Survey Plan
	Nov. 2020	Development/Building Permit
NO	DATE	REVISION/ISSUE

3D
Diron Design & Drafting Services
 915 Island Highway Sayward BC V0P 1R0
 Tel. 1250 282 3695 3djens@gmail.com web:3djens.com

New Residence for Linda & James Anderson
 Wharf Road, Oyster Cove, Lot 6
 Ladysmith, BC

Site Plan & Specifications
 Construction Notes

Owner	Date Plotted:	Job No.
J & L Anderson 1-403-809-3011	17.11.2020	#A2013
Designed	Drawn:	Dwg of
JD	JD	1 11
Scale:	as Shown	Sheet No.
		A01 - B

**B.C. LAND SURVEYOR'S CERTIFICATE OF PROPOSED LOCATION OF BUILDING(S) ON STRATA LOT 6,
DISTRICT LOT 56, OYSTER DISTRICT, STRATA PLAN 2009, TOGETHER WITH AN INTEREST IN THE COMMON
PROPERTY IN PROPORTION TO THE UNIT ENTITLEMENT OF THE STRATA LOT AS SHOWN ON FORM 1**

P.I.D. 016-664-370



ALL DISTANCES ARE IN METRES AND DECIMALS THEREOF

THE INTENDED PLOT SIZE OF THIS PLAN IS 280 mm IN WIDTH BY 432 mm IN HEIGHT (B-SIZE) WHEN PLOTTED AT A SCALE OF 1:150

CIVIC ADDRESS:
STRATA LOT 6, 245 OYSTER COVE ROAD,
LADYSMITH, B.C.

CLIENT: CA COASTAL CONSTRUCTION LTD.

NOTES:

PARCEL DIMENSIONS ARE DERIVED FROM EXISTING LAND TITLE OFFICE RECORDS,
BEING STRATA PLAN VIS2009.

OFFSETS TO PROPERTY LINE FROM BUILDING ARE FROM FOUNDATION

ELEVATIONS ARE IN METRES AND GEODETIC (CGVD28), BASED ON FIP #1127. ELEVATION = 13.58m

DATE OF FIELD SURVEY: JANUARY 11, 2021

NOTE: TITLE SUBJECT TO:
STATUTORY RIGHT OF WAY ED105363
STATUTORY RIGHT OF WAY ED105364
STATUTORY RIGHT OF WAY EE59031
STATUTORY BUILDING SCHEME ED105402

TEXT LEGEND:

- DENOTES SPOT ELEVATION
- DENOTES FOUND IRON POST
- DENOTES UNKNOWN MANHOLE
- DENOTES CATCH BASIN ROUND
- DENOTES STANDPIPE
- DENOTES BUILDING

THIS LOCATION CERTIFICATE IS BASED ON LAND TITLE AND SURVEY AUTHORITY RECORDS
AND FIELD SURVEY. UNREGISTERED INTERESTS HAVE NOT BEEN INCLUDED OR CONSIDERED.

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or in part without the consent of the signatory.



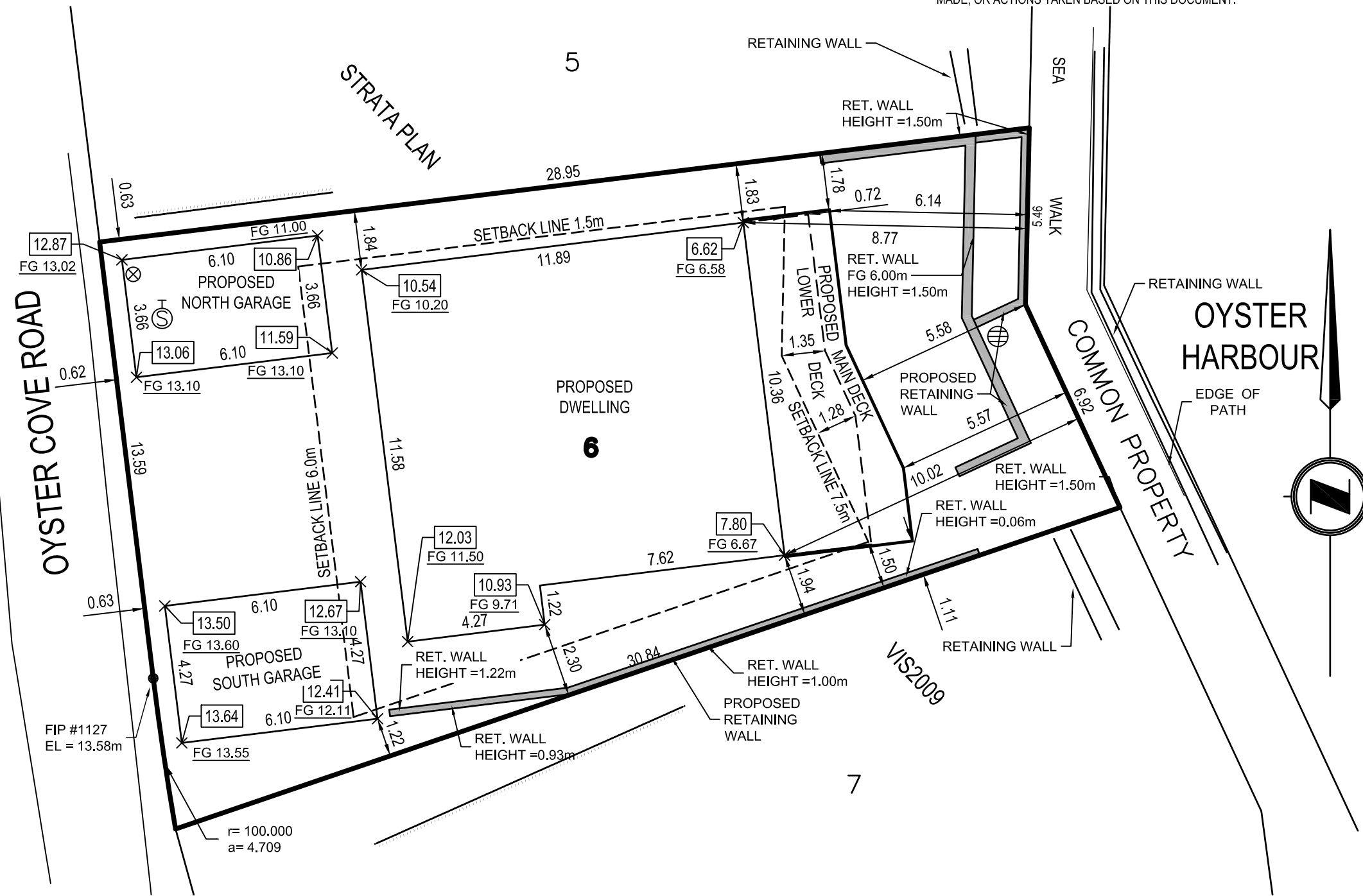
McELHANNEY ASSOCIATES
LAND SURVEYING LTD.
Suite 202
5855 York Road
Duncan BC
Canada V9L 3S3
Tel 250 748 3335

OUR FILE NO.: 2233-01152-01
DWG NO.: 2233-01152-1-V-1 BLC PROP REV 3.dwg

THIS PLAN IS PREPARED SOLELY FOR A LIMITED CONTRACTUAL USE BETWEEN
McELHANNEY ASSOCIATES AND OUR CLIENT.

THIS DOCUMENT SHOWS THE RELATIVE LOCATION OF THE SURVEYED
STRUCTURES AND FEATURES WITH RESPECT TO THE BOUNDARIES OF THE
PARCEL DESCRIBED ABOVE. THIS DOCUMENT SHALL NOT BE USED TO DEFINE
PROPERTY LINES OR PROPERTY CORNERS.

THE SIGNATORY ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR ANY DAMAGES
THAT MAY BE SUFFERED BY A THIRD PARTY AS A RESULT OF ANY DECISIONS
MADE, OR ACTIONS TAKEN BASED ON THIS DOCUMENT.



NORTH GARAGE	DWELLING	SOUTH GARAGE
AVERAGE NATURAL GRADE = 12.10 MAXIMUM BUILDING HEIGHT BY BYLAW = 3.50 MAXIMUM ALLOWABLE ROOF ELEVATION = 15.60	AVERAGE NATURAL GRADE = 9.58 MAXIMUM BUILDING HEIGHT BY BYLAW = 12.00 MAXIMUM ALLOWABLE ROOF ELEVATION = 21.58	AVERAGE NATURAL GRADE = 13.06 MAXIMUM BUILDING HEIGHT BY BYLAW = 3.50 MAXIMUM ALLOWABLE ROOF ELEVATION = 15.56
PROPOSED PEAK = 17.30* PROPOSED GARAGE SLAB = 13.12* PROPOSED GYM SLAB = 10.37* *DESIGN FROM 3D DIRON DESIGN & DRAFTING *PROJECT # A2013 DATED MAY 3, 2021	PROPOSED DWELLING PEAK = 19.58* PROPOSED BASEMENT SLAB = 6.41* *DESIGN FROM 3D DIRON DESIGN & DRAFTING *PROJECT # A2013 DATED MAY 3, 2021	PROPOSED PEAK = 17.13* PROPOSED GARAGE SLAB = 13.65* PROPOSED STORAGE SLAB = 10.98* *DESIGN FROM 3D DIRON DESIGN & DRAFTING *PROJECT # A2013 DATED MAY 3, 2021

CERTIFIED CORRECT THIS 25th DAY OF MAY, 2021.

TYSON QUOCKSISTER, BCLS

THIS DOCUMENT IS NOT VALID UNLESS DIGITALLY SIGNED

FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: June 14, 2020 LEA File # F8300

Town of Ladysmith

410 Esplanade, PO Box 220, Ladysmith, BC, V9G 1A2

Jurisdiction and address

With reference to (CHECK ONE):

- Land Title Act* (Section 86) – Subdivision Approval
- Local Government Act* (Division 7) – Development Permit
- Community Charter (Section 56) – Building Permit
- Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

Strata Lot 6, District Lot 56, Oyster District, Plan VIS2009; 245 Oyster Cove Road

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a Qualified Professional and is a Professional Engineer or Professional Geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

1. Consulted with representatives of the following government organizations:

2. Collected and reviewed appropriate background information
3. Reviewed the Proposed Development on the Property
4. Investigated the presence of Covenants on the Property, and reported any relevant information
5. Conducted field work on and, if required, beyond the Property
6. Reported on the results of the field work on and, if required, beyond the Property
7. Considered any changed conditions on and, if required, beyond the Property
8. For a Flood Hazard analysis I have:
 - 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
 - 8.2 Estimated the Flood Hazard on the Property
 - 8.3 Considered (if appropriate) the effects of climate change and land use change
 - 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others
 - 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report
9. For a Flood Risk analysis I have:
 - 9.1 Estimated the Flood Risk on the Property
 - 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
 - 9.3 Estimated the Consequences to those Elements at Risk

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:

- 10.1 A standard-based approach
- 10.2 A Risk-based approach
- 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:

- 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:

- 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- 12.3 Made a finding on the level of Flood Hazard or Flood Risk tolerance on the Property
- 12.4 Compared the guidelines with the findings of my flood assessment
- 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

- 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties
- 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

- The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)
- The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood Assessment Report:

~~[CHECK ONE]~~

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

[CHECK ONE]

- With one or more recommended registered Covenants.
- Without any registered Covenant.

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

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

[CHECK ONE]

- With one or more recommended registered Covenants.
- Without any registered Covenant.

- For flood plain bylaw variance, as required by the *Flood Hazard Area Land Use Management Guidelines* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".
- For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

June 14, 2020

Date

Prepared by

Darron G. Clark, P.Eng.

Name



Signature

1900 Boxwood Road

Address

Nanaimo, BC, V9S 5Y2

(250) 756-0355

Telephone

dclark@lewkowich.com

Email

Reviewed by

Jeff Scott, P.Eng.

Name (print)



Signature

(Affix PROFESSIONAL SEAL here)

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

I am a member of the firm **Lewkowich Engineering Associates Ltd.**
and I sign this letter on behalf of the firm. (Name of firm)

APPENDIX D: *LANDSLIDE ASSESSMENT ASSURANCE STATEMENT*

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

To: *The Approving Authority*

Date: May 24, 2020 File# F8300

Town of Ladysmith

410 Esplanade, PO Box 220, Ladysmith, BC, V9G 1A2

Jurisdiction and address

With reference to (check one):

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

For the Property: Strata Lot 6, District Lot 56, Oyster District, Plan VIS2009; 245 Oyster Cove Road

Legal description and civic address of the Property

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

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

Check to the left of applicable items

- 1. Collected and reviewed appropriate background information
- 2. Reviewed the proposed *residential development* on the Property
- 3. Conducted field work on and, if required, beyond the Property
- 4. Reported on the results of the field work on and, if required, beyond the Property
- 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
 - 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
 - 6.2 estimated the *landslide hazard*
 - 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
 - 6.4 estimated the potential *consequences* to those *elements at risk*
- 7. Where the *Approving Authority* has adopted a *level of landslide safety* I have:
 - 7.1 compared the *level of landslide safety* adopted by the *Approving Authority* with the findings of my investigation
 - 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
 - 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 8. Where the *Approving Authority* has **not** adopted a *level of landslide safety* I have:

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

Based on my comparison between

Check one

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

I hereby give my assurance that, based on the conditions^[1] contained in the attached *landslide assessment* report,

Check one

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

Check one

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

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

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

Check one

- with one or more recommended registered covenants.
- without any registered covenant.
- for flood plain bylaw variance, as required by the “Flood Hazard Area Land Use Management Guidelines” associated with the Local Government Act (Section 910), “the development may occur safely”.
- for flood plain bylaw exemption, as required by the Local Government Act (Section 910), “the land may be used safely for the use intended”.

Darron G, Clark, P.Eng.

Name (print)



Signature

May 24, 2020

Date

^[1] When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a “life safety” criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User’s Guide, Structural Commentaries, Part 4 of Division B. This states:

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

1900 Boxwood Road, Nanaimo, BC, V9S 5Y2

Address

250 756 0355

Telephone

(Affix Professional seal here)

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

I am a member of the firm Lewkowich Engineering Associates Ltd.

and I sign this letter on behalf of the firm.

(Print name of firm)



11/23/2020

Re: Strata Lot 6, District 56, Oyster District, Strata Plan 2009 – Development Permit Application

To whom it may concern,

The purpose of this letter is to provide project information pertaining to the attached development permit application.

Currently at Lot 6 – 245 Oyster Cove road there is a vacant building lot owned by James and Linda Anderson. The Andersons have owned the building lot for quite some time and have now decided to build a single family dwelling on the parcel. The proposed house is designed to fit into the landscape of the steep terrain as well to be aesthetically pleasing.

We thank you for your consideration on this application and look forward to hearing back from you.

Yours truly,

Colin Amey

CA Coastal Construction Ltd.

STAFF REPORT TO COUNCIL

Report Prepared By: Julie Thompson, Planner
Report Reviewed By: Jake Belobaba, Director of Development Services
Meeting Date: June 15, 2021
File No: DVP 3090-20-06
Re: Development Variance Permit Application – 350 Chemainus Road

RECOMMENDATION:

That Council deny Development Variance Permit Application 3090-20-06 for 350 Chemainus Road.

EXECUTIVE SUMMARY:

A Development Variance Permit (DVP) application has been received to vary the front and rear parcel line setbacks, dwelling finished floor area, and retaining wall height to facilitate the construction of a proposed single unit dwelling and a driveway at 350 Chemainus Road. Staff are recommending that the application not be approved due to safety concerns with the proposed access.



Figure 1: Subject Property

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

The 1,580m² (0.4 acres) subject property is located at 350 Chemainus Road, between the road and the E&N railway. The property is long and narrow in shape, with a 173.28m frontage along Chemainus Road, is 3.06m wide at its narrowest point and 15.56m wide at its widest point. The property slopes steeply toward Chemainus Road and is separated from the road and supported by a 4.0m tall retaining wall. The wall is primarily located within the road right of way, however, a portion of wall encroaches onto the southern end of the property (see Attachment A). The wall was constructed by the Town in 2009 to prevent the subject property from sloughing onto Chemainus Road.

PROPOSAL:

The applicant has applied to vary the front and rear parcel line setbacks, the maximum height of an engineered retaining wall, and the finished floor area of a single unit dwelling, to facilitate the construction of a proposed three-storey dwelling and a driveway off Chemainus Road. The dwelling and driveway are proposed to be situated in the northwest corner of the property. Due to the steep grade and large retaining wall near the property’s frontage, the applicant is proposing to cut into the slope and retaining wall to construct the proposed driveway, which will require a number of additional retaining walls running perpendicular to the existing retaining wall. Portions of the proposed retaining walls would be located in the road right of way (see Figure 2 and Attachment B). The proposed driveway is far away from the portion of the existing retaining wall that encroaches onto the property.



Figure 2: Side & front elevation of proposed dwelling and driveway as seen from Chemainus Road.

The proposed variances are summarized in Table 1.

Table 1: Summary of Proposed Variances

Zoning Bylaw Regulation	Required	Proposed
Minimum front parcel line setback	6.0m (for a principal building) 4.5m (for an unenclosed balcony) ¹	1.5m 0.1m

¹ S. 5.8(a)(vi) ‘Setback Exemptions’ allows unenclosed balconies to encroach not more than 1.5m into a front setback, therefore, the front setback for an unenclosed balcony in the R-1 zone is: 6m-1.5m=4.5m

Minimum rear parcel line setback	4.5m	1.1m
Maximum engineered retaining wall height	3.0m; stepped back 2.0m for every 3.0m in height.	8.5m; no stepping required.
Maximum Finished Floor Area	240.0m ²	250.0m ²

ANALYSIS:

Geotechnical Slope Stability Assessment:

Though the subject property is not located within a Hazard Lands Development Permit Area (DPA 7), the applicant has submitted a geotechnical slope stability assessment by a professional engineer. The assessment evaluates the parcel’s slope stability in the context of the proposed use and proposed construction (see Attachment C).

Access Safety Concerns:

The application was referred to the Town’s Engineering Department for comment. Engineering has noted concerns with the sight lines available for the proposed driveway. A portion of the existing retaining wall will limit visibility for cars leaving the driveway, requiring them to pull into oncoming traffic before they can see oncoming traffic. Engineering has recommended that the applicant remove a small piece of the existing retaining wall from the northwest end (the portion where the address is shown on Figure 2) and slope back the grades to create more open sight lines of Chemainus Road and allow vehicles leaving the driveway to see oncoming traffic.

The proposed access will also require an encroachment agreement with the Town to allow portions of the proposed retaining walls running perpendicular to the existing retaining wall to be located within the boulevard. Staff do not support approval for the encroachment agreement unless the safety concerns noted above are addressed. The applicant was notified of the need for an encroachment agreement and redesign and has stated that he will only agree to the encroachment agreement if the Town covers costs related to providing access to the subject property (see Attachment D). The cost of modifying public infrastructure to accommodate driveway access is the responsibility of the property owner. Therefore, staff do not recommend entering into an encroachment agreement under these terms.

Retaining Wall Encroachment:

As noted above, a small portion of the Town’s retaining wall encroaches onto the subject property near its south end (see Attachment A). The Town must have access to all portions of the wall for repair and maintenance purposes—more so with increased development and activity occurring on the property—in order to protect the integrity of the wall and slope. As such, staff have requested that the applicant grant the Town a statutory right of way over the encroaching portion of the wall. Correspondence with the applicant (Attachment D), suggests he is only willing to grant the right of way if the Town pays \$500,000, which is approximately

100 times the market value of the right of way and approximately seven times the assessed value of the entire property which has been assessed at \$73,500 by BC Assessment².

Granting a DVP is a discretionary decision of Council and due to the significant public safety concerns noted above, staff recommend that this application be denied. Staff will work with the applicant to address the encroaching retaining wall through a separate process.

ALTERNATIVES:

Council can choose to:

1. Direct staff to undertake public notification for DVP 3090-21-06 and bring the application back to Council for consideration at a future meeting.
2. Refer the application back to staff for further review as specified by Council.

FINANCIAL IMPLICATIONS:

N/A

LEGAL IMPLICATIONS:

Granting a DVP is discretionary and Council has no obligation to issue one. Staff will correct the encroaching retaining wall through a separate process.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Prior to issuance of a DVP, public notification is required in accordance with [section 499](#) of the *Local Government Act* and Development Procedures Bylaw No. 1667. The applicant must cover the cost of notification. Subsequently, notification has not yet been carried out. If Council wishes to consider approving DVP 3090-21-06, notification must occur first (see Alternative 1).

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

The application was reviewed by the Town’s Engineering and Building Inspection Departments as well as the Fire Chief. Comments from Engineering form the basis of the recommendation in this report.

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input checked="" type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

- | | |
|---|----------------------------------|
| <input type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
|---|----------------------------------|

² See <https://www.bccassessment.ca//Property/Info/QTAwMDBENUxKOQ==>

- Community
- Waterfront

Not Applicable

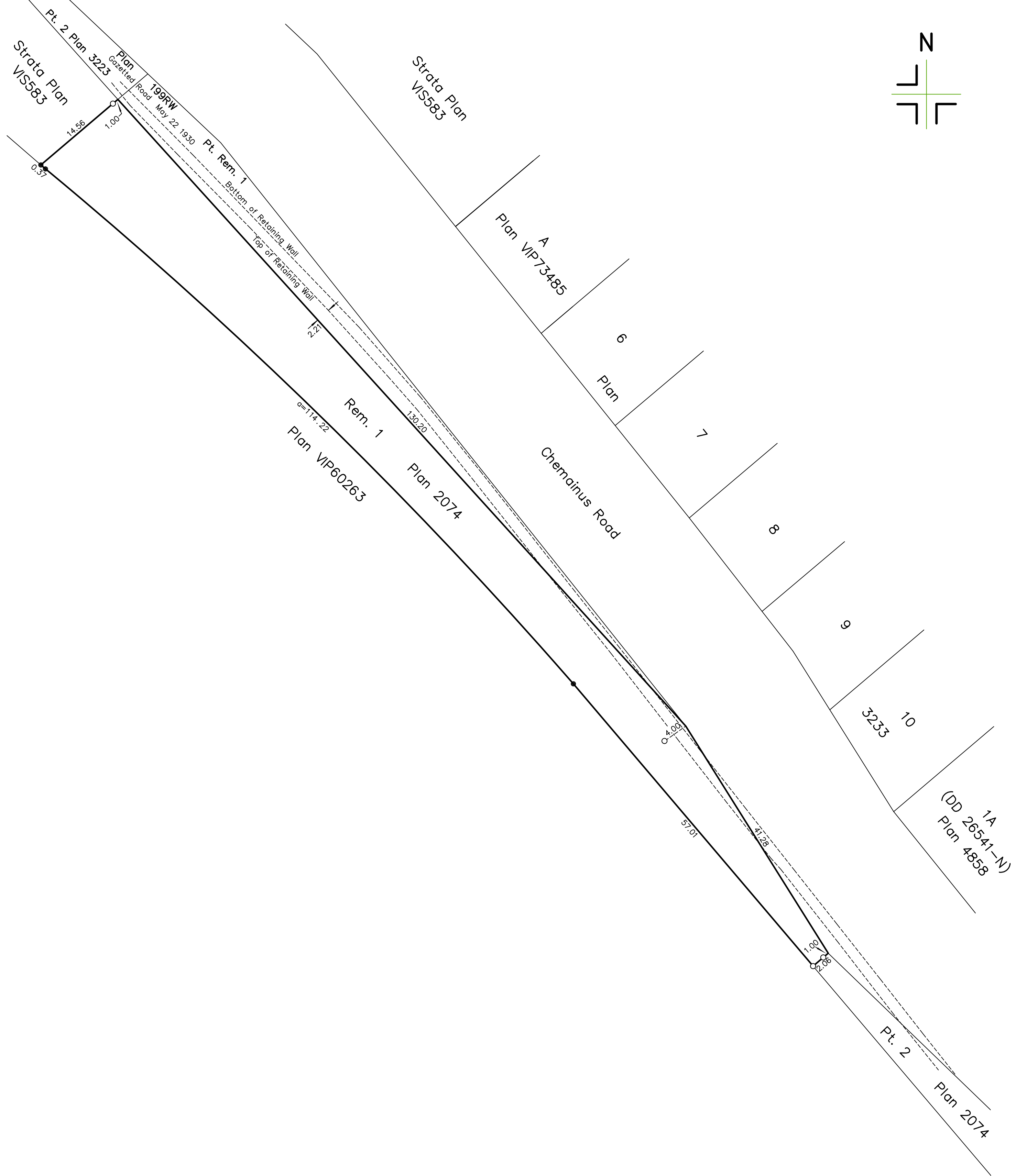
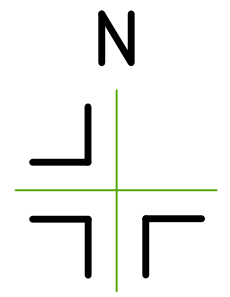
I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENTS:

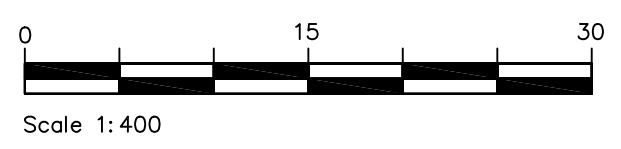
- A. Retaining Wall Survey Plan
- B. Proposed Site Plan
- C. Geotechnical Slope Stability Assessment
- D. Applicant Correspondence

Attachment A



NOTE:
THIS PROPERTY IS AFFECTED BY
THE FOLLOWING REGISTERED DOCUMENT:
M76300.

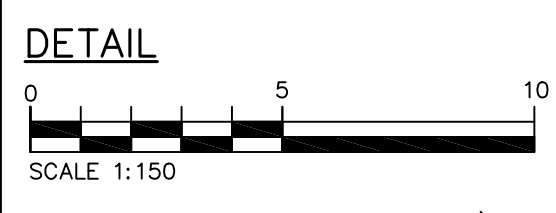
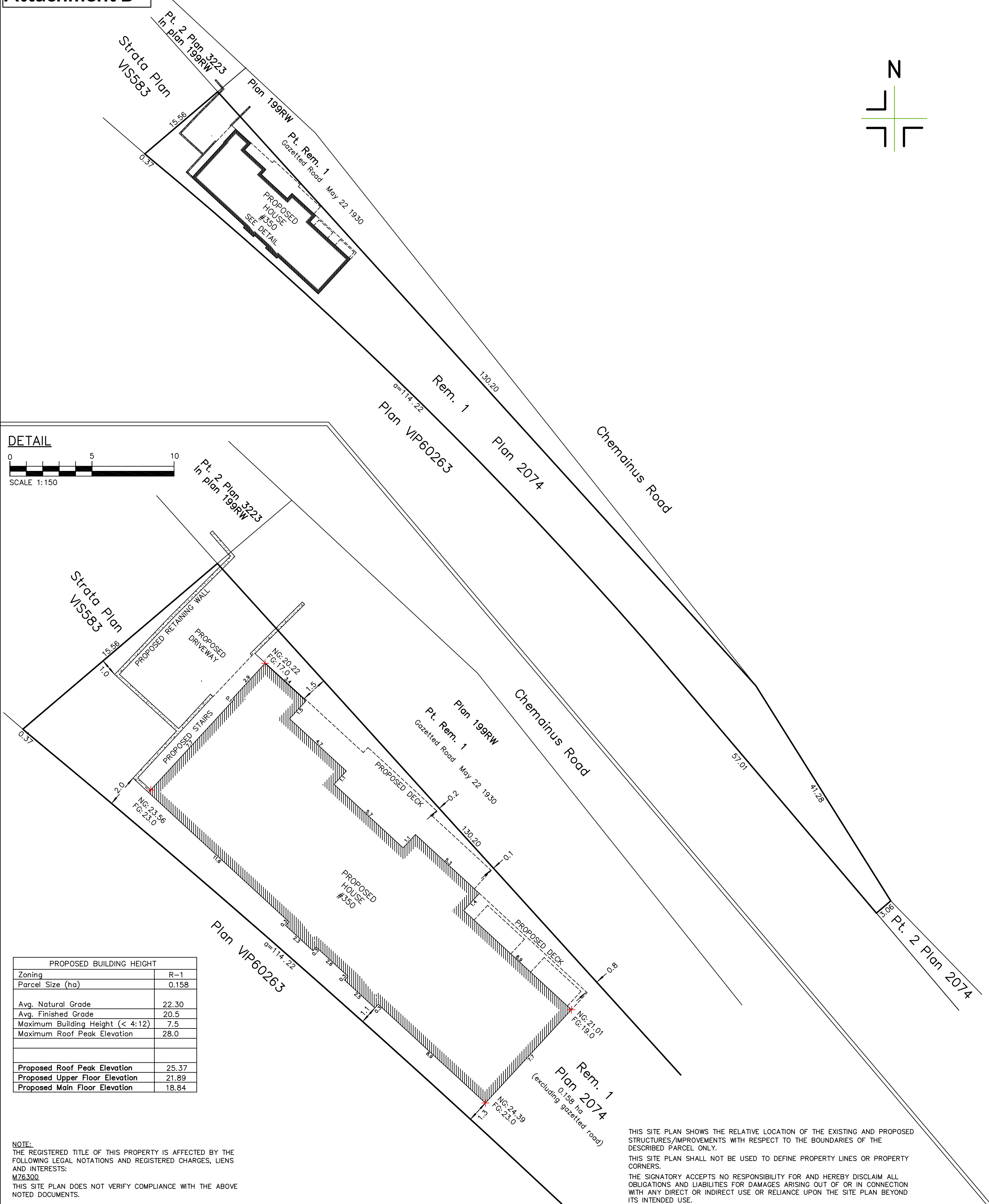
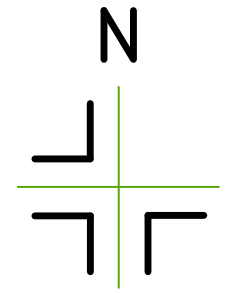
SITE PLAN SHOWING: LOT 1, DISTRICT LOT 42, OYSTER DISTRICT, PLAN 2074, EXCEPT THAT PART IN PLAN 3223.		
Client: PETER NJENGA	Civic Address: 350 CHEMAINUS ROAD	
File: 18-052	Scale: 1:400	Drawn by: DRW



Legend
 O Denotes Standard Iron Post Placed
 ● Denotes Standard Iron Post Found
 Distances Shown are in Metres.

Turner + land surveying™
 250.753.9778
 605 Comox Road
 Nanaimo, BC V9R 3J4
 www.turnersurveys.ca

Attachment B

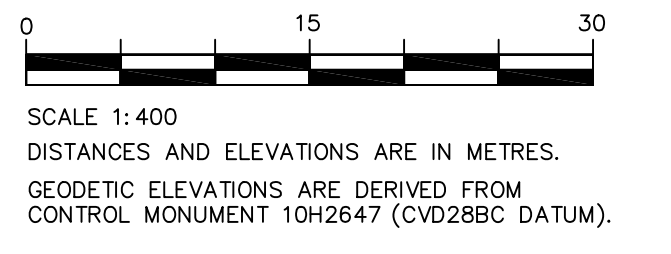


PROPOSED BUILDING HEIGHT	
Zoning	R-1
Parcel Size (ha)	0.158
Avg. Natural Grade	22.30
Avg. Finished Grade	20.5
Maximum Building Height (< 4:12)	7.5
Maximum Roof Peak Elevation	28.0
Proposed Roof Peak Elevation	25.37
Proposed Upper Floor Elevation	21.89
Proposed Main Floor Elevation	18.84

NOTE:
 THE REGISTERED TITLE OF THIS PROPERTY IS AFFECTED BY THE FOLLOWING LEGAL NOTATIONS AND REGISTERED CHARGES, LIENS AND INTERESTS:
M76300
 THIS SITE PLAN DOES NOT VERIFY COMPLIANCE WITH THE ABOVE NOTED DOCUMENTS.

THIS SITE PLAN SHOWS THE RELATIVE LOCATION OF THE EXISTING AND PROPOSED STRUCTURES/IMPROVEMENTS WITH RESPECT TO THE BOUNDARIES OF THE DESCRIBED PARCEL ONLY.
 THIS SITE PLAN SHALL NOT BE USED TO DEFINE PROPERTY LINES OR PROPERTY CORNERS.
 THE SIGNATORY ACCEPTS NO RESPONSIBILITY FOR AND HEREBY DISCLAIMS ALL OBLIGATIONS AND LIABILITIES FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY DIRECT OR INDIRECT USE OR RELIANCE UPON THE SITE PLAN BEYOND ITS INTENDED USE.

SITE PLAN TO ACCOMPANY DEVELOPMENT VARIANCE PERMIT APPLICATION FOR:
LOT 1, DISTRICT LOT 42, OYSTER DISTRICT, PLAN 2074, EXCEPT THAT PART IN PLAN 3223.



Certified correct this 27th day of January, 2021.

Turner & Associates
 land surveying™

250.753.9778
 B.C.L.S. 435 Terminal Avenue North
 Nanaimo, BC V9S 4J8
 www.turnersurveys.ca

Client: PETER NJENGA	Civic Address: 350 CHEMAINUS ROAD
File: 18-052	Zoning: R-1
Scale: 1:400	Drawn by: DRW



GEOTECHNICAL SLOPE STABILITY ASSESSMENT

Proposed Single-Family Residence
350 Chemainus Road
Ladysmith, BC

Legal Address:
Lot 1, District Lot 42, Oyster District, Plan 2074, except that part in Plan 3223

Prepared For:
Mr. Peter Njenga
c/o Finn & Associates Design Ltd.

Attention:
Mr. Richard Finnegan

August 14, 2020

File No.: F8264.01
Revision No.: 00
Prepared by: Jeff Scott, P.Eng
Reviewed by: Chris Hudec, M.A.Sc, P.Eng

Lewkowich Engineering Associates Ltd.
1900 Boxwood Road
Nanaimo, BC, V9S 5Y2
250-756-0355 (Office)
250-756-3831 (Fax)
www.lewkowich.com



DISCLAIMER

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as “the Report,” may be used by the Town of Ladysmith (ToL) as a precondition to the issuance of a development and/or building permit and that this Report and any conditions contained in the Report may be included in a restrictive covenant under Section 56 of the Community Charter and registered against the title of the Property at the discretion of the ToL.
2. This Report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of Mr. Peter Njenga, c/o Finn & Associates Design Ltd. We have not acted for or as an agent of the ToL in the preparation of this Report.
3. The conclusions and recommendations submitted in this Report are based upon information from relevant publications, a visual site assessment of the property, anticipated subsurface conditions, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the development becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. The conclusions and recommendations issued in this Report are valid for a maximum of two (2) years from the date of issue. The 2-year term may be reduced as a result of updated bylaws, policies, or requirements by the authority having jurisdiction, or by updates to the British Columbia Building Code (BCBC). Updates to professional practice guidelines may also impact the 2-year term. If no application of the findings in this Report have been made to the subject development, the conclusions issued in this Report become void and re-assessment of the property will be required.
5. This Report has been prepared by Mr. Jeff Scott, P.Eng., and reviewed by Mr. Chris Hudec, M.A.Sc., P.Eng. Messrs. Scott and Hudec are both adequately experienced and are also members in good standing with the Engineers and Geoscientists of British Columbia (EGBC).



EXECUTIVE SUMMARY

1. The following is a brief synopsis of the subject property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The subject property, 350 Chemainus Road, Ladysmith, BC, from this point forward referred to as “the Property,” is located on the east coast of Vancouver Island within the jurisdictional boundaries of the ToL. The proposed development for the Property consists of a single-family residence.
3. LEA was retained to conduct a geotechnical assessment of the Property in relation to the proposed single-family residence. The assessment concludes the only geotechnical hazard relates to the steep slopes within the Property.
4. The slope stability assessment included a visual site reconnaissance and slope stability analyses with Slope/W computer modeling software.
5. The findings in this Report recommend slope mitigation options, including lowered footings and/or cantilevered structure, or slope reinforcement with soil nails. This Report concludes the development is considered safe as proposed, provided the recommendations in this Report are followed.

List of Abbreviations Used in the Report

Abbreviation	Title
LEA	Lewkowich Engineering Associates Ltd.
ToL	Town of Ladysmith
BCBC	British Columbia Building Code
EGBC	Engineers and Geoscientists of British Columbia
FoS	Factor of Safety
SLS	Service Limit State
ULS	Ultimate Limit State



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1.0 INTRODUCTION

1.1 General

As requested, LEA has carried out a geotechnical assessment of the subject Property in relation to the proposed single-family residential development. This Report provides a summary of our findings and recommendations.

1.2 Background

- a. The subject Property is located within the jurisdictional limits of the ToL. As per the ToL Official Community Plan,¹ the Property is not within a Development Permit Area.
- b. We understand the proposed development consists of a two-storey single-family residence. We further understand the proposed residence will consist of conventional construction methods, including typical cast-in-place concrete foundations.

1.3 Assessment Methodology

- a. This geotechnical slope stability assessment included a desktop review of relevant background information, including regional geology, topographic plans, aerial photographs, and nearby well records. Please refer to the list of references at the end of this Report.
- b. This assessment included a site reconnaissance of the Property on June 29, 2020, to visually assess the Property and current slope conditions.
- c. This assessment included evaluation of the current global stability of the steep slope under both static and seismic conditions. Two-dimensional slope models were developed using GeoStudio 2020 Slope/W limit equilibrium slope stability analysis software. Slope stability analyses were completed in order to determine adequate foundation depths to mitigate any global slope stability issues.
- d. This assessment was prepared with consideration for the referenced EGBC *Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in British Columbia*.² See attached Appendix D: Landslide Assessment Assurance Statement.

2.0 SITE CONDITIONS

2.1 Physical Setting

- a. The subject Property is located in the southeast region of the Town of Ladysmith. The Property is situated between Chemainus Road to the northeast and a railway corridor to the southwest. A similar 'Single Dwelling Residential' property immediately borders the Property to the northwest. The foreshore of

Ladysmith Harbour (ocean) is located approximately 50m to the northeast. Refer to Figure 2.1 below.



Figure 2.1: Site Location (Google Maps)

2.2 Terrain and Features

- a. In general, the terrain of the Property steeply rises from Chemainus Road to the railway corridor. Total vertical relief across the Property is approximately 15m.
- b. A lock block retaining wall is located along the southwest edge of Chemainus Road. The majority of the wall is not located within the Property limits, as shown on the attached Site Plan. The wall measures up to approximately 4.5m height in the area of the proposed residence. Record drawings of the wall were not available at the time of this Report, however we understand the wall was designed as a gravity wall without the installation of geosynthetic reinforcement.
- c. An approximately 2.8m wide level bench is found immediately behind the wall. The level bench is partially comprised of a rock rubble fill drainage blanket for the retaining wall. The level bench abruptly transitions into an approximately 3.0m high near-vertical bluff, exposing native very dense glacial till soils. Above the bluff, the slope continues at slope angles between 25 to 30 degrees from horizontal. The southwestern property limits are defined by a railway embankment, estimated to be 1.5m in height with slope angles between 40 to 45 degrees from horizontal. Refer to Photo 2.2 below.



Photo 2.2: Retaining wall near northeast corner of the Property, looking southwest.

- d. The Property was undeveloped at the time of this assessment. The slope was well vegetated with young to mature mixed trees and a moderate undergrowth of low-lying vegetation. The majority of the trees on the slope showed vertical growth patterns.

2.3 Regional Geology

- a. Surficial geology mapping indicates the subsurface soil conditions are comprised of Somenos moraine deposits of well drained, gravelly sandy loam (moderately to strongly cemented pans).³
- b. Bedrock geology for the area is classified as the Nanaimo Group, comprised of undivided sedimentary rocks from the upper Cretaceous period, generally consisting of boulder, cobble and pebble conglomerate, coarse to fine sandstone, siltstone, shale and/or coal.⁴
- c. There are no known fault lines that cross the subject Property.

2.4 Soil Conditions

- a. A subsurface investigation was not included as part of this assessment. Visual inspection allowed for observations of minor soil exposures within the Property.
- b. In general, the observed soil conditions are consistent with published surficial geology mapping. Soil conditions as observed within the 3m high bluff consisted of a thin layer of organic topsoils, overlying very dense glacial till (over-consolidated, heterogeneous matrix of gravelly sand and silt with trace cobble).
- c. No bedrock exposures were observed within the Property. Based on nearby well records, we expect the depth to bedrock is approximately 20m below existing grades.⁵
- d. Rock rubble fill has been placed directly behind the lock block retaining wall as a drainage blanket. Fill materials are also present along the southwest property line as part of the railway embankment. We expect negligible fill materials within the remainder of the Property.
- e. Based on observed conditions and our previous experience in the area, we do not anticipate any soft, weak, or liquefiable soils within the subject Property that would have a significant impact on conventional single-family residential construction methods.

2.5 Surface and Groundwater

- a. There was no ponded water, nor evidence of abnormal groundwater conditions observed during our visual reconnaissance of the Property.
- b. The nearest water well to the subject Property is located approximately 550m southeast within the railway corridor. Static groundwater was recorded at 17m depth from ground surface, approximately 3m above the bedrock and glacial till interface.
- c. Groundwater levels can be expected to fluctuate seasonally with cycles of precipitation. Groundwater conditions at other times and locations can differ from those observed at the time of our assessment.

3.0 SLOPE STABILITY ANALYSIS

3.1 General

- a. Slope Stability analyses were carried out using GeoStudio 2020 Slope/W software, employing the Morgenstern-Price limit equilibrium method. The software was used to evaluate the slope's resistance to slope failure by calculating a range of potential slip surfaces, determining the critical FoS and the probable extent of failure within the slope. Analyses were performed for both static and seismic conditions.
- b. The slope profile was modeled based on a section through Section A-A as shown on the attached marked-up Site Plan, roughly aligned through the middle of the proposed dwelling.

3.2 Soil Parameters

- a. The stability analyses were performed using effective stress conditions and frictional soil parameters as estimated from observed soil conditions and based on LEA experience with similar soil conditions in the area. Effective cohesion was conservatively ignored. The soil strength parameters are summarized in Table 3.2 below.
- b. The lock block wall was also modelled as a frictional soil unit, in order to simulate the possibility of slope failure through the wall at the interface of block layers.

Soil Layer	Unit Weight (kN/m ³)	Effective Friction Angle (degrees)	Effective Cohesion (kPa)
Surficial Soils, compact	20	32	0
Glacial Till, very dense	22	38	0
Lock Block Wall	23	45	0
Rock Rubble Fill	20	40	0
Sand & Gravel Backfill	20	34	0

3.3 Piezometric Conditions

- a. The static piezometric levels adopted for the slope model were based on recorded groundwater levels from adjacent well logs, as well as observed groundwater conditions during the field review.
- b. No evidence of groundwater seepage was observed within the soil exposures on the slope nor through the face of the retaining wall.
- c. The nearest water well to the subject Property is located approximately 550m southeast within the railway corridor. Static groundwater was recorded at 17m depth from ground surface, approximately 3m above the bedrock and glacial till interface. This reported groundwater level was adopted for the analyses.
- d. The modeled piezometric line is identified on the attached Slope/W Section Plots as dashed blue lines.

3.4 Methodology

- a. A range of potential rotational failures were computed with the Slope/W software. The analyses included assessment of both global failure (crest to toe) and failure through the lower bench created post-excavation. Evaluation of slope stability above the bench was not completed as this slope section will be supported by the dwelling.

- b. The analyses assessed post-construction conditions, and included a 75kPa uniform load applied across the proposed building extends to simulate applied loading from the dwelling, as well as the anticipated volume of backfill along the southwestern building limits. Railway loading was included in the global analysis, considering a 400 kPa loading applied over a single railway tie / sleeper.
- c. The EGBC Guidelines for *Legislated Landslide Assessments for Proposed Residential Development in British Columbia* (2010)² specify that if soil liquefaction or strain softening is not an issue, the seismic slope stability FoS can be estimated by the methods provided by the guidelines.
- d. The guidelines provide a procedure for the calculation of the horizontal earthquake acceleration coefficient k15 (Method 2 of the guidelines), which is used to simulate the design earthquake. A seismic analysis employing the k15 parameter and yielding a FoS greater than or equal to 1.0 is considered acceptable for residential development in accordance with the guideline. Areas within a potential slip surface yielding a FoS equal to 1.0 are estimated to displace 15cm or more, and areas outside the slip surface are estimated to displace less than 15cm.
- e. The k15 coefficient was computed to be 0.254g, based on an earthquake moment magnitude (M) of 7.0 and a spectral response acceleration (Sa(0.5)) of 1.029g, for 2% in 50-year ground motions. A list of seismic hazard values for this site are attached to this Report.
- f. We note the maximum suggested displacement that is tolerable for normal residential construction is 15cm. It is possible some residential buildings could withstand greater displacements, the extent of which can be determined by a Structural Engineer.

3.5 Results

- a. The results of the slope stability analyses are summarized in Table 3.5 below. Detailed Slope/W analyses results may also be found attached to this Report.

Failure Scenario	Factor of Safety		Distance from Northeast Building Limits (m)
	Static	Seismic	
Global Failure	1.532	1.055	N/A
Lower Bench Critical Slip Surface	0.953	0.724	2.0
Lower Bench FoS >= 1.00 (Seismic)	1.255	1.000	3.0

4.0 DISCUSSIONS AND RECOMMENDATIONS

4.1 Steep Slope

- a. The steep slope is considered to be in a relatively stable condition. There were no visual signs of potential global / full slope height instability (ponding water, seepage, tension cracks, past slump blocks, toe erosion, etc.) observed on the subject Property and slope. Furthermore, the majority of the trees displayed vertical growth patterns, an indication that surficial soil movement or long-term soil creep is not rapidly occurring.
- b. Visual inspection of the existing lock block wall did not reveal any notable deformations or distress (leaning, bulging, block displacement, toe erosion, seepage), indicating the wall is performing satisfactory and as designed. The exposed soil bluff behind the wall was standing near-vertical with no evidence of significant failure or erosion. Only minor accumulation of talus soils due to normal weathering patterns were observed at the toe of the soil bluff.

4.2 Stability Analyses Interpretation

- a. The slope stability modelling included assessment of both global failure (crest to toe / railway corridor to Chemainus Rd), as well as failure through the lower bench / building area.
- b. The global failure analyses resulted in a critical seismic FoS greater than 1.00, and static FoS greater than 1.50. We therefore conclude the slope is stable considering a global failure scenario.
- c. Analyses of the lower bench / building area resulted in critical seismic FoS less than 1.00. The slip plane with a seismic FoS equal to 1.00 exits the ground surface at an approximate distance of 3.0m from the proposed northeast building limits, which encompasses roughly 1/3rd of the residence. This generally means building areas within the slip plane could displace more than 15cm during the design seismic event, while areas inland of the slip plane will displace less than 15cm. The accepted maximum displacement that is tolerable for normal wood-framed residential construction is 15cm.
- d. The analyses therefore conclude there could be sufficient land displacement during the design seismic event to damage the proposed dwelling.
- e. We note the critical static FoS is also less than 1.00. This would indicate that the slope is not statically stable in the post-construction condition. However, further static analyses were completed for the post-construction slope geometry without the applied building load. The results of this analysis still showed critical static FoS less than 1.00 near the crest of slope. We know however, this result is improbable considering the existing and taller slope profile is currently statically stable, and has been since construction of the retaining wall. This analysis demonstrates the conservative nature of the slope stability methods, and the selected soil parameters used in the model.

- f. Provided one of the following slope mitigation measures are followed (or combination thereof), we anticipate the slope hazard will be within acceptable criteria. Further analyses may be required to confirm the selected mitigation option satisfies minimum slope stability criteria.

4.3 Stability Mitigation Options

- a. The following are proposed options to reduce the slope stability hazard to within acceptable criteria.

4.3.1 Lowered Footings combined with Cantilevered Structure

- a. The proposed residence can be safely sited over the predicted failure plane through a combination of lowering footings below the slip surface and a cantilevered structure, as illustrated in Figure 4.3.1 below. We note this method is intended to maintain safe egress and to mitigate against damage to the residence and does not propose to provide any mitigation against possible loss of land.

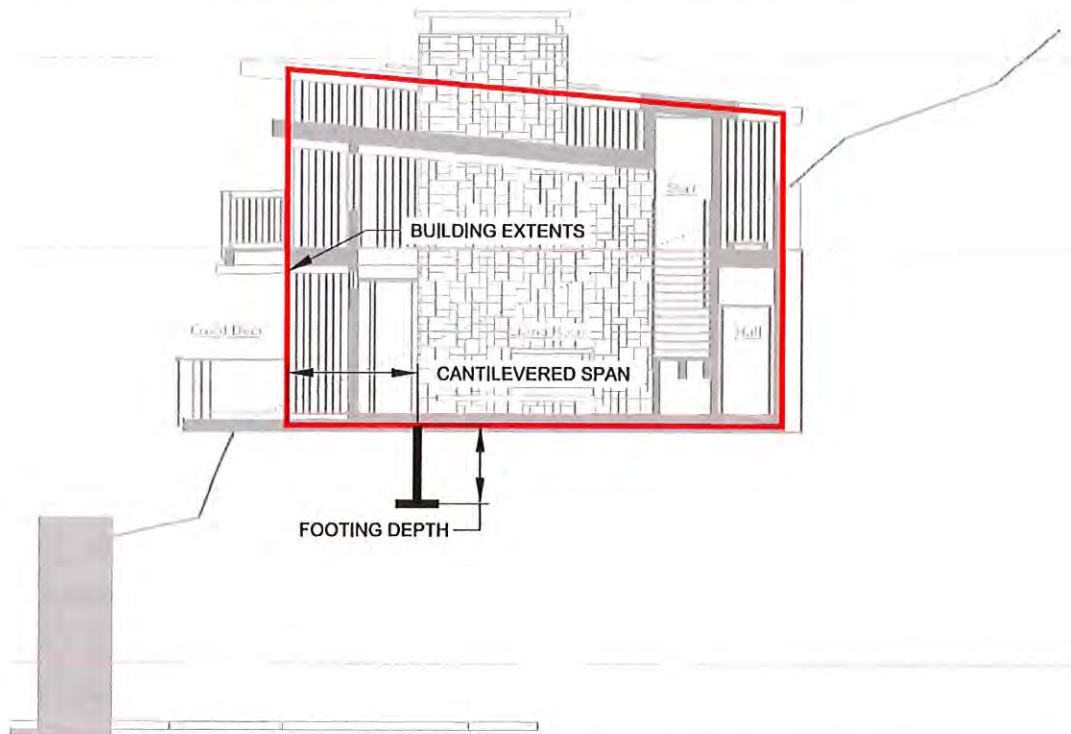


Figure 4.3.1: Illustration of Foundation Concept

- b. It should be understood that seismic events of magnitudes less than the design earthquake are likely to occur. These smaller dynamic loads may still cause repairable damage to the residence; however, the residence should remain habitable following repairs.
- c. Based on a preliminary review of slope geometry and proposed building position, the following Table 4.3.1 compares feasible cantilevered spans to required exterior footing depth. Any of the presented combinations could be considered for preliminary structural design.



Cantilevered Span	Exterior Footing Depth
2.00m	2.40m
2.50m	1.50m
3.00m	0.45m

- d. No building loads shall be supported by soils within the predicted failure plane (i.e. 3.0m from northeast building limits).
- e. Proposed foundation design shall be reviewed by the Geotechnical Engineer to confirm appropriate bearing depth.

4.3.2 Slope Reinforcement

- a. Slope reinforcement measures such as Soil Nailing is a technique that stabilizes steep slopes or excavations through the introduction of grouted steel tendons / bars at relatively close spacing. Following nail installation, the slope face is generally protected with shotcrete and/or mesh facing or other facing types. The soil nails would be designed to resist internal failure, and be sufficiently long to span the predicted slip surface.
- b. For this site, we expect installation of soil nails would first require dismantling the existing lock block wall in front of the residence, then reassembly following nail installation.
- c. LEA could provide a soil nail design upon request. As per prior discussions with the current Property owner, we understand a soil nailing program is not a financially feasible option.

4.4 General Slope Discussions and Recommendations

- a. Any change in proposed residence dimensions, position or elevation, or any change to slope geometry to those presented in this Report and attachments may require a reassessment of slope stability. Any change to residence design shall be reviewed by the Geotechnical Engineer. Proposed foundation design shall be reviewed and approved by the Geotechnical Engineer.
- b. We do not recommend permanent fill slope construction any steeper than 2H:1V. Slopes excavated into very dense naturally deposited soils may be configured at 1.5H:1V, subject to Geotechnical review. All finished slopes shall be graded or protected as necessary to mitigate soil erosion or general degradation of the slope face.
- c. The upper slope created through construction of the level residence bench shall be support by the residence. The rear / southwest exterior wall of the residence will therefore be a full-height, cast-in-place reinforced concrete wall, design by a Structural Engineer to retain the slope. Lateral earth pressure

coefficients as presented in Section 4.7 of this Report can be used for structural design.

- d. Ponds, hot tubs, swimming pools and in-ground lawn irrigation systems shall be prohibited within the setback zone.
- e. It should be noted that landslides can occur due to human activity (i.e. excavation, placement of fill, removal of vegetation, etc.) or by failure of civil infrastructure (i.e. leakage/rupture of underground water and sewer mains, stormwater disposal from existing developments, etc.). It is important that water does not pond near the crest of slope. Surface water flow across the slope from precipitation events, collected stormwater or any other drainage system must be prevented from flowing in a concentrated manner down the slope. The concentrated discharge of collected stormwater can lead to erosion, earth movement, or slope failure.
- f. The existing native vegetation cover on the slope should be maintained. The slope should not be cleared of vegetation, although select pruning, spiraling, or limbing of trees as directed by a qualified tree professional or arborist is permissible, subject to bylaw and geotechnical review. Generally, trees should only be cut if their roots are undermined by slope regression or if they are leaning severely. An arborist shall be contacted to direct any topping, pruning or cutting of trees.
- g. Preserve a healthy natural vegetated buffer zone adjacent to cleared / landscaped areas for runoff attenuation which will assist in maintaining stability of surficial cover.
- h. Disposal of fills, yard waste, organic debris or excavation spoils shall not be discharged or dumped onto the slope or overload the slope crest.

4.5 Foundation Design and Construction

- a. Prior to construction, the foundation areas should be stripped to remove all unsuitable materials to provide an undisturbed natural subgrade for footing support.
- b. Foundation loads should be supported on natural undisturbed material approved for use as a bearing stratum by our office, or structural fill, and may be designed using the following values:
 - i. For foundations constructed on a dense naturally deposited inorganic subgrade, or structural fill, an SLS bearing pressure of 150 kPa, and a ULS bearing pressure of 200 kPa may be used for design purposes. These values assume a minimum 0.45m depth of confinement or cover.
- c. The Geotechnical Engineer should evaluate the bearing soils at the time of construction to confirm that footings are based on appropriate and properly prepared founding material.
- d. Exterior footings should be provided with a minimum 0.45m depth of ground cover for frost protection purposes.

4.6 Seismic Criteria

- a. We do not anticipate any compressible or liquefiable soil types that would have a significant impact on the bearing soils of the proposed residential construction.
- b. Based on the 2018 British Columbia Building Code, Division B, Part 4, Table 4.1.8.4.A, "Site Classification for Seismic Site Response," the soils and strata encountered during our involvement with the project to date would be "Site Class C" (Very Dense Soil or Soft Rock).

4.7 Lateral Earth Pressures

- a. Any future retaining wall construction within the Property shall be reviewed by the Geotechnical and/or Structural Engineer(s).
- b. We understand the proposed development will include the construction of several pour-in-place concrete retaining walls, including the rear residence exterior wall and around the parking area. We understand the tallest wall at the back of the parking area is estimated to be 8m high.
- c. Below are typical lateral earth pressure coefficients for conventional pour-in-place concrete retaining walls. If other types of retaining wall structures are being considered, please contact our office for additional design information. It is noted that the methods employed are estimates and further analysis may be required after dimensions of the proposed structure have been determined. Final retaining wall plans shall be reviewed by the Geotechnical Engineer.
- d. Lateral earth pressure coefficients (K) for the design of the cast-in-place retaining walls are outlined in Table 4.7.1. It is assumed that there will be a level bench (0 degree from horizontal) for a minimum lateral distance equal to 0.65x the height of the wall (i.e. 5.2m for an 8m high wall) and no additional surcharge on the wall. If a backslope is proposed or this condition is not achievable, then the presented lateral earth pressure coefficients are invalid and will require reassessment. For backslopes equal to, or greater than 2H:1V, the height of the backslope must be added to the design height of the wall, as per EGBC guidelines. We recommend any proposed backslope be less than 3H:1V.
- e. An average soil friction angle of 27° has been used to calculate the lateral earth pressure coefficients. It is assumed that retained soils are fully drained, well compacted, cohesion-less sands and gravels, with a unit weight of 21 kN/m³.
- f. Seismic forces used reflect values from the 2015 National Building Code interpolated seismic hazard values for this specific Property in the CoN which are 0.483 Peak Ground Acceleration (PGA) (2% in 50 year probability) and 0.257 PGA (10% in 50 year probability).
- g. The Mononobe-Okabe (M-O) Method has been used to calculate the seismic active earth pressure coefficient (K_{ae}). The static active earth pressure coefficient (K_a) has been calculated using Coulomb's

theory. The static passive earth pressure coefficient (K_p) has been calculated using Rankine's theory. See the following Table 4.7.1 for design values.

Table 4.7.1 – Lateral Earth Pressure Coefficients

Lateral Earth Pressure Condition	Earth Pressure Coefficient (K)	
Static Active	K_a	0.34
Static Passive	K_p	2.66
Seismic Active	K_{ae}	0.55

- h. The thrust resulting from lateral earth pressures under each of the conditions outlined in Table 4.7.1 may be calculated using the following relationship in Table 4.7.2. A minimum uniform static load of 20 kPa shall be considered for compaction forces.

Table 4.7.2 – Calculation of Lateral Earth Pressures

$P = 0.5 K \gamma H^2$
P = Thrust (kN/m Length of Wall)
K = Lateral Earth Pressure Coefficient
γ = Soil Unit Weight (kN/m ³)
H = Height of Wall (m)

- i. The seismic active coefficient provides a value that combines both static and dynamic forces to determine total active thrust (P_{ae}). The static component (P_a) acts through a point that is approximately $H/3$ above the toe of the wall. The dynamic component (ΔP_{ae}) acts through a point at approximately $0.6H$ above the toe of the wall. The total active thrust may then be considered to act at a height from the base of the wall using the following relationship in Table 4.7.3.

Table 4.7.3 – Height from base of wall for Total Active Thrust

$h = [P_a (H/3) + \Delta P_{ae} (0.6H)] \div P_{ae}$
h = Height from base of wall (m)
P_a = Static Active Thrust (kN/m)
P_{ae} = Total Active Thrust (kN/m)
ΔP_{ae} = Dynamic Active Thrust (kN/m)

- j. We assume fully drained backfill conditions. Drainage requirements for any wall construction shall be reviewed by the Geotechnical Engineer prior to construction.

5.0 CONCLUSIONS

- a. From a geotechnical point of view, the land is considered safe for the use intended (defined for the purposes of this report as the siting of a single-family residence), with the probability of a geotechnical failure resulting in property damage of less than 2% in 50 years, provided the recommendations in this report are followed.

6.0 ACKNOWLEDGEMENTS

- a. Lewkowich Engineering Associates Ltd. acknowledges that this Report may be requested by the Building Inspector (or equivalent) of the ToL as a precondition to the issuance of a building permit. It is acknowledged that the Approving Officers and Building Officials may rely on this report when making a decision on application for development of the land. We acknowledge that this Report has been prepared solely for, and at the expense of Mr. Peter Njenga, c/o Finn & Associates Design Ltd. We have not acted for or as an agent of the ToL in the preparation of this Report.

7.0 LIMITATIONS

- a. The conclusions and recommendations submitted in this Report are based upon information from relevant publications, a visual site assessment of the property, anticipated subsurface conditions, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the development becomes available, the recommendations may be altered or modified in writing by the undersigned.

8.0 CLOSURE

- a. Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.

Reviewed By:



Jeff Scott, P.Eng.
Geotechnical Engineer



August 17, 2020

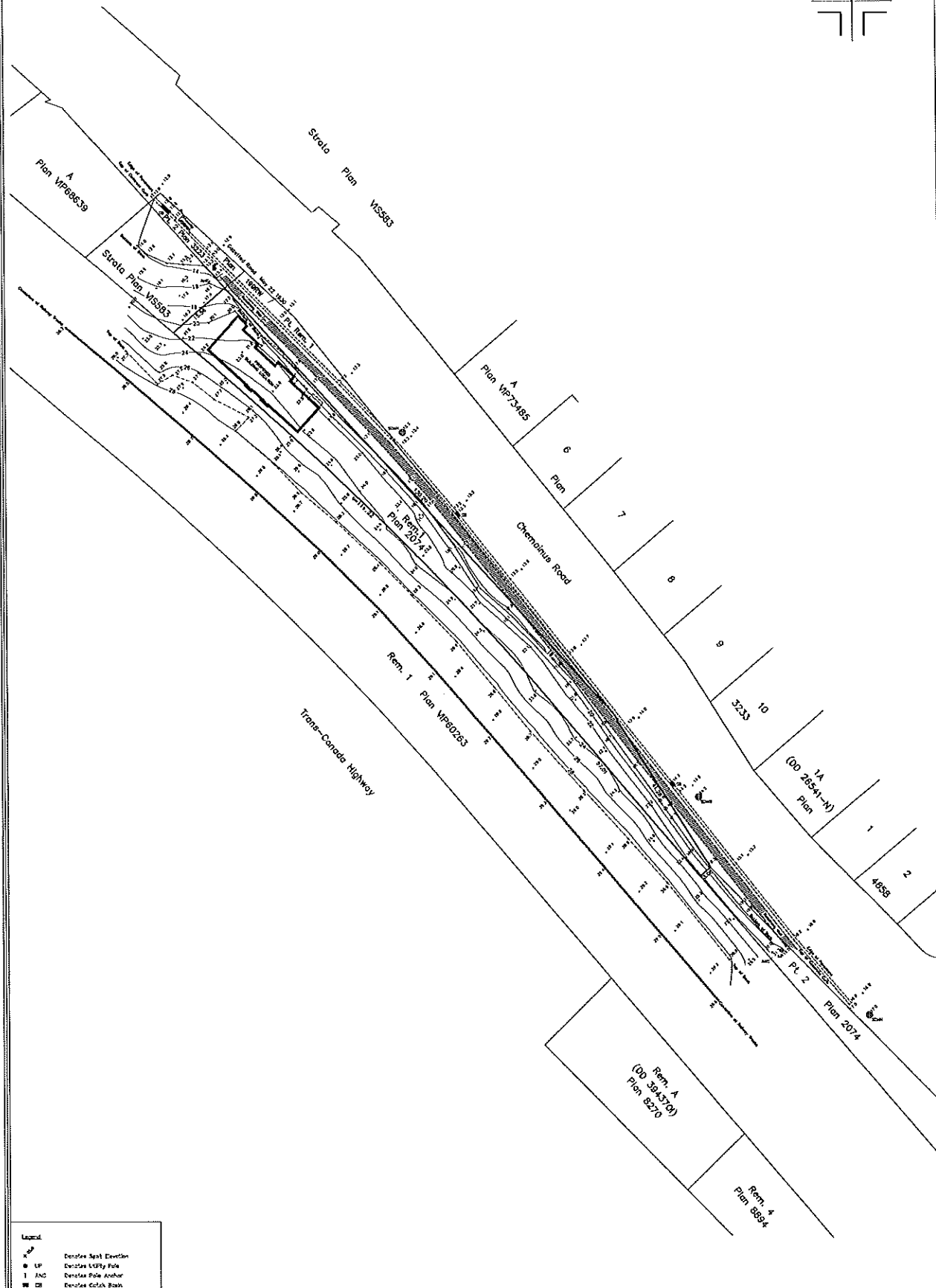
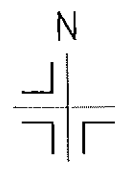
Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

9.0 ATTACHMENTS

1. Turner & Associates Land Surveying, *Site Plan Showing: Lot 1, District Lot 42, Oyster District, Plan 2074, except that part in Plan 3223*, File 18-052_REV1, dated July 27, 2020.
2. Finn & Assoc. Design, drawing package referencing "350 Chemainus Drive," Proj No. 1914, 7 sheets, dated July 7, 2020.
3. LEA, Slope/W Section Plots with Results (6 Plots).
4. Natural Resources Canada, 2015 National Building Code Seismic Hazard Calculation datasheet, dated July 13, 2020.
5. EGBC, Appendix D: Landslide Assessment Assurance Statement, signed August 14, 2020.

10.0 REFERENCES

1. Town of Ladysmith, Official Community Plan, Map 2, dated September 18, 2018.
2. Engineers and Geoscientists of British Columbia, *Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in BC*, dated May 2010.
3. BC Ministry of Environment, *Soils of South Vancouver Island British Columbia*, Soil Survey Report No. 44, Sheet 1, dated 1986.
4. Province of BC, interactive web-map, iMapBC, accessed July 2020.
5. Province of BC, online Water Resource Atlas, accessed July 2020.



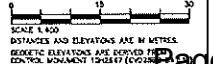
Legend:

	Denotes Bench Elevation
	Denotes Utility Pole
	Denotes Pole Anchor
	Denotes Catch Basin
	Denotes Storm Drain Manhole

SITE PLAN SHOWING:
 LOT 1, DISTRICT LOT 42, OYSTER DISTRICT, PLAN 2074,
 EXCEPT THAT PART IN PLAN 3223.

Drawn by: PETER MENZLA
 Date: 2004-08-10
 Scale: 1:500
 Drawn by: 809

Site Address: 350 CHEMOUNIE ROAD



NOTE:
 THIS PROPERTY IS AFFECTED BY
 THE FOLLOWING REGISTERED DOCUMENTS:
 M23302.

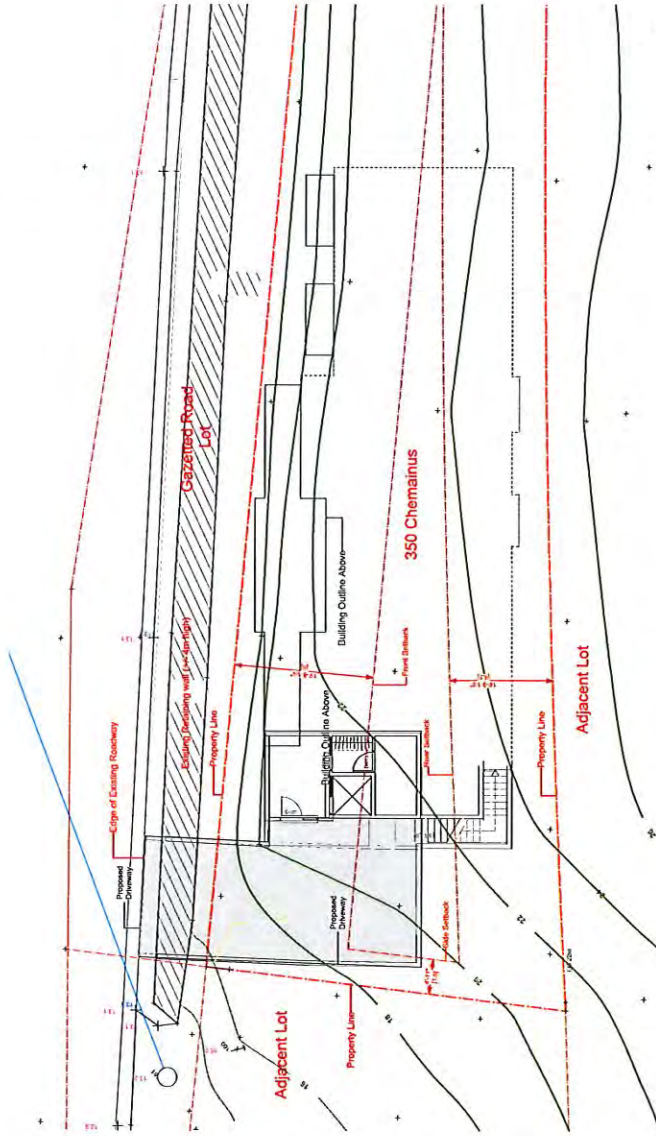
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[Signature]

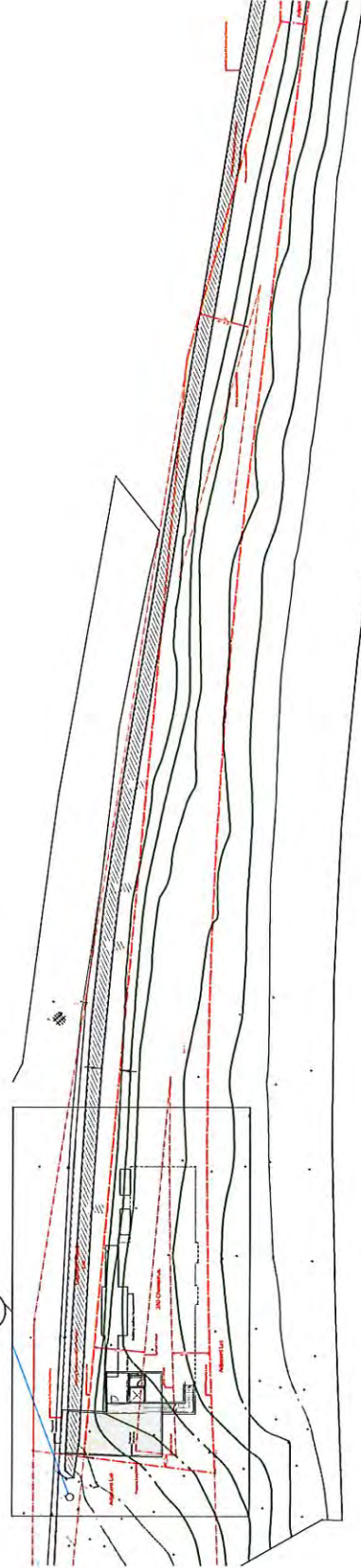
Turner & Associates
 Land Surveying
 230 723 8778
 435 Terminal Avenue North
 Nanaimo, BC V9S 4J8
 www.turnersurvey.com

350 Chemainus Drive

FOR DEVELOPMENT APPLICATION ONLY



2 Site Plan Detail
Scale: 1/8" = 1'-0"



1 Site Plan
Scale: 1/250'

3 Isometric
Scale: 3/16" = 1'-0"

Item No.	Description
4000	Overall Site Plan
4001	Site Plan Detail
4002	Site Plan
4003	Site Plan (Elevation)
4004	Site Plan (Elevation)
4005	Site Plan (Elevation)
4006	Site Plan (Elevation)
4007	Site Plan (Elevation)
4008	Site Plan (Elevation)
4009	Site Plan (Elevation)
4010	Site Plan (Elevation)
4011	Site Plan (Elevation)
4012	Site Plan (Elevation)
4013	Site Plan (Elevation)
4014	Site Plan (Elevation)
4015	Site Plan (Elevation)
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4020	Site Plan (Elevation)

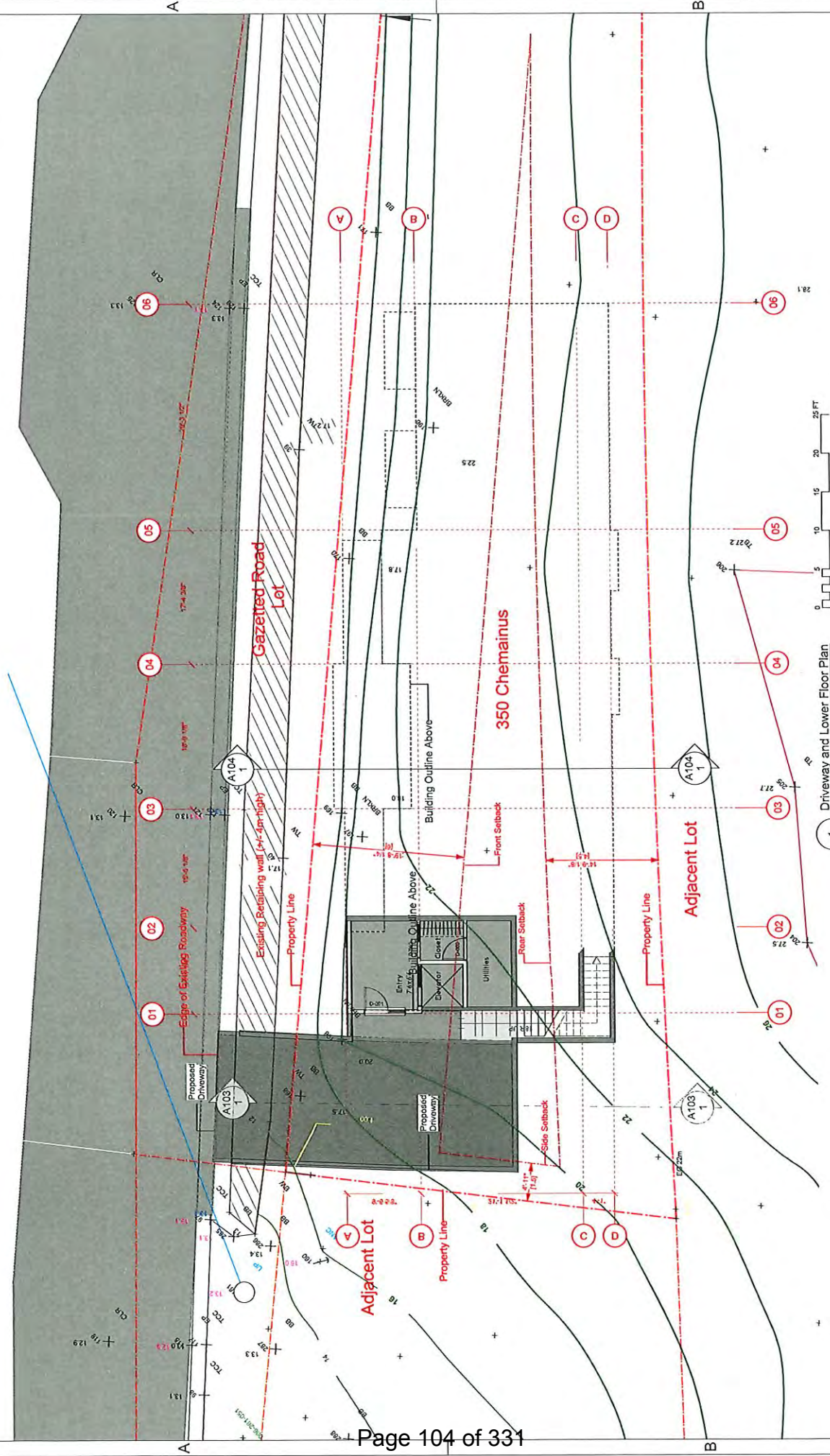
Firm & Assoc. Design
755 Terminal Ave. N.
www.firm.com

Cover & Site Plan
Project No: Neenah Residence
350 Chemainus Road, Ladysmith

Scale: 1/250'

Sheet No: 10 of 17

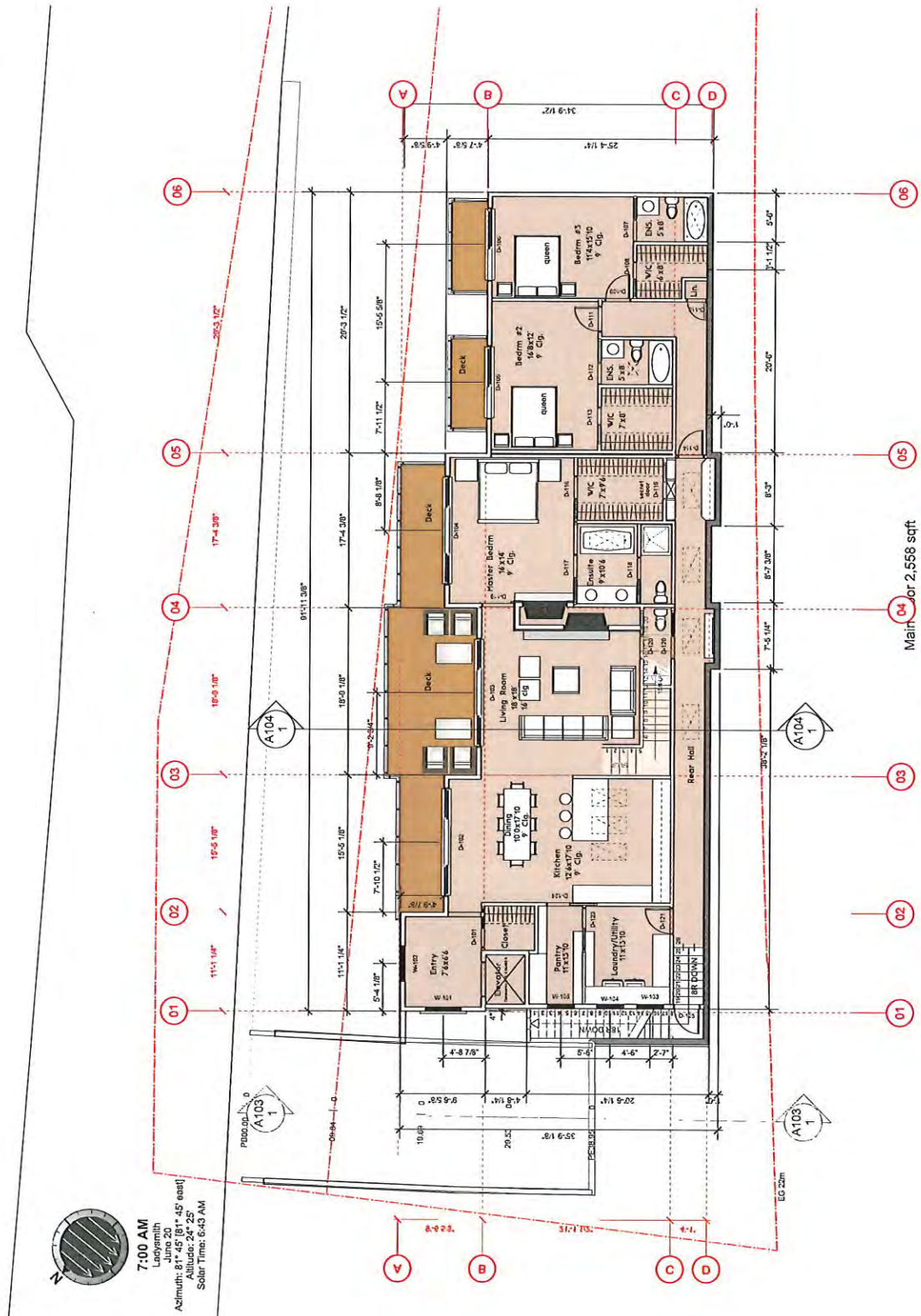
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1 Driveway and Lower Floor Plan
Scale: 1/8" = 1'-0"

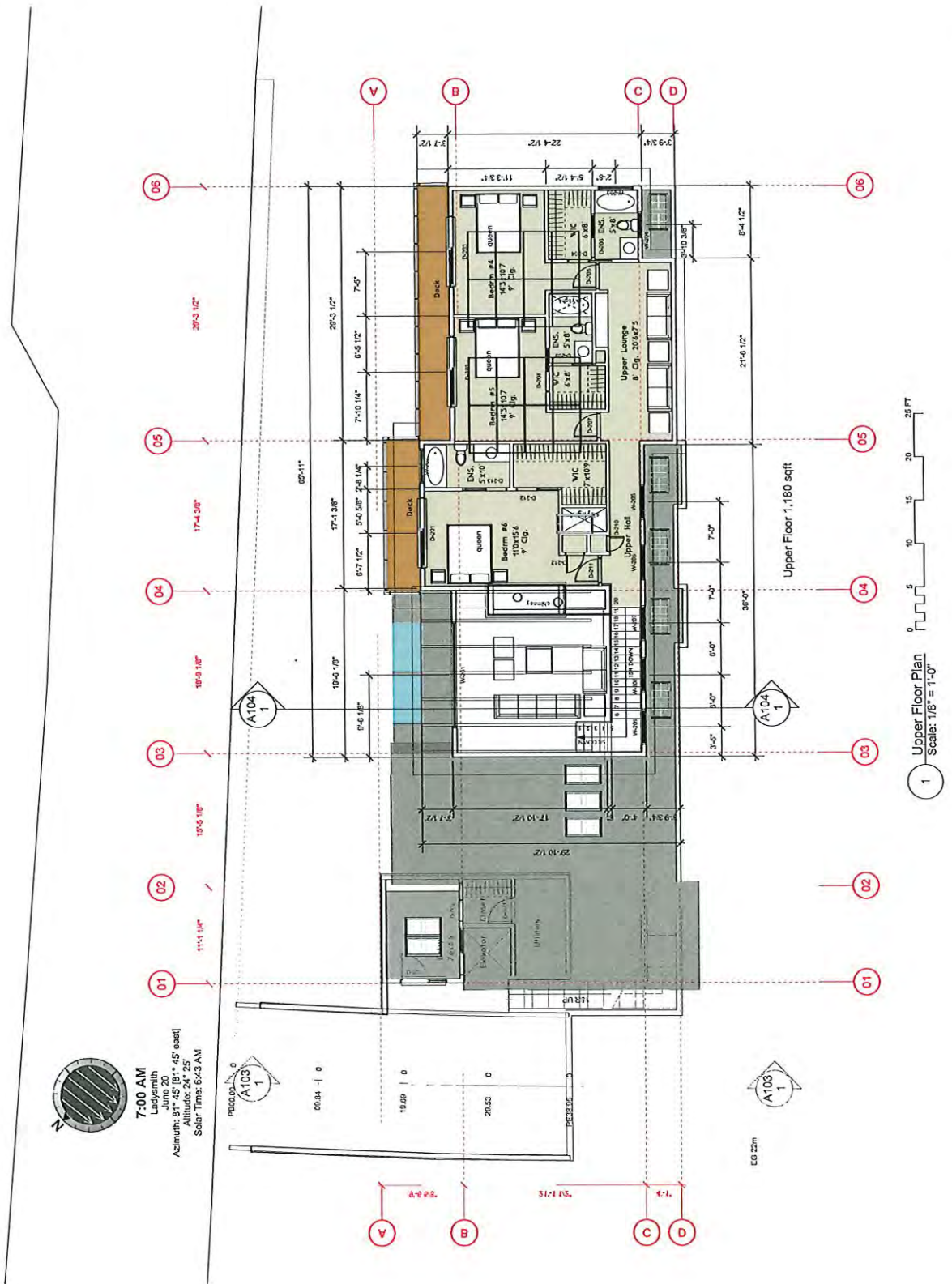
Project Manager Submitted By Checked By Drawn By		Project No. 1914 1914 RIF	
Date 2020-JULY CAD File Name 1914		Project Title Nnenga Residence 350 Chemainus Road, Ladysmith	
Design Firm Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com		Sheet Title Lower Floor Plan Nnenga Residence 350 Chemainus Road, Ladysmith	
		Sheet No. A100 of 7	

FOR DEVELOPMENT APPLICATION ONLY



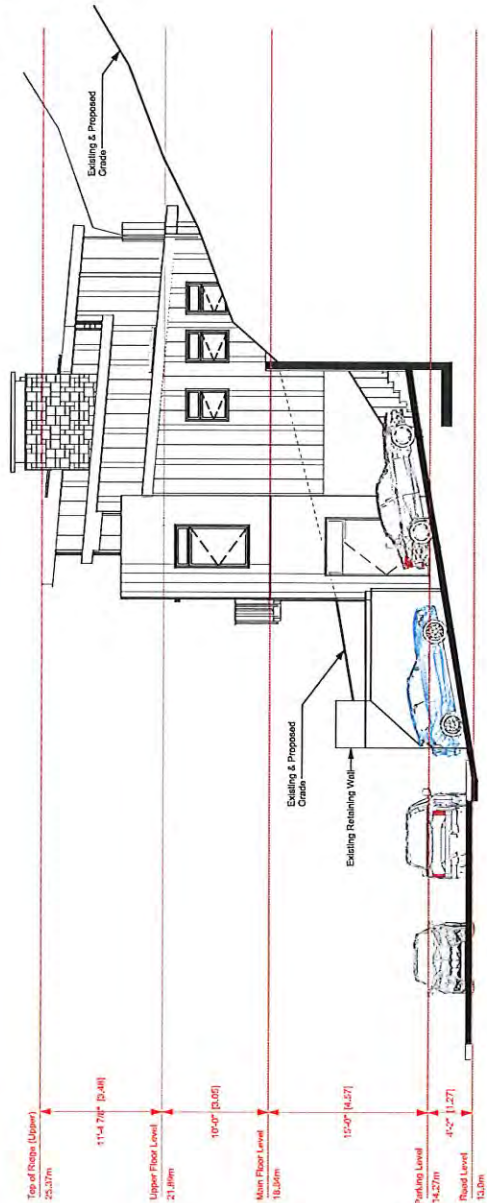
7:00 AM
 June 20
 Ladysmith
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 Solar Time: 6:25 AM
 Solar Time: 6:43 AM

Project Name	Main Floor Plan	Sheet No.	A101
Project No.	1814	Project Title	Nrenga Residence
Design Firm	Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com	Client Name	350 Chelmsford Road, Ladysmith
Project Manager	PN	Drawn By	RF
Submitted By		Checked By	
Project ID	1814	Date	2020-07-07
Drawn By		Scale	

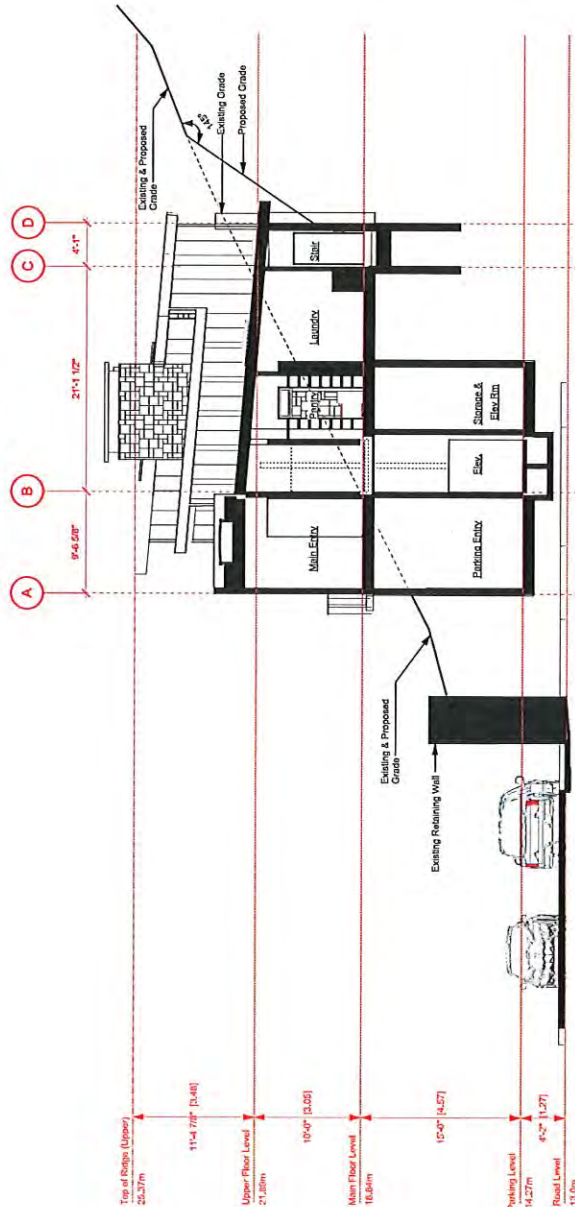


Project Name: Upper Floor Plan Project No: Nnenga Residence Address: 350 Chemainus Road, Ladyematin		Sheet No: A102 of 7
Project Manager: PN Submitted By: 1914 Checked By: RF Drawn By: RF	Date: 2020 JULY CAD File Name: 1914 Project ID: 1914 Issue No: 2020-07-07	Design Firm: Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com

FOR DEVELOPMENT APPLICATION ONLY



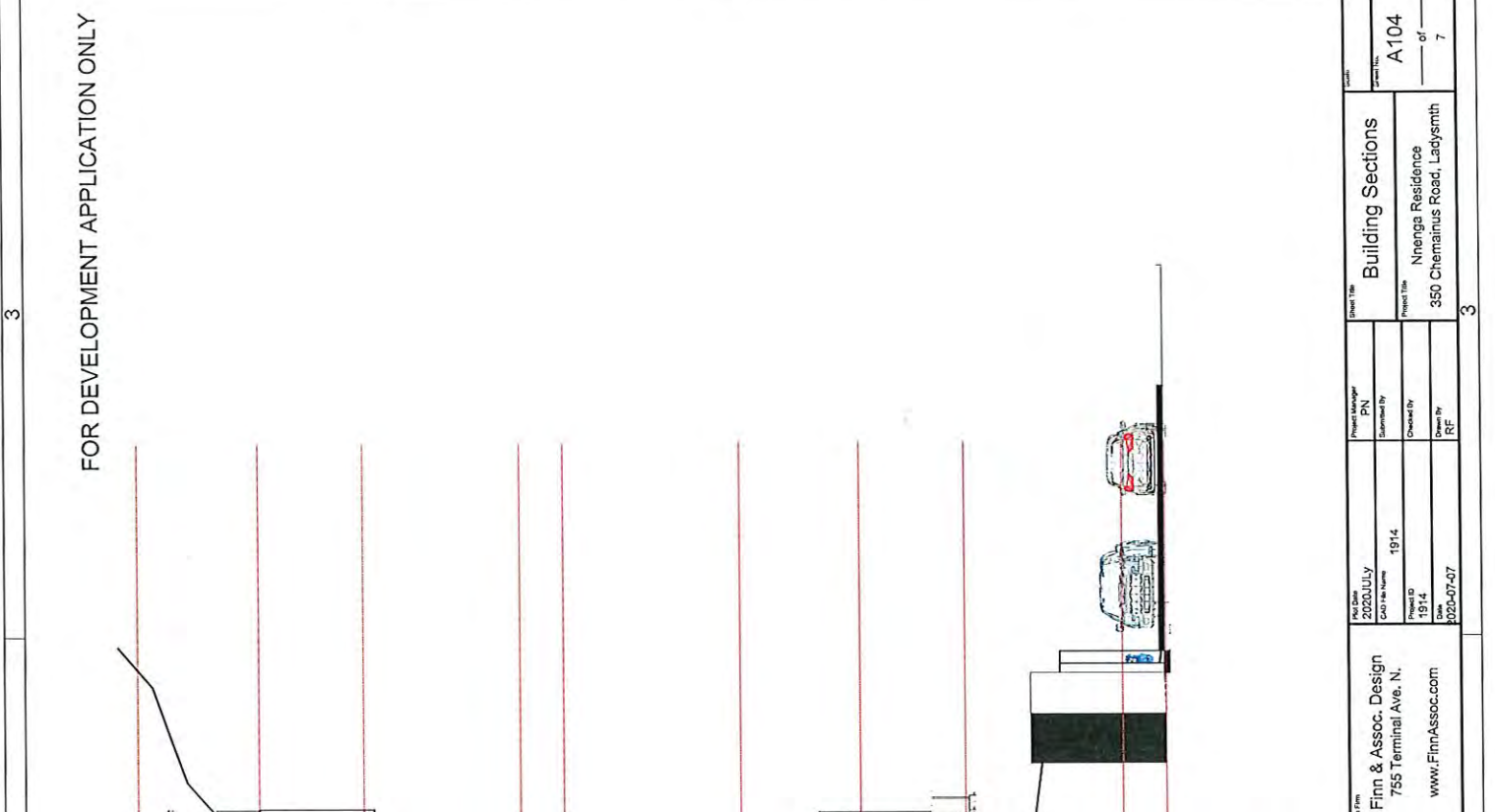
1 Section Thro' Parking. Scale: 1/8" = 1'-0"



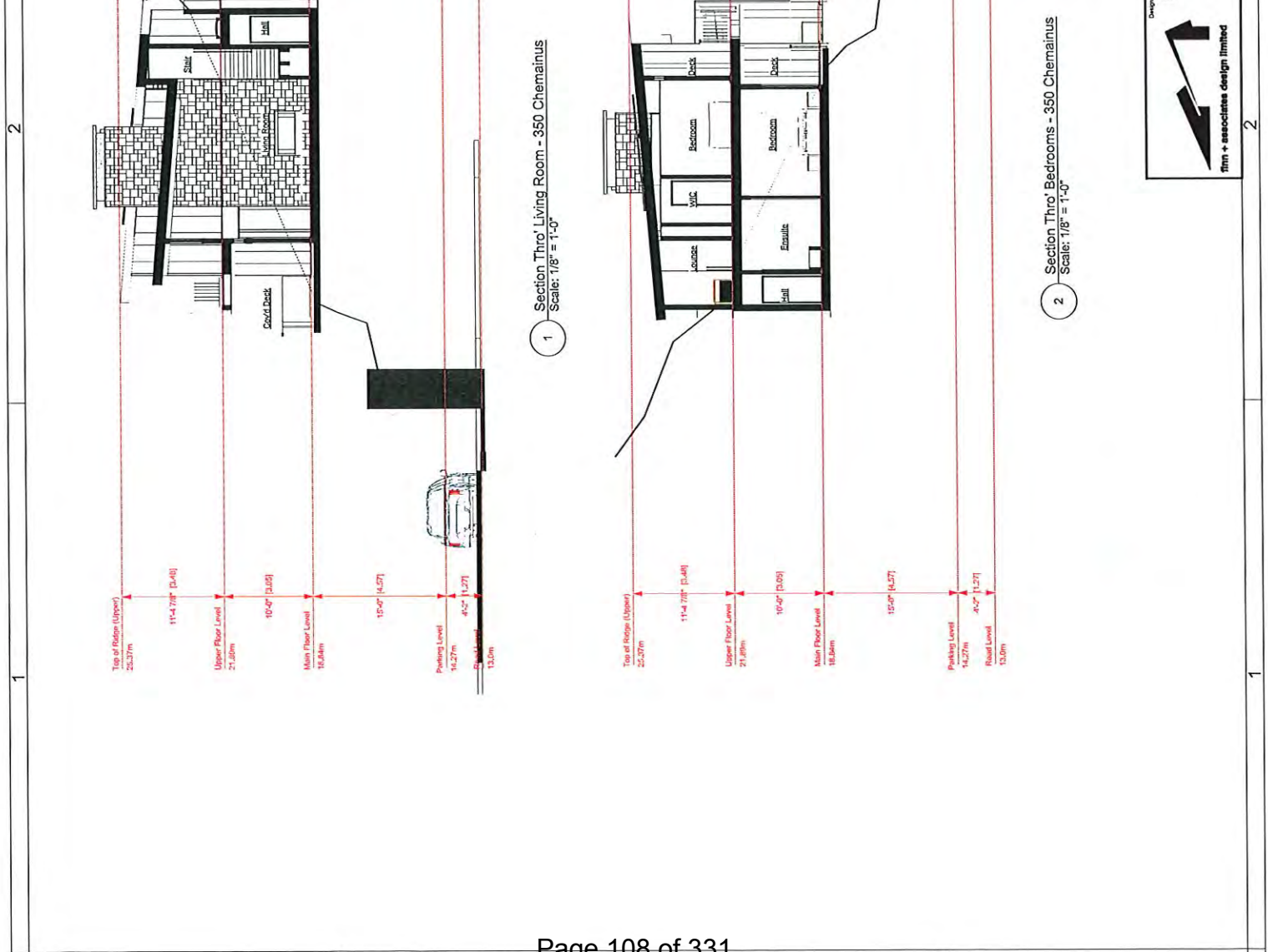
2 Section Thro' Elevator. Scale: 1/8" = 1'-0"

Design Firm
finn + associates design limited
 Finn & Assoc. Design
 755 Terminal Ave. N.
 www.finnassoc.com


Project No.	2020JULY	Project Title	Building Sections
Client Name	350 Chems Road	Submitted By	Nrenga Residence
Project ID	1914	Checked By	350 Chems Road, Ladysmith
Date	2020-07-07	Drawn By	RF
Project No.	A103	Sheet No.	7



1 Section Thro' Living Room - 350 Chemainus
 Scale: 1/8" = 1'-0"



2 Section Thro' Bedrooms - 350 Chemainus
 Scale: 1/8" = 1'-0"

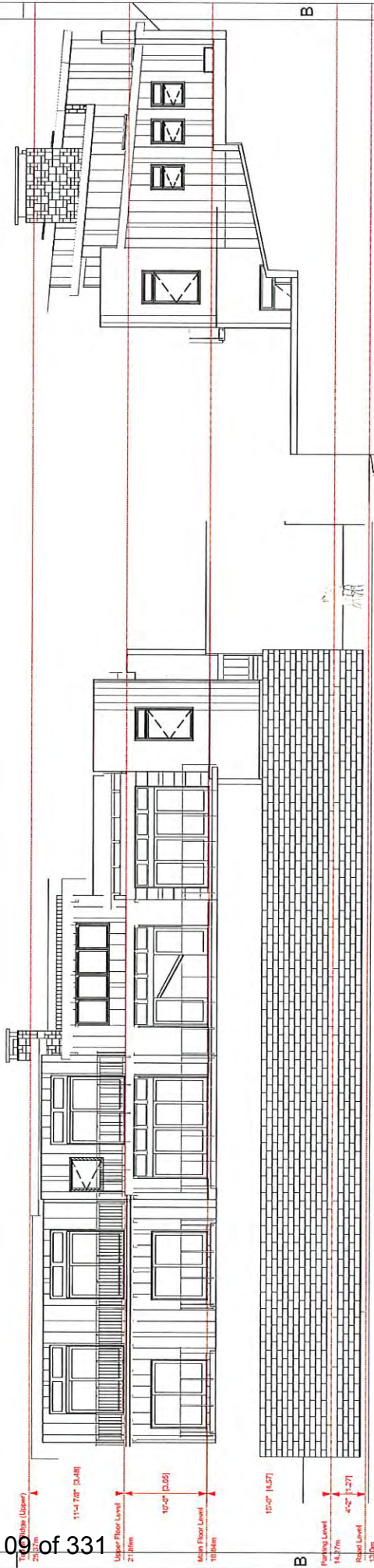
 Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com	Project Manager PN	Project Title Building Sections	Sheet Title A104
	Date 2020-07-27	Checked By RF	Project Title Nnenga Residence 350 Chemainus Road, Ladysmith
Design Firm Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com	Project Manager PN	Project Title Building Sections	Sheet No. 7
Date 2020-07-27	Checked By RF	Project Title Nnenga Residence 350 Chemainus Road, Ladysmith	Sheet No. 7



1 East Elevation Rendered
Scale: 3/32" = 1'-0"



6 Entry Overview
Scale: 3/32" = 1'-0"



3 East Elevation
Scale: 1/8" = 1'-0"

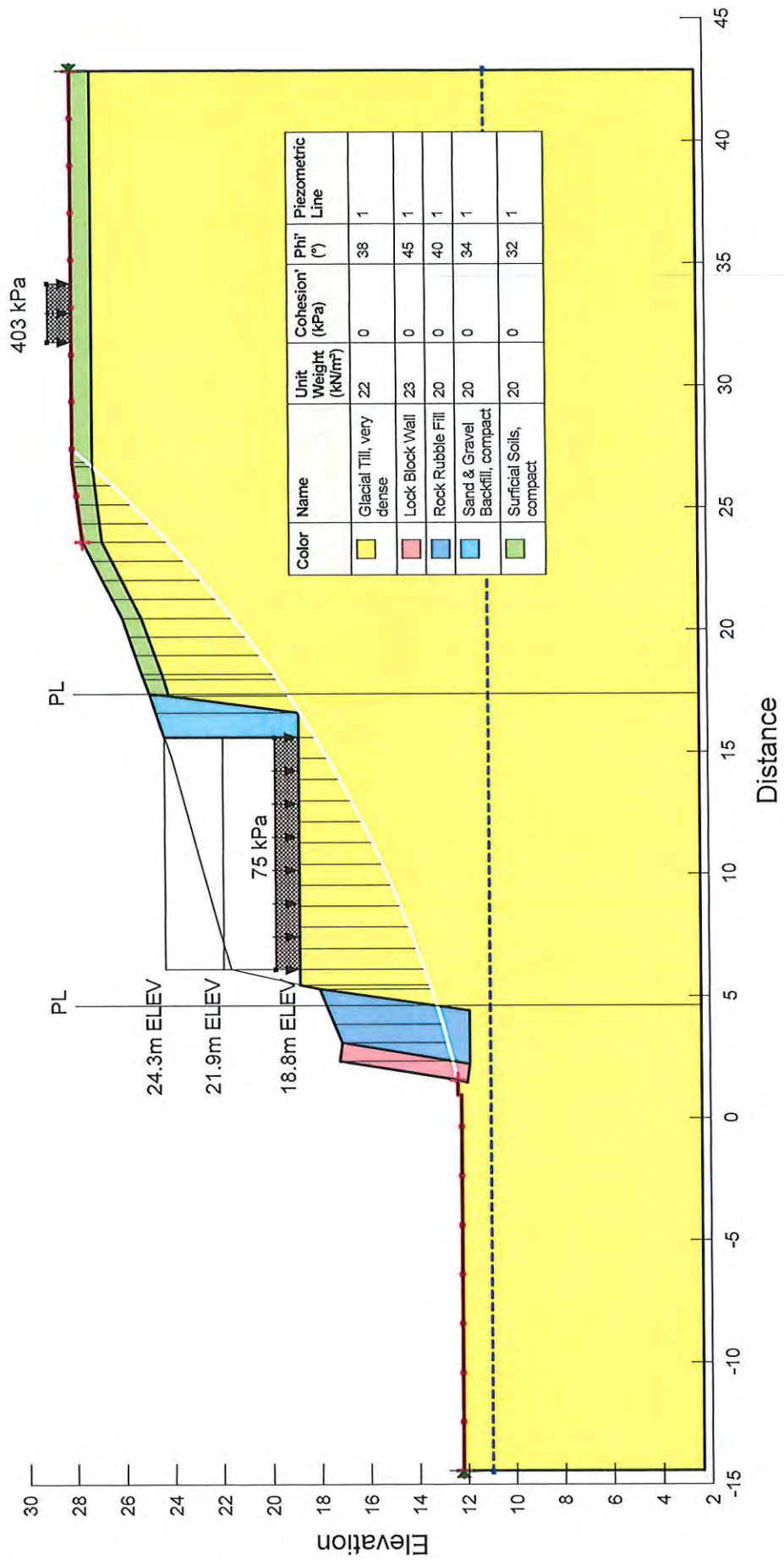
4 North Elevation
Scale: 1/8" = 1'-0"

	Design Firm Finn & Assoc. Design 755 Terminal Ave. N. www.FinnAssoc.com	Project Manager PN	Sheet Title Elevations	Date 02/09-07-07
		Submitted By 1814	Project No. A104	of 7
		Checked By RF	Project Title Nrenga Residence 350 Chemainus Road, Ladysmith	
		Date 02/09-07-07		

F8264 - 350 Chemainus Road, Ladysmith

Global Failure
Seismic Condition
Critical Slip Surface

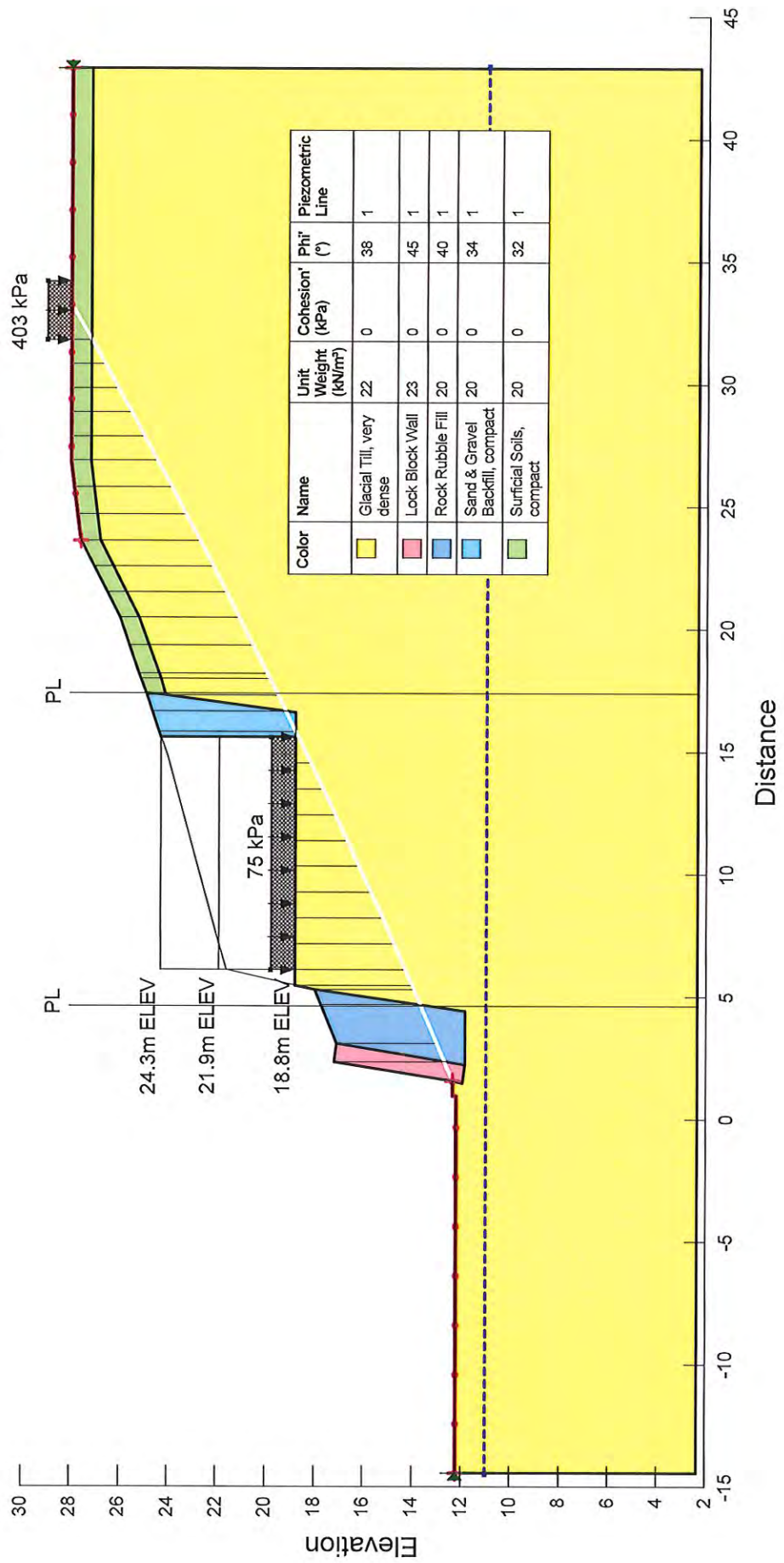
1.055



F8264 - 350 Chemainus Road, Ladysmith

Global Failure
 Static Condition
 Critical Slip Surface

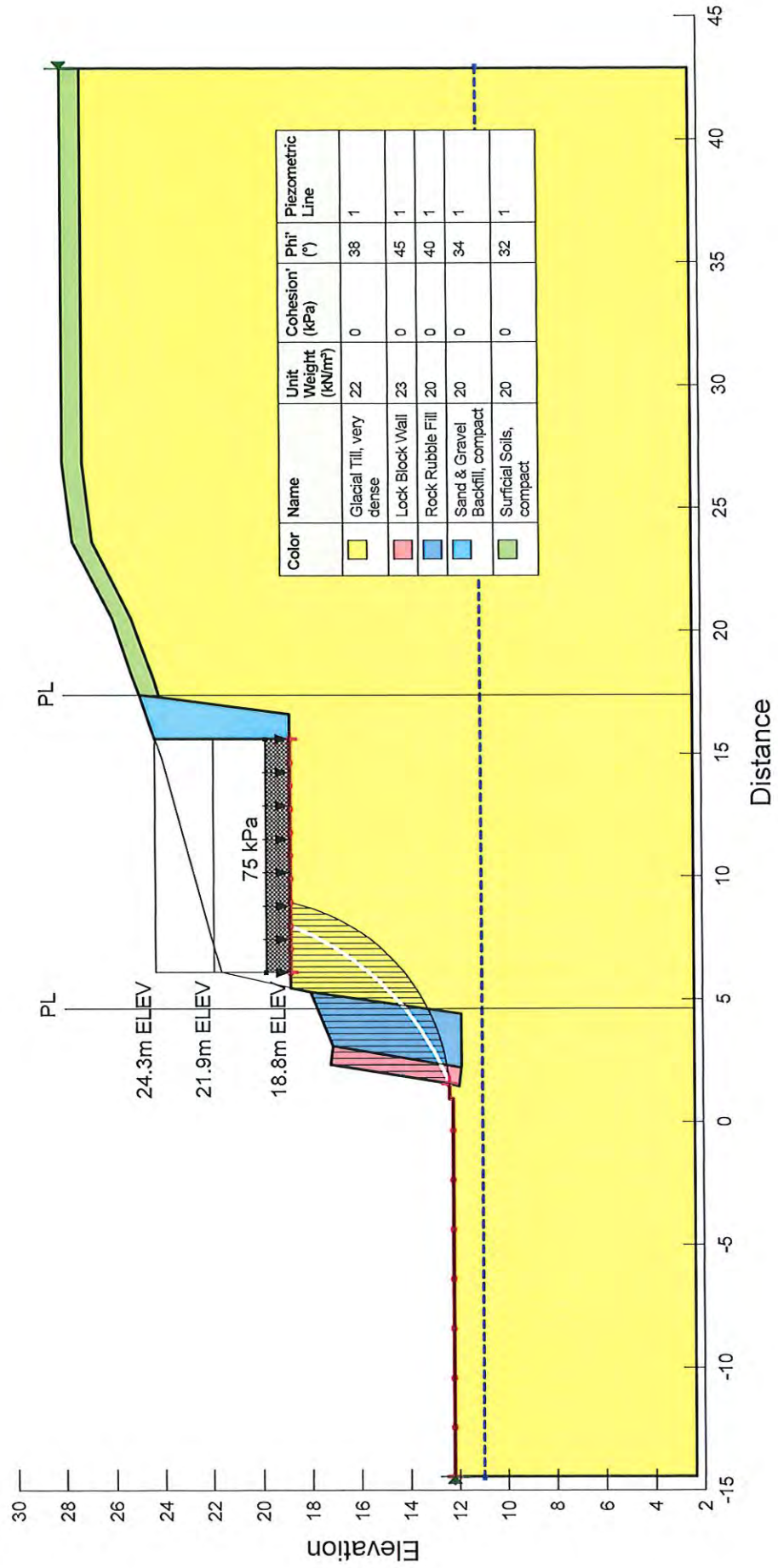
1.532



F8264 - 350 Chemainus Road, Ladysmith

Lower Slope Failure
 Seismic Condition
 Fos >= 1.00

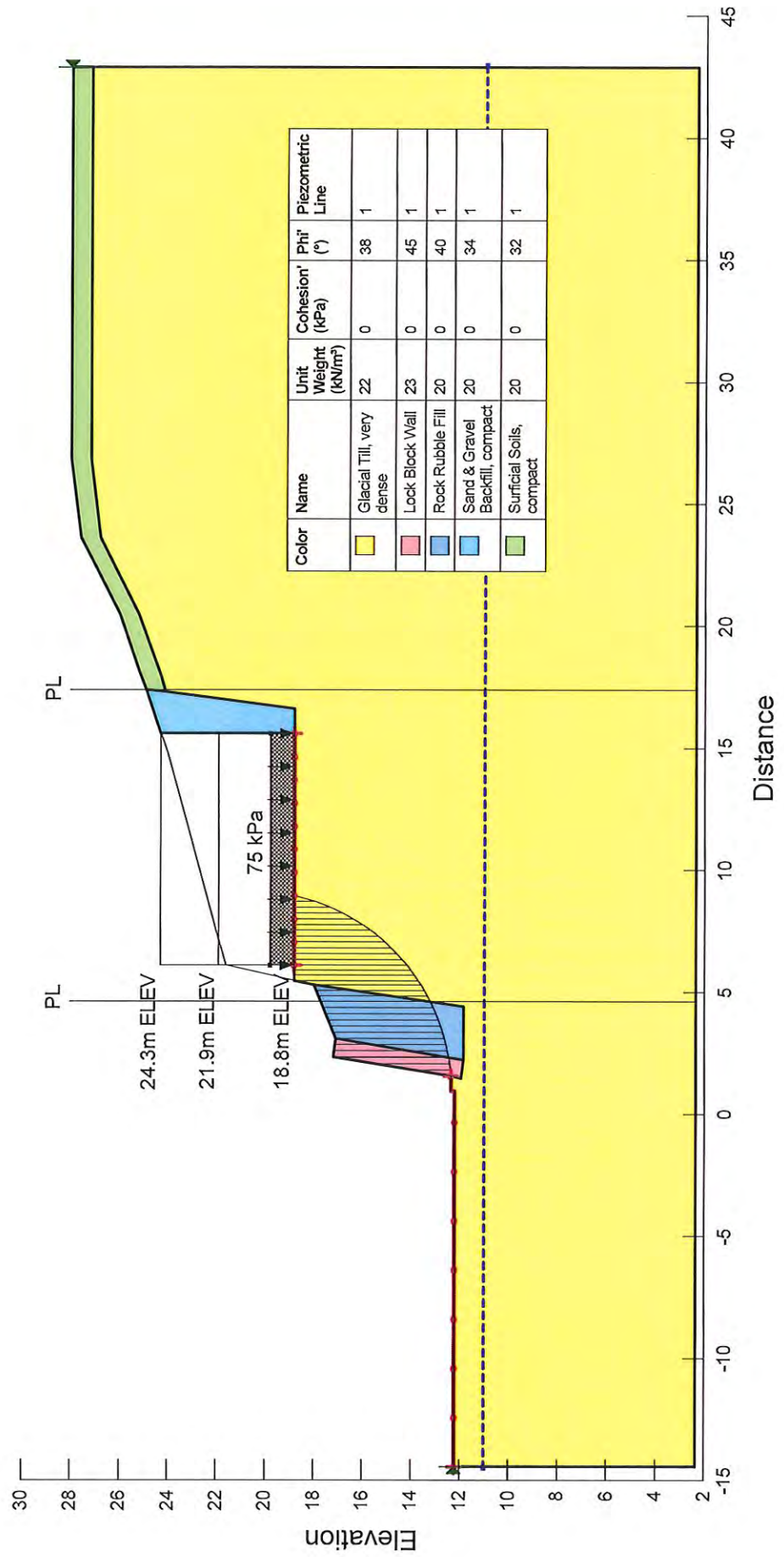
1.000



F8264 - 350 Chemainus Road, Ladysmith

Lower Slope Failure
 Static Condition
 Fos >= 1.00 (Seismic)

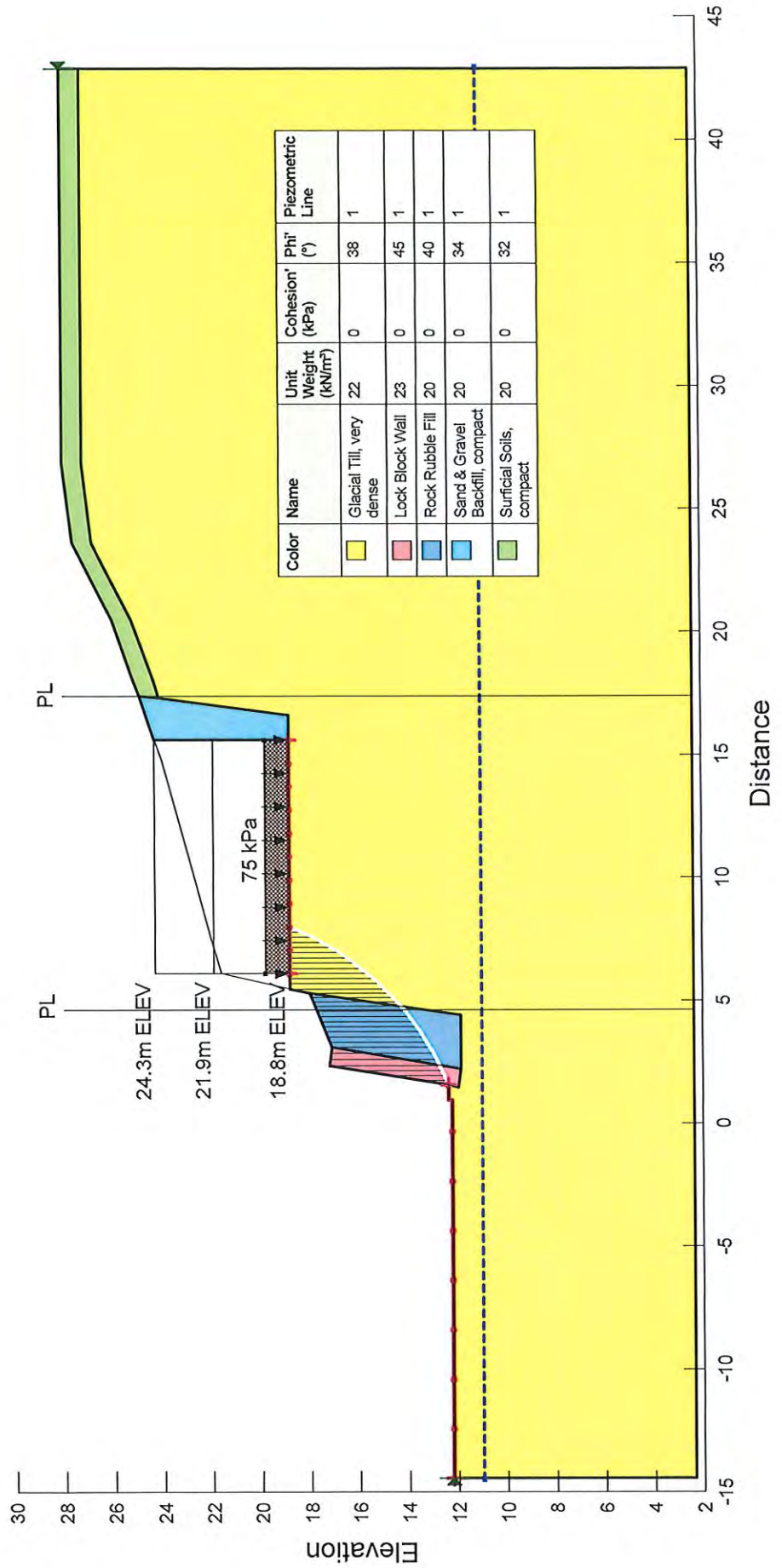
1.255



F8264 - 350 Chemainus Road, Ladysmith

Lower Slope Failure
 Seismic Condition
 Critical Slip Surface

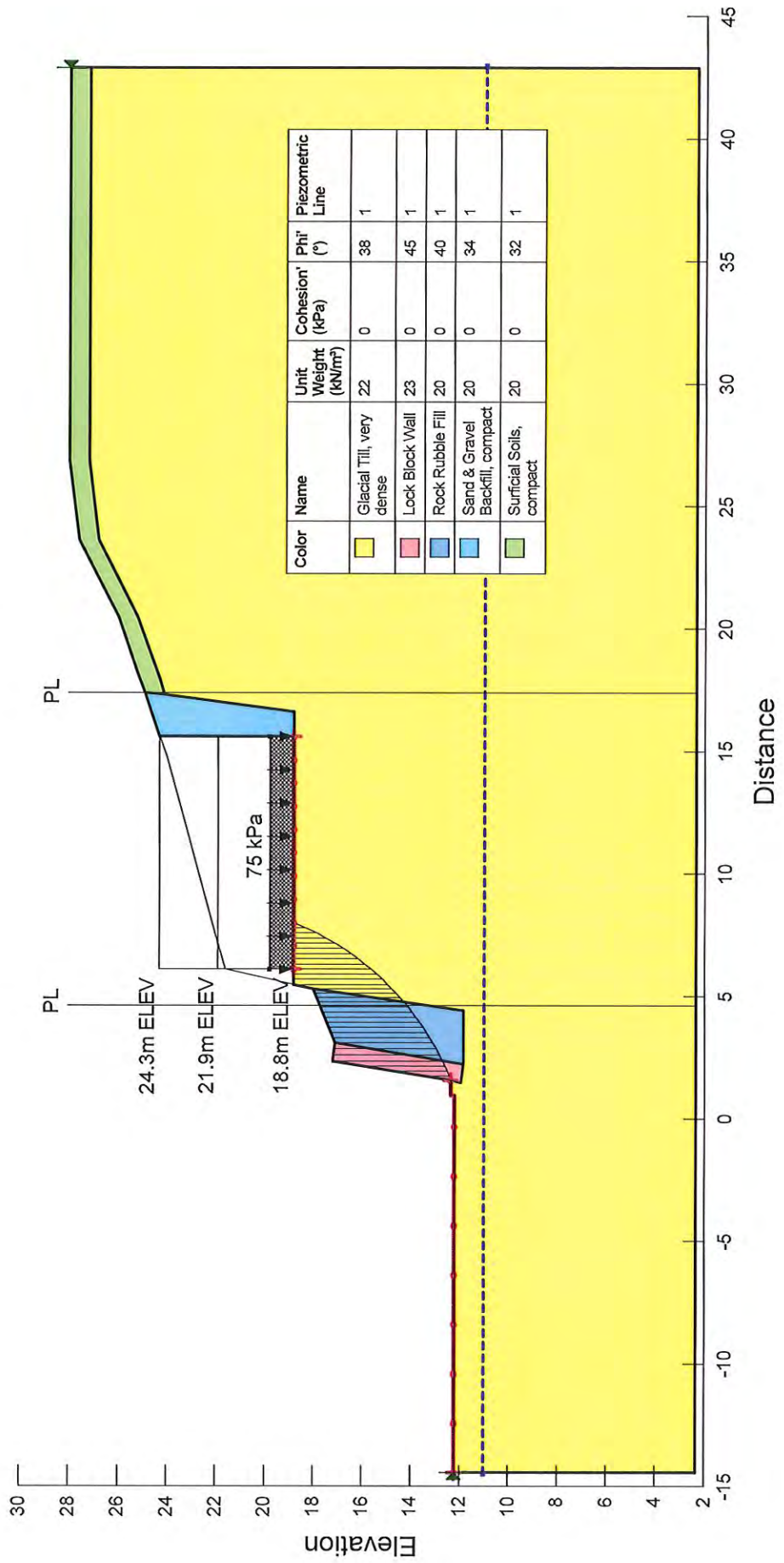
0.724



F8264 - 350 Chemainus Road, Ladysmith

Lower Slope Failure
 Static Condition
 Critical Slip Surface

0.953



APPENDIX D: LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

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

To: The Approving Authority

Date: August 14, 2020 File# F8264

Town of Ladysmith

410 Esplanade, PO Box 220, Ladysmith, BC V9G 1A2

Jurisdiction and address

With reference to (check one):

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

For the Property: Lot 1, District Lot 42, Oyster District, Plan 2074, except that part in Plan 3223;
350 Chemainus Road, Ladysmith, BC

Legal description and civic address of the Property

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

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

Check to the left of applicable items

- 1. Collected and reviewed appropriate background information
- 2. Reviewed the proposed *residential development* on the Property
- 3. Conducted field work on and, if required, beyond the Property
- 4. Reported on the results of the field work on and, if required, beyond the Property
- 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
 - 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
 - 6.2 estimated the *landslide hazard*
 - 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
 - 6.4 estimated the potential *consequences* to those *elements at risk*
- 7. Where the *Approving Authority* has adopted a *level of landslide safety* I have:
 - 7.1 compared the *level of landslide safety* adopted by the *Approving Authority* with the findings of my investigation
 - 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
 - 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 8. Where the *Approving Authority* has not adopted a *level of landslide safety* I have:

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

Based on my comparison between

Check one

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

I hereby give my assurance that, based on the conditions^[1] contained in the attached *landslide assessment* report,

Check one

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

Check one

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

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

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

Check one

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

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

Jeff Scott, P.Eng.

Name (print)

Jeff Scott
Signature

August 14, 2020

Date

^[1] When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a "life safety" criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User's Guide, Structural Commentaries, Part 4 of Division B. This states:

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

1900 Boxwood Road, Nanaimo, BC V9S 5Y2

Address

250-756-0355

Telephone



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

I am a member of the firm Lewkowich Engineering Associates Ltd.

and I sign this letter on behalf of the firm.

(Print name of firm)

From: [Peter N. Njenga](#)
To: [Julie Thompson](#)
Cc: [Geoff Goodall](#); [Jake Belobaba](#); [Ryan Bouma](#)
Subject: Re: FW: 350 Chemainus Rd. Eng. Comments - encroachment agreement SRW
Date: May 22, 2021 7:18:35 AM
Attachments: [image002.png](#)
[image001.png](#)

Hi Julie,

In response to your email dated May 21 2021, I still refer to my email dated March 17 2021 and there is absolutely no way I'm going to accept the Township liability of the wall and encroachment and any costs related to it. You need to address all the 4 points raised in my said email. It is now 4 years gone since I started asking for access to my property but it appears the Township is unwilling to give me access unless I accept their liability and risks . I have been advised by my lawyers not to accept such liability and risks. There exist clear case laws. Please address my said letter. As I said, we can still negotiate before I give the matter to my lawyers. And my patients is running out. I'm truly disappointed.

Sincerely,
Peter Njenga

On Fri, May 21, 2021 at 4:40 PM Julie Thompson <jthompson@ladysmith.ca> wrote:

Hi Peter –

Thanks for discussing your DVP application with me today. Below are the comments I mentioned I would email to you.

We encourage you to reconsider our requests for:

- an encroachment agreement which would involve redesigning a portion of the retaining wall to allow for safe access to and from your property at [350 Chemainus Road](#); and
- an SRW on your property which will allow the Town to maintain the small portion of retaining wall that encroaches onto your property.

The reason for both of these requests is from a public safety standpoint. The large wall fronting your property is necessary to prevent sloughing of your property onto Chemainus Road. With the property being developed and therefore more activity occurring on the property, there is more concern that the Town have access to all portions of the wall for repair and maintenance purposes; we'd like to ensure that the integrity of the wall can be maintained to prevent public safety issues in the future.

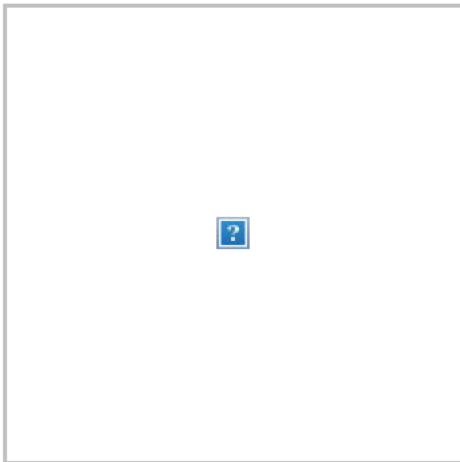
Likewise, the Town would be comfortable granting an encroachment agreement for the access, but not at the expense of public safety, for which we have made some design recommendations to rectify the potential issues and allow us to support the encroachment agreement.

We'd like to move forward with the solutions above as we feel they addresses both your needs for access to the property as well as the public safety needs. We hope that you will reconsider these important requests in light of these public safety concerns.

In any case, we can move ahead with your DVP application without these two requests being conditional of issuance of the DVP. However, please note that approval of a DVP does not preclude the requirement for an encroachment agreement. The Town will still require the encroachment agreement in order to allow the access. The Town is not willing to enter into an encroachment agreement without having the safety issues addressed according to our Engineer's comments, at the expense of the property owner. Please also note that issuance of a DVP is a discretionary decision of Council and applicants are not entitled to approval. Your application would be viewed more favourably if presented to Council with your support for the above noted requests, offered as part of your application. I anticipate that staff will not recommend approval of the DVP to Council without having secured these two requests, in light of the public safety concerns.

Please let me know how you'd like to proceed with your DVP application or if you have any questions.

Cheers,



Julie Thompson

Planner

Development Services Department

Phone: 250.245.6420

132C Roberts St. MAIL PO Box 220 Ladysmith, BC V9G1A2

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Development Services is now open in a limited capacity to the public with new COVID-19 protocols in place. We are responding to all email and phone enquiries and accepting applications electronically. The public can access resources, building information and commonly requested forms through the Business & Development section of our website: <https://www.ladysmith.ca/business-development/application-forms>. To provide the best service possible, we recommend contacting us by phone or email to determine if a visit to our office is necessary.

From: Peter N. Njenga

Sent: March 17, 2021 6:36 AM

To: Julie Thompson <jthompson@ladysmith.ca>; Geoff Goodall <ggoodall@ladysmith.ca>

Cc: Richard Finnegan Ryan Bouma <RBouma@ladysmith.ca>;

Ryan Turner

Subject: Re: FW: [350 Chemainus Rd](#). Eng. Comments - encroachment agreement SRW

Hello Julie,

WITHOUT PREJUDICE:

Please note that there is no problem in signing the encroachment agreement so long it clearly states the following important issues:

1. Ladysmith Township is fully responsible for the work and costs related to giving me access that includes cutting the portion of the retainer wall, demolishing it, reengineering and modifying the edges leading to the driveway to the satisfaction of the township engineers. The property owner shall be responsible for driveway immediately after that retainer wall section and its edges has been fully addressed by the Township.

NOTE: Myself and Mr Geoff Good had previously discussed

and agreed on this. The Township cannot elect a retainer wall that encroaches a property without the property owner consent and then expect the property owner to be held responsible for removal of any part of it.

2. That agreement shall clearly state that it does not affect the Township compensation for illegal retainer wall encroachment.

3. **WITHOUT PREJUDICE:** Now that you mentioned about contacting your lawyers, it is my wish we agree out of the courts about any compensation that I am entitled to. Lawyers, though very good, require fees. If this is the way forward, I will also contact a lawyer that is knowledgeable about these kind of illegal property encroachment issues by municipalities. However, to settle this liability that was incurred negligently by professional engineers for whatever reason, I offer a compensation settlement of \$500,000 net of legal fees and related taxes based on my estimation and this offer expires after 1 month from today's date. After that, I think the best way will be to settle the matter in the court. It should also be noted that a portion of the property was properly gazetted to be a road but no compensation was paid.

4. The Survey cannot be registered without addressing and agreeing on the above issues.

Sincerely,

Peter Njenga

On Tue, Mar 16, 2021 at 11:53 AM Julie Thompson <jthompson@ladysmith.ca> wrote:

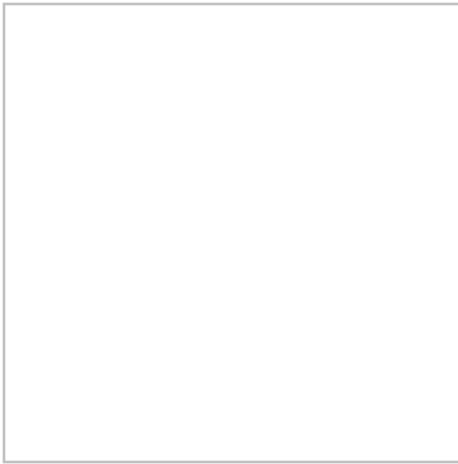
Hi Peter –

The technical issues with the DVP application are regarding the retaining walls near the end of the driveway which require an encroachment agreement with the Town. This is separate from the SRW also discussed in my previous email. An encroachment agreement will be required in order to allow construction of the walls into the Town's boulevard as proposed. An encroachment agreement is not an SRW or an easement it's more like a license and it provides you with permission to construct in the Town's boulevard in a specific area, subject to the conditions of the agreement and liability insurance. Encroachment agreements are quite standard in areas like the Downtown, where awnings often encroach over the Town's sidewalk. Construction in the boulevard wouldn't be permitted without the agreement. I have attached our encroachment agreement template for your information.

However, because the Engineering department has noted some safety concerns regarding the wall, a portion of the wall will need to be redesigned (see attachment and Engineering's comments below). We'll need to know how it will be redesigned so that we can add that into the encroachment agreement and possibly the DVP, if a variance is needed for the height of the retaining walls that encroach into the boulevard. Hopefully this clarifies why the encroachment agreement is needed. Perhaps Richard can provide me with the updated designs of the retaining walls and height information, see attached PDF for specific details.

Regarding the SRW, we will be seeking a legal opinion and I'll let you know what our recommendation will be once that's received, and how that may impact the DVP application.

Cheers,



Julie Thompson

Planner

Development Services Department

Phone: 250.245.6420

132C Roberts St. **MAIL** PO Box 220 Ladysmith, BC V9G1A2

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From: Peter N. Njenga

Sent: March 11, 2021 6:59 PM

To: Julie Thompson <jthompson@ladysmith.ca>; Richard Finnegan

Ryan Bouma <RBouma@ladysmith.ca>; Ryan Turner

Subject: Re: FW: [350 Chemainus Rd.](#) Eng. Comments - encroachment agreement SRW

Hi Julie,

Kindly note:

1. DVP application: I would suggest that you discuss directly with Richard and Ryan T. about Technical issues on this DVP application. I'm sure all technical issues raised will be addressed by the Architect and Surveyor and Engineer.

2. Encroachment: I would highly recommend that this DVP application should not be conditional that I sign a waiver agreement on encroachment or condition agreement about the illegal encroachment to my property, because doing so will trigger liability issues related to the Township encroaching my property.

So please, DVP application has nothing to do with illegal encroachments and should be treated separately.

Sincerely,

Peter Njenga

On Thu, Mar 11, 2021 at 11:34 AM Julie Thompson <jthompson@ladysmith.ca> wrote:

Hi Peter –

Please see the below email from our engineer, Ryan Bouma.

Please be advised that the Town will require an encroachment agreement with you for the sections of retaining wall that make up the proposed driveway that are in the Town's boulevard. This encroachment agreement would be supported by the Engineering Department subject to the removal of the section of wall described below, in Ryan's email, to mitigate some safety concerns with the proposed driveway. I have attached a sketch which identifies the walls needing an encroachment agreement and the portion of wall that Ryan recommends be removed (see both pages of the PDF). Engineering also recommends that a statutory right-of-way be registered to title, in favour of the Town, for the portion of retaining wall that encroaches onto your property, near the south end (see attached site plan). We would recommend that the encroachment agreement and registration of the SRW be a condition of issuance of the DVP.

For the encroachment agreement, I would need to know the height of the walls in the Town's boulevard. This may also be added into the DVP if these sections of the walls are taller than 3 metres. I have the retaining wall heights in the locations indicated on the attached drawings, but there is no measurement for the top-of-wall at the very end of the retaining walls (where they end near the boulevard). The attachment shows the locations I am referring to. Perhaps Richard could provide that information?

Our office has been very busy, but I am hoping to sent out the notification for your DVP ASAP and then bring it forward to Council, I just need to know the retaining wall heights for those sections indicated on the attachment.

If you'd like to discuss Ryan's comments in more detail, I would be happy to set up a meeting with you and engineering.

Thank you,



Julie Thompson

Planner

Development Services Department

Phone: 250.245.6420

132C Roberts St. **MAIL** PO Box 220 Ladysmith, BC V9G1A2

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From: Ryan Bouma <RBouma@ladysmith.ca>

Sent: March 4, 2021 12:09 PM

To: Julie Thompson <jthompson@ladysmith.ca>

Subject: 350 Chemainus Survey

Hi Julie.

Attached is the requested survey you requested.

Engineering has a concern with the sight lines available for the proposed driveway. The existing retaining wall will limit visibility within the very narrow boulevard and expect that when leaving the driveway the car will need to pull too far into oncoming traffic to adequately see. It is the south bound traffic that is a concern. Therefore we recommend removing the small left over piece of retaining wall from the northwest end and slope back the grades to open sight lines up Chemainus Road into oncoming traffic.

Let me know your thoughts. Thanks.



Ryan Bouma, P. Eng

[Sr. Engineering Technologist](#)

Engineering Department

250.245.6442

330 6th Ave **MAIL** PO Box 220 Ladysmith, BC V9G 1A2

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STAFF REPORT TO COUNCIL

Report Prepared By: Jake Belobaba, Director of Development Services
Reviewed By: Allison McCarrick, CAO
Meeting Date: June 15, 2021
File No: 3360-21-05
Re: **Zoning Amendment to Permit Existing Single Unit Dwellings in the C-2, C4 and R-3 Zones.**

RECOMMENDATION:

That Council:

1. Give first and second readings to “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 40) 2021, No. 2078”;
2. Direct staff to proceed with scheduling and notification of a Public Hearing for Bylaw No. 2078 pursuant to the *Local Government Act*; and
3. Direct staff to refer Bylaw No. 2078 to the Ministry of Transportation & Infrastructure following third reading of the bylaw pursuant to the *Transportation Act*.

EXECUTIVE SUMMARY:

This report presents “Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 40) 2021, No. 2078” for Council consideration. The proposed zoning amendments are intended to address legal non-conforming, single unit dwellings in the Downtown Commercial (C-2), Tourist Service Commercial (C-4) and Medium Density Residential (R-3) zones.

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

Single unit dwellings are not a permitted use in the C-2, C-4 and R-3 zones. However, in all three of these zones, older single unit dwellings exist that predate the zoning designation.

According to BC Assessment records, there are approximately ten existing single unit dwellings in the C-2 zone and four in the R-3 zone. One property is “split zoned” with both R-3 and C-4 zoning. Both the R-3 portion and C-4 portion of the property contain single unit dwellings. A map of these properties is provided in Attachment B¹.

Assuming the dwellings were lawfully constructed², these dwellings are permitted to remain as legal non-conforming uses under section 528 of the *Local Government Act*. However, this designation comes with a number of restrictions:

¹ Note actual use of the property and BC Assessment records may differ. Some properties shown may not contain single-unit dwellings and some properties not shown may contain single unit dwellings.

² Non-conforming use rights do not apply if the use was constructed contrary to the zoning.

1. If a legal non-conforming use is discontinued for a continuous period of six months, the use can no longer continue.
2. A legal non-conforming use cannot be rebuilt if more than 75% of the building above the foundation is demolished or destroyed.
3. A legal non-conforming use cannot be expanded (e.g. an addition to the home cannot be added).
4. Structural alterations to the legal non-conforming use are prohibited unless permitted by the Board of Variance to relieve a hardship.

The latter two restrictions are the most problematic as they prohibit or dissuade upkeep and renovations of the dwelling units, many of which have unique heritage character or are located in high profile locations like the Downtown. Staff routinely have to advise property owners that renovations to these properties are prohibited or highly restricted.

Generally speaking, the R-3 and C-2 zones are intended as densification areas where multi-family, commercial or mixed use development is encouraged and the C-4 zone is intended to promote tourism use. Hence the prohibition on single-detached dwellings in these zones, as it is desirable for redevelopment and infill to contribute to densification and change of use in these areas.

PROPOSAL:

Staff are proposing that the C-2, C-4 and R-3 Zones be amended to allow single unit dwellings constructed before June 15, 2021 to remain as a permitted use. Any homes meeting these criteria would no longer be subject to the restrictions of legal non-conforming uses; however new single unit dwellings would not be permitted. This means as existing single unit dwellings are demolished, they will be replaced by commercial, multi-family, mixed use or tourist commercial buildings as permitted under the applicable zone (or converted with appropriate building code considerations).

The properties shown in Attachment B are generally covered by Development Permit Areas as follows:

- Properties zoned C-2 are generally covered by both the Multi-Unit Residential Development Permit Area (DPA 4) and the Downtown Development Permit Area (DPA 2).
- Properties zoned R-3 tend to only be covered by DPA 4.
- The property zoned C-4 is covered by the Commercial Development Permit Area (DPA-3).

Council recently passed Bylaw No. 2070, which exempts single unit dwellings in DPA 4 from the requirement to obtain a DP. Bylaw No. 2070 did not create the same exemption for single unit dwellings in DPA 2 or DPA 3, nor are staff proposing such an amendment as these DPAs contain useful form and character controls and apply to areas (like the Downtown) where such controls are necessary, even for single unit dwellings.

ANALYSIS:

The proposed changes will support continued upkeep of single unit dwellings in high profile areas like the Downtown, contributing to the overall aesthetic of these areas, while also encouraging densification and redevelopment of these sites as the single unit dwellings reach the end of their lifespan. Combined with existing form and character controls, staff expect the proposed changes to make a positive contribution to the form and character of key neighbourhoods.

ALTERNATIVES:

Council can choose to:

1. Not proceed with Bylaw No. 2078.
2. Amend Bylaw No. 2078 and give first and second readings as amended.
3. Refer Bylaw No. 2078 back to staff for further review as specified by Council.

FINANCIAL IMPLICATIONS:

N/A

LEGAL IMPLICATIONS:

N/A

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

A Public Hearing is required pursuant to section 464 of the *Local Government Act*. Ministry of Transportation & Infrastructure approval is required following third reading pursuant to section 52 of the *Transportation Act*.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

N/A

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input checked="" type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

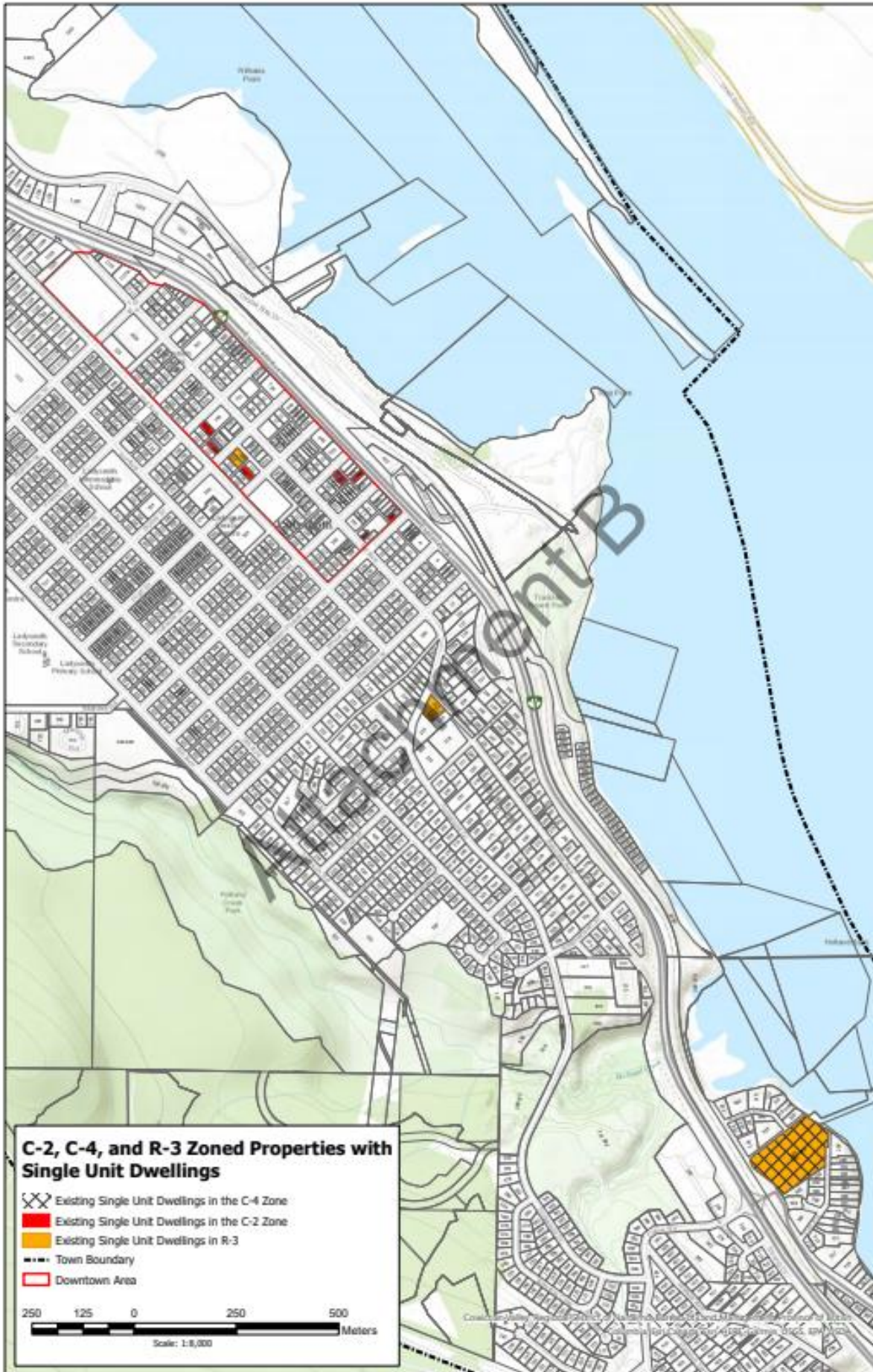
- | | |
|---|--|
| <input type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
| <input type="checkbox"/> Community | <input checked="" type="checkbox"/> Not Applicable |
| <input type="checkbox"/> Waterfront | |

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENTS:

- A. Bylaw 2078
- B. Map of affected properties





Steering Committee Meeting #1: Meeting Minutes

Project: Ladysmith Arts and Heritage Hub
Meeting Date: March 30, 2021 10:00am - 11:00am
Meeting Location: Zoom
Minutes Issued: June 1, 2021

Attendance:

Aaron Stone	AS	<i>Mayor, Town of Ladysmith</i>
Roxanne Harris	RH	<i>Chief, Stz'uminus First Nation</i>
Allison McCarrick	AMC	<i>Chief Administrative Officer, Town of Ladysmith</i>
Chris Barfoot	CB	<i>Director of Parks, Recreation and Culture, Town of Ladysmith</i>
Jake Belobaba	JB	<i>Director of Development Services, Town of Ladysmith</i>
Mike George	MG	<i>Communication and Engagement Specialist, Town of Ladysmith</i>
Marsh Stevens	MS	<i>Town of Ladysmith Councillor</i>
Ben Checkwitch	BC	<i>Checkwitch Poiron Architects Inc.</i>
Brett MacIntyre (X̱uut'a K'ii)	BM	<i>Checkwitch Poiron Architects Inc.</i>
John Marston	JM	<i>Design Consultant</i>
Kelty McKinnon	KM	<i>PFS Studios Landscape Architects</i>
Sofia Martinez Costa	SMC	<i>PFS Studios Landscape Architects</i>
Ray Gauthier	RG	<i>Stz'uminus First Nation Representative</i>
Ora Steyn	OS	<i>Arts Council of Ladysmith and District Representative</i>
Quentin Goodbody	QB	<i>Ladysmith and District Historical Society Representative</i>
Marnie Craig	MC	<i>Ladysmith Maritime Society Representative</i>

No. Item

1. **Introduction:** Mayor Stone recognized Stz'uminus territory and welcomed everyone to the meeting before giving a short introduction to the project.
2. **Description of Scope:** Ben Checkwitch gave a short introduction to the design team, as well as a short summary of what items are and are not the scope of the project. It was further clarified that there are some items that are not within the scope of the project that the design team will still need to understand as they will have impacts on the project.
3. **Stz'uminus Project Goals:** Chief Harris spoke about the goals of the Stz'uminus community for the project:
 - It is important for people to be aware that the Stz'uminus people are present and are part of the community.
 - It is important for Stz'uminus culture to be visible on the site. The heritage of the Stz'uminus people is not limited to the reserve.

- The project is an opportunity for Reconciliation and “Reconciliation”. The Town of Ladysmith has spoken at length with the Stz’uminus community about making Stz’uminus culture visible throughout the Town, they are eager to turn words into concrete action.
 - This project represents a reciprocal relationship between the Town and the Stz’uminus community. Now that everyone is “at the table” it is time to get to work.
 - The project should welcome people, make them feel safe and included.
 - The welcome figures at the Ladysmith High School are a successful example of how a project can make people feel welcome and invited. They also highlight the importance of ensuring youth feel safe and welcome to the site. Youth will be continuing the efforts of Reconciliation and Reconciliation begun with this project, so it is important that they be considered.
4. **Relocation of the Artists Studio Building:** Mayor Stone gave a short summary of Councils decision to approve the investigation to relocate the Artists Studio building from the location identified in the concept plan prepared by Hotson Architects to a location across Oyster Bay drive, closer to the water. Ben Checkwitch followed up with a summary of the status of this investigation, which outlined the geotechnical and structural steps underway to assess the feasibility of the new location.
5. **Arts Council of Ladysmith and District Project Goals:** Ora Steyn spoke about the goals of the Arts Council for the project:
- The Arts Council is in need of studio space.
 - They are interested in the potential of the Cafe/Gift Shop for both members as well as the community as a whole.
 - The Arts Council has worked extensively with the federal government, which has invested money towards the goal of fostering the Arts on Vancouver Island, particularly Digital Arts. This project represents a great opportunity to further this goal.
6. **Historical Society Project Goals:** Quentin Goodbody spoke about the goals of the Historical Society for the project:
- The Historical Society is very excited about the projects potential; it is a great opportunity for all the stakeholder groups to collaborate and work together.
 - The focus of the Historical Society is the industrial heritage of the site. The site is a pivotal piece of the development of the Town of Ladysmith, particularly after the decline of the coal industry.
 - The Historical Society is working with the Maritime Society on the harbour area heritage. This project has great potential to help showcase this heritage.
7. **Maritime Society Project Goals:** Marnie Craig gave a short presentation on the industrial history of the site and the goals of the Maritime Society for the project:
- A large part of the Maritime Society presentation was intended to focus on the challenges associated with the location of the Artists Studio as described in the concept plan prepared by Hotson Architecture. They support reviewing the possibility of relocating the Artists Studio across Oyster Bay Drive.
 - The Maritime Society has a strong working relationship with the Historical Society.
 - The Maritime Society has existing space inside the Machine Shop which houses the Harbour Heritage Centre. The Centre supports a popular heritage program which includes field trips for local children. The program works with the Elder College on the content for these field trips, and has fostered a strong working relationship with members of the Stz’uminus community.
 - There is a large heritage component on the waterfront below the project site which includes a cafe, moorage, a floating museum, and heritage centre. This project is an opportunity to create a “synergy” between the waterfront activities and the activities on site.

- The project site is a rare example of an intact historical industrial site. It is likely one of the only remaining examples left in British Columbia. As such, preservation is important. The Maritime Society and Historical Society are very focused on the preservation of the rail spurs, and they feel the concept plan prepared by Hotson Architecture did not adequately address this preservation.
 - The project is an exciting opportunity to provide a “journey through time”, from the past through the present, into the future.
8. **Background of Artists Studio:** Allison McCarrick asked if John Marston could elaborate on the background of the Artists Studio, given his close involvement with the project from an early stage:
- The development of the Artists Studio has been under discussion for a long time.
 - One of the challenges of the project will be how to sensitively mix the industrial and First Nations heritages of the site.
 - However it can be done. It is important to try to align these histories, rather than separate them. This will allow the site to acknowledge both histories in a positive way, so they can grow and evolve into the future together.
 - The location of the Artists Studio building as described in the concept plan prepared by Hotson Architecture is not the best way to move forward. It would be preferable to move the Studio closer to the water.
9. **Introduction to Landscape Architectural Consultants:** Keltly McKinnon gave a short introduction to PFS Studios, the landscape consultants for the project:
- PFS Studios is very excited about the potential for this project. There are lots of histories that can be expressed in exciting ways.
 - They have experience with projects that have a similar mix of indigenous heritage and industrial heritage. They have learned that every site has layers of history from time immemorial for all of us; it does not need to be antagonistic towards anyone.
 - These histories are entwined and cannot be divided, they can be expressed in beautiful ways together.
 - Neither history has stopped evolving, they are moving into the future. This highlights the importance of children, as described by Chief Harris.
10. **Closing Remarks:** Mayor Stone thanked all participants for attending, and gave a short closing statement:
- It is exciting to hear all the different perspectives on the project.
 - The potential relocation of the Artists Studio respects everyone's desire to tell “the greater story of our place”. It shows everyone is listening.
 - It is a small step that reflects our shared history and how we can move forward together in a good way.
 - The potential relocation is also a strong move from a design standpoint; it allows for a strong connection to the water, and it changes the nature of Oyster Bay Drive from a thoroughfare to an access point for the site.
 - It is important to acknowledge the colonial history embodied by the industrial heritage of the site. We need to “own it” in order to move forwards towards “Reconciliation”.

**Minutes of the Parks, Recreation & Culture Advisory Committee
Wednesday, May 19, 2021 at 7:00pm**

COMMITTEE MEMBERS PRESENT:

Tim Richards, Chair
Lynda Baker
Councillor Duck Paterson
Ava Smith
Bryn Dovey

Kelly Daniels
Lesley Lorenz
Geoff Dean
Emily Weeks

STAFF PRESENT:

Chris Barfoot
Pamela Zwicker

AGENDA

Moved and seconded:
2021-11: That Parks, Recreation and Culture Advisory Committee approve the agenda for the meeting as presented. Additional topic L. Lorenz Transfer Beach
Motion carried.

MINUTES

Moved and seconded:
2021-12: That Parks, Recreation and Culture Advisory Committee approve the minutes of the April, 2021 meeting as presented. One adjustment was requested by L. Baker to April's minutes.
Motion carried.

OLD BUSINESS

Leisure Access Program clarification- clarified residential boundaries for eligibility as per the request from PRCAC to staff last meeting
Members of the committee asked if Areas G, H, and Stz'uminus might be included in the program. A council to council discussion would be a more appropriate venue to discuss the possibility of Stz'uminus FN involvement with the LAC.
Further discussion about provincial and federal funding for educational and recreational opportunities for youth.

NEW BUSINESS

Brown Drive Park discussion- PRCAC members were given an overview of Brown Drive Kinsmen Park as well as the current amenities including a new bike park, trails, the story book walk and playground. The park has seen an increasing number of visitors over this past while due to the additional amenities and the Storybook Walk attracts a number of children and school classrooms. The possibility of a park implementation plan is a future opportunity for the neighborhood and PRCAC to be involved in further park development or not development. G. Dean noted that the front half of the park is highly used whereas the back half seems to not be used very much at all. Possibility of planting more trees in the open grass area.

Possible future event held to bring attention to the park, and engage the community in what they may want to see for future design/uses. For example: Spike ball, volleyball, horse shoe pits, bean bag toss, picnic, games. Could there be a secondary entrance to separate different types of trail user groups? Parking could be an issue as there are not many spaces currently allocated for the park.

Transfer Beach bookings-L. Lorenz asked if PRC staff were able to take end of year school bookings at Transfer Beach as in past years. As COVID-19 continues to pose serious health risks, PRC is not booking out the shelters at TB at this time. However, PRC staff are taking an interest list from school groups who call to inquire about TB. If any schools wish to share their plans with staff we can add them to a list so that when other schools call to inquire about particular days and times, staff can inform them if it's likely to be busy due to unofficial bookings.

UPDATES

PRC Department Update - PRCAC was provided a department update by staff included in the agenda. Project updates included:

HEALTH & WELLNESS

Fitness registrations for the month of April reflected the current PHO restrictions on indoor group fitness activities. All indoor programs (even low intensity) were ordered to 'pause' for a 'circuit breaker'. As a result, many programs were moved to Forrest Field, as outdoor programming is still permitted. Additional program planning considerations include a 3m space between participants and class sizes being limited to 10 people max.

For the month of April, 700 appointments were booked into the Fitness Centre and Fitness Programs were at 85% capacity.

AQUATICS

April marked the implementation and restart of Red Cross swimming lessons! Lessons are being offered six days a week, with a variety of time slots, and include Pre-School and SwimKids 1-10.

Attendance in Aquatic Fitness, Everyone Welcome, Lengths, Parent & Tot, and Leisure Swims continue to be high.

A Red Cross Stay Safe course was also offered in April, with 13 youth participants completing the program.

RECREATION

Program and class offerings under Recreation include Preschool, Children, Youth, and General Recreation.

PRESCHOOL/CHILDREN/YOUTH

The Town of Ladysmith has been approved for a \$33,915 Canada Summer Jobs Grant to hire nine positions for seasonal employment throughout the Summer.

These positions include Junior and Senior Daycamps Leaders, Youth Parks Maintenance Workers, and Sustainability Ambassadors. Canada Summer Jobs is a program funded by the Government of Canada to create quality job placements for youth in safe, inclusive and healthy work environments.

Parks, Recreation and Culture will be offering Daycamp at two locations, Transfer Beach and FJCC for 7 weeks this summer, starting July 5th. Staff is currently finalizing Daycamp staff details and weekly program themes.

The Youth Zone Pre-Teen Program continues in April at 100% capacity.

COMMUNITY PROJECTS

As part of the Poverty Reduction Project, Poverty Challenges ran from March 29 – April 9, 2021 with approximately 50 people committing to one of the three challenges. These challenged included:

- Food allowance challenge
- Public/Active transportation challenge
- 12 hour "nowhere to go" challenge

From April 9 - 11th, LSS students from Career & Personal Planning 10 took up the challenge to participate in the Food Allowance poverty challenge. Those that volunteered to participate were each given \$16.35 to budget and learn about food security for a 72 hour period.

Community members, LPRC staff and LSS students who participated in the challenges met virtually to debrief their experiences and to share their thoughts on creating local solutions to poverty in our community.

FACILITY MAINTENANCE PROJECTS (Repairs or capital project updates):

The Washrooms at Transfer Beach, Brown Drive Park and the 6th Ave entrance to Holland Creek Trail have been opened up for the season. With the Town's parks and playgrounds already seeing increased use, the re-

opening of these important amenities will be well received by the public who are regularly using these spaces.

Edison-style lights donated by Microtel Inn & Suites by Wyndham Oyster Bay in support of Ladysmith's small business community were installed along 1st Avenue. The lights help create a sense of place and represents the strong connection the hotel has with Ladysmith's residents, local businesses and its many visitors.

NEXT MEETING Next meeting will be held at 7:00pm, June 16, 2021 via ZOOM.

ADJOURNMENT It was moved, seconded and carried that the meeting be adjourned at 8:15 PM

DRAFT



Notes from the Official Community Plan Steering Committee Meeting Held on May 20, 2021 at 3pm by Zoom

Attendees:

Mayor Stone	Allison McCarrick	Emily Weeks	Cyndi Beaulieu
Chief Harris	Quentin Goodbody	Geoff Dean	Martin Byrne
Duck Paterson	Isabel Anderson	David Grimstead	Mark Drysdale
Rob Johnson	Tamara Hutchinson	Brian Childs	Jason Harrison
Jake Belobaba	Jennifer Fix (consultant)	Julie Tierney (recorder)	

Regrets:

Tara Pollock	Jennifer Sibbald	Ray Gauthier	Abbas Farabakhsh
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Acknowledgement

Mayor Stone acknowledged with gratitude that this meeting takes place on the traditional, unceded territory of the Stz'uminus First Nation.

Introduction

J. Belobaba welcomed committee members and provided a brief overview.

Community Engagement Plan Review

J. Fix shared her screen and reviewed the Community Engagement Plan (CEP), a living document to be updated as circumstances change and lessons are learned. The CEP covers:

- Project Background
- Engagement Objectives
- Participation Level
- Stakeholders and Partners
- Engagement Activities and Schedules
- Risks and Mitigation Approaches
- Evaluations

J. Fix thanked committee members who provided survey feedback and noted that most changes were made. The first of two surveys is live; the link will be provided to committee members to share with residents if they choose. The official launch will take place on Wednesday, May 27th. Printed copies of the survey accompanied with promotional material will be available at FJCC, City Hall, and Development Services.

Committee members were encouraged to promote engagement opportunities by inviting residents to visit the Town's OCP webpage, which highlights the various opportunities as they happen rather than personally gather information from residents; however, if they do receive comment or feedback, to provide details to staff or consultants.

Committee members were informed of virtual workshops planned in June. Three identical, interactive, workshops will be held online and will offer residents and targeted stakeholders an opportunity to discuss diverse topics ranging from transportation and housing, to public spaces and urban growth.

Youth Engagement

Discussion took place regarding the plans to encourage engagement of local youth by providing one week of full time pay for one or two youth liaisons. I. Anderson offered to distribute information to her peers. J. Fix and I. Anderson to meet at a later date to discuss further.

RECEIVED:

Corporate Officer (D. Smith)



AGENDA

Community Planning Advisory Committee

Wednesday, June 2, 2021 at 7:00 p.m.
via Zoom

PRESENT: Chair – Jason Harrison; Members – Abbas Farahbakhsh, Brian Childs, Tamara Hutchinson; Council Liaison – Tricia McKay; Director of Development Services – Jake Belobaba; Senior Planner & Recorder – Christina Hovey;

ABSENT: Members – Jennifer Sibbald, Tony Beckett, Steve Frankel

GUESTS: None

The meeting was called to order at 7:06 p.m., the Chair acknowledged with gratitude that he was chairing the meeting from the traditional unceded territories of the Snuneymuxw First Nation and that Ladysmith and most participants were on the traditional territories of the Stz'uminus People.

1. AGENDA APPROVAL

It was moved, seconded and carried that the Agenda of June 2, 2021 be approved.

2. ADOPTION OF MAY 5, 2021 MINUTES

It was moved, seconded and carried that the Minutes of May 5, 2021 be approved.

3. NEW BUSINESS

a. Building Schemes and Building Design Guidelines

Director of Development Services Jake Belobaba provided an overview of the topic of Statutory Building Schemes and design controls that are available to local government.

In the past, local governments would sometimes require Statutory Building Schemes for new development, however this is no longer common, as Statutory Building Schemes cannot be enforced by local governments.

The following tools are more commonly used by local government:

- Section 219 Covenants:
 - Agreement between the local government and property owner. Flexible and broad in scope. Subject to contract law and rules of the Land Titles Office.
 - Generally easy to enforce, as the local government will not issue a Building Permit until the conditions are met.
 - Not as powerful as regulations such as zoning bylaws.

- The property owner must agree to the covenant (except in certain cases for safety issues) so usually they are only imposed as part of a discretionary decision of Council (e.g. a rezoning).
- Development Permit Guidelines:
 - Can be quite prescriptive for form and character.
 - Can only be used for certain types of development as laid out in *the Local Government Act*.
 - The legislation generally does not allow regulation of form and character of single detached houses through development permit area guidelines.
- Phased Development Agreements:
 - Newer tool
 - A flexible tool, can be used to specify features of development, amenity provisions, etc.
 - Needs agreement from property owner.
- Zoning Bylaw:
 - Significant control of building size and shape.
 - Cannot control finishing materials/colours etc.
- Form-based codes:
 - “Form based codes” include illustrations showing what you want buildings to look like.
 - They are not very common in Canada but are possible under the legislation and a very useful tool.

CPAC had a lengthy discussion on the appearance of the downtown and newer residential suburbs. Some comments included:

- Council has flagged for discussion through the OCP about maintaining the “look” of the community in new subdivisions.
- Committee members would like to see more attention to design standards and building quality in new subdivisions.
- Affordability in housing is also an important factor.
- Council should not be afraid to impose stringent conditions on developers, it will not “scare them away”.
- The Town should consider adopting the BC Energy Step Code The province has mandated building “Step Code” Level 5 by 2032.
- Some Committee members would like an expanded scope to review more development proposals for form and character.

Abbas Farahbakhsh departed the meeting at 8pm

b. CPAC Membership Update - Council appointments for the next term

Senior Planner Christina Hovey provided an update on the new term of CPAC. This is the last meeting of the Council reviewed the new appointments on June 1, 2021. Julie Tierney will contact members to confirm appointments and Council will make the information public on June 15th.

July 7, 2021 will be the first meeting of the new CPAC Term. Staff will refresh/provide new CPAC Binders and it is an opportunity to review meeting procedures and consider new procedures.

6. MONTHLY BRIEFING

File Updates:

The following files that CPAC previously reviewed have been to Council since the last meeting:

- 630 Farrell Road (File No. 3360-20-05);
- 336 Belaire Street (File No. 3360-20-09);
- 1130 Rocky Creek Road (File No. 3360-20-02); and
- 201/203 Dogwood Drive (File No. 3360-20-04).
- Council also received a referral for a liquor licence for the “Bayview Brewing Co.” on Dogwood Drive.

CPAC members can review the Council Agendas and Minutes or call Staff for further details.

7. NEXT MEETING – July 7, 2021

8. ADJOURNMENT

The meeting was adjourned at 8:27 p.m.

Chair (J. Harrison)

RECEIVED:

Corporate Officer (D. Smith)



TOWN OF LADYSMITH

STATEMENT OF FINANCIAL INFORMATION

YEAR ENDED DECEMBER 31, 2020

**TOWN OF LADYSMITH
STATEMENT OF FINANCIAL INFORMATION
YEAR ENDED DECEMBER 31, 2020**

Financial Information Act

Prepared under the *Financial Information Regulation, Schedule 1*

Statement of Financial Information Approval

Please see 2020 Audited Financial Statements for:

- Management Report
- Statement of Assets and Liabilities – *See consolidated statement of financial position*
- Operational Statement – *See Schedule 1*
- Notes to the Financial Statements – *See all notes*
- Schedule of Debts - *See Notes 12-14*

Schedule of Guarantee and Indemnity Agreements

The Town of Ladysmith has not given any guarantees or indemnities under the Guarantees and Indemnities Regulation.

Statement of Severance Agreements

*There were **no** severance agreements made between the Town of Ladysmith and its non-unionized employees during fiscal year 2020.*

Schedule of Elected Official Remuneration and Expenses

Schedule of Employee Remuneration and Expenses

Schedule of Payments for Goods and Services

Appendix 1 - 2020 Audited Financial Statements

**TOWN OF LADYSMITH
STATEMENT OF FINANCIAL INFORMATION APPROVAL**

The undersigned, as authorized by the Financial Information Regulation, Section 1, subsection 9(2), approves all the statements and schedules included in this Statement of Financial Information, produced under the *Financial Information Act*.

Erin Anderson
Director of Financial Services
June 15, 2021

Aaron Stone
Mayor
June 15, 2021

**TOWN OF LADYSMITH
SCHEDULE OF RENUMERATION AND EXPENSES FOR 2020**

Elected Officials

NAME	POSITION	REMUNERATION	EXPENSES
Stone, Aaron	Mayor	\$37,676	\$945
Jacobson, Amanda	Councillor	15,552	-
Johnson, Robert	Councillor	15,552	350
McKay, Patricia	Councillor	15,552	936
Paterson, Donald	Councillor	15,552	-
Stevens, Andrew	Councillor	15,552	28
Virtanen, Jeffrey	Councillor	15,552	202
Total Elected Officials		\$130,988	\$2,460

Employees

NAME	POSITION	PAYROLL	EXPENSES
Anderson, Erin	Director of Financial Services/Acting CAO	\$149,298	\$2,984
Baker, Curtis	Cert Utility Op III - Utilities Supervisor	87,182	117
Barfoot, Christopher	Director of Parks, Recreation & Culture	90,191	15
Barney, Martin	Certified Utilities Operator I	92,781	1,023
Belobaba, Jake	Director of Development Services	124,419	787
Bollinger, Colin	Senior Building Inspector	89,243	702
Bouma, Neil	Certified Carpenter	83,066	189
Bouma, Ryan	Sr Engineer Tech/Approving Officer	94,114	2,826
Brown, Michael	Utilities Supervisor - Treatment & Supply	136,744	1,228
Fukakusa, Gerald	Manager of Accounting Services	114,513	1,149
Ganderton, Mike	Streets Supervisor	88,314	215
Geisbrecht, Kelly	Facilities Maintenance Supervisor	81,959	-
Glenn, Susan	Supervisor-Community Programs & Serv	76,638	-
Goldfuss, Kevin	Manager of Operations	121,465	19
Goodall, Geoff	Director of Infrastructure Services	149,327	1,126
Grueber, Gregory	Certified Utility Operator III	121,551	356
Jack, Isaac	Certified Utility Operator II (Backhoe)	80,275	1,242
Lassam, Shane	Equipment and Compost Operator IV	81,956	-
McLeod, Robert	Certified Utility Operator II - Watershed	87,586	439
Morgan, Michael	Equipment Operator III	84,544	189
Paydli, Ian	Manager of Human Resources	114,361	632
Simpson, Robert	Parks Maintenance Supervisor	88,611	448
Skelton, Simon	Sr Parks Maintenance Worker	78,922	857
Smith, Donna	Manager of Corporate Services	98,875	380
Thompson, Julie	Planner	75,280	1,880
Vaux, Ronald	Certified Mechanic	82,079	634
Winter, Joanna	Manager of Legislative Services	75,144	89
Winter, Wolf	Certified Wastewater Trmt Utility Op II	86,835	288
Total: Employees with remuneration greater than \$75,000		\$2,735,273	\$19,814
Add Employees with remuneration less than \$75,000		2,981,082	45,719
Add Elected officials		\$130,988	\$2,460
Total: All employees		\$5,847,343	\$67,992

Reconciliation with Financial Statements

Add Purchase of benefits	1,348,189
Less Capital labour	(121,989)
Add Accruals, statutory reporting and timing differences	44,643
Wages & Benefits - Schedule 1 Financial Statements	<u>7,118,186</u>

**TOWN OF LADYSMITH
SCHEDULE OF PAYMENTS MADE FOR GOODS AND SERVICES IN 2020**

Payee	Payments
518257 BC Ltd	\$ 46,328
Acme Supplies	26,323
Altec Industries	166,088
Ammeter Electric 1998 Inc	68,855
Andrew Sheret Ltd	62,011
Associated Engineering (BC) Ltd	1,159,621
ATS Traffic British Columbia Ltd	27,711
BC Assessment Authority	94,035
BC Hydro	574,122
Bridge Vault & Dominion Precast (Divs Of 794754	42,695
Centralsquare Canada Software Inc	33,564
Clean Harbors Canada Inc.	122,648
Cleartech Industries Inc	143,993
Coastal Animal Control Services Of BC Ltd.	38,234
Columbia Fuels A Div Of Parkland Fuel Corp	91,322
Communication Connection BC Inc (The)	31,156
Cowichan Valley Regional District	2,985,604
Cowichan Valley Regional Hospital District	1,055,222
David Stalker Excavating Ltd	639,360
District Of North Cowichan	107,894
F&M Installations Ltd	39,849
Flocor Inc	46,589
Gap Enviromicrobial Services Ltd	30,458
GFL Environmental Inc	26,691
Golder Associates Ltd	61,826
Graphically Speaking	51,496
Herold Engineering Ltd	50,882
Hotson Architecture Inc	35,736
Hub City Paving Ltd	48,011
ICBC	58,922
Island Aggregates Ltd	49,428
Island Tractor & Supply Ltd	34,634
Ivory Tower Investments Ltd	30,069
IWC Excavation Ltd	344,782
J Lealand Contracting	74,132
Jenkins Marzban Logan LLP In Trust	630,000
Koers & Associates Engineering Ltd	298,445
KTI Limited	28,265
Mastercraft Flooring Ltd	52,630
Metro Motors Ltd	73,052
Milestone Equipment Contracting Inc	190,314
Minister Of Finance	98,230
Ministry Of Small Business And Revenue	169,194
Municipal Finance Authority	90,595
Municipal Insurance Association Of BC	196,646

Payee	Payments
Municipal Pension Fund	499,570
NAC Constructors Ltd	487,612
Pacific Blue Cross	222,452
RECEIVER GENERAL (Payroll Only)	310,287
Receiver General For Canada	1,076,007
Ricoh Canada Inc	38,522
Rushworth Electrical Services Inc	42,632
Shaw Electrical Services Ltd	39,093
Sicom Industries Ltd	41,300
Slip Tube Enterprises Ltd	99,880
Steve Marshall Ford	44,174
Stewart Mcdannold Stuart	237,970
Stonhard	45,659
Telus Mobility	34,529
Trojan UV	85,785
Urban Systems Ltd.	50,307
US Bank	226,067
Vancouver Island Regional Library	429,529
Veer Holdings Inc	44,634
Waste Connections Of Canada Inc	280,497
Waterhouse Environmental Services Corporation	72,080
Westburne	26,219
Westerra Equipment LP	68,462
Windley Contracting Ltd	1,049,404
Worksafe BC	154,634
WSP Canada Group Ltd	174,191
WSP Canada Inc.	27,176
	\$ 16,236,336
Grants and contributions over \$25,000:	
Ladysmith & District Historical Society	35,538
Ladysmith Chamber Of Commerce	62,570
Ladysmith Resources Centre Association	44,478
Total payments over \$25,000	16,378,922
Payments under \$25,000	1,892,988
Grants under \$25,000	43,950
Total payments made	\$ 18,315,860
Reconciliation:	
Total payment made (above)	18,315,860
Expenses - Schedule 1 Financial Statements	18,796,572
Difference	(480,712)

Differences due to timing, cash versus accrual accounting and PSAB accounting

Appendix 1 -
2020 Audited Financial
Statements



INDEX TO THE FINANCIAL STATEMENTS
DECEMBER 31, 2020

Management Report

Independent Auditor's Report

Consolidated Financial Statements

Consolidated Statement of Financial Position	1
Consolidated Statement of Operations	2
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Consolidated Statement of Changes in Net Financial Assets	4
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Schedules

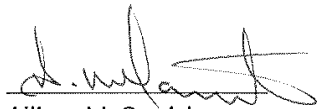
I Statement of Operations by Segment – 2019 & 2020	32-33
II Consolidated Statement of Tangible Capital Assets – 2019 & 2020	34-35

STATEMENT OF MANAGEMENT'S RESPONSIBILITY

The accompanying Consolidated Financial Statements are the responsibility of the management of the Town of Ladysmith and have been prepared in compliance with legislation, and in accordance with Canadian Public Sector Accounting standards.

In carrying out its responsibilities, management maintains appropriate systems of internal and administrative controls designed to provide reasonable assurance that transactions are executed in accordance with proper authorization, that assets are properly accounted for and safeguarded, and that financial information produced is relevant and reliable.

MNP LLP as the Municipality's appointed external auditors, have audited the Consolidated Financial Statements. The Auditor's report is addressed to the Mayor and members of Council and appears on the following page. Their opinion is based upon an examination conducted in accordance with Canadian Auditing Standards, performing such tests and other procedures as they consider necessary to obtain reasonable assurance that the Consolidated Financial Statements are free of material misstatement and present fairly the financial position and results of the Municipality in accordance with Canadian Public Sector Accounting Standards.



Allison McCarrick
Chief Administration Officer

Independent Auditor's Report

To the Mayor and Council of the Town of Ladysmith:

Opinion

We have audited the consolidated financial statements of the Town of Ladysmith (the "Town"), which comprise the consolidated statement of financial position as at December 31, 2020, and the consolidated statements of operations, changes in net financial assets, cash flows and the related schedules for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Town as at December 31, 2020, and the results of its operations and cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Town in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

Management is responsible for the other information. The other information comprises the annual report, which is expected to be made available to us after the date of this auditor's report.

Our opinion on the consolidated financial statements does not cover the other information and we will not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

When we read the annual report, if we conclude that there is a material misstatement therein, we are required to communicate the matter to those charged with governance.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Town's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Town or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Town's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Town's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Town's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Town to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Town to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Nanaimo, British Columbia

April 20, 2021

Chartered Professional Accountants

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2020

		<u>2020</u>	<u>2019</u>
Financial Assets			
Cash and short-term deposits	<i>(Note 2)</i>	\$ 32,457,247	\$ 24,653,055
Accounts receivable	<i>(Note 4)</i>	<u>2,584,490</u>	<u>5,653,020</u>
		<u>35,041,737</u>	<u>30,306,075</u>
Liabilities			
Accounts payable and accrued liabilities	<i>(Note 5)</i>	4,461,984	3,560,551
Post-employment benefits	<i>(Note 6)</i>	319,100	262,400
Deferred revenue	<i>(Note 7)</i>	1,494,902	611,478
Refundable deposits and other	<i>(Note 8)</i>	1,366,204	819,767
Restricted reserves	<i>(Note 9)</i>	485,631	474,480
Development cost charge reserve	<i>(Note 10)</i>	4,472,558	3,714,388
Federal gas tax reserve	<i>(Note 11)</i>	1,607,008	1,474,035
Equipment financing	<i>(Note 12)</i>	857,420	915,645
Short-term financing	<i>(Note 13)</i>	952,700	952,700
Debenture debt	<i>(Note 14)</i>	<u>16,156,313</u>	<u>16,962,428</u>
		<u>32,173,820</u>	<u>29,747,871</u>
Net Financial Assets		<u>2,867,917</u>	<u>558,203</u>
Non-Financial Assets			
Tangible Capital Assets	<i>(Schedule II)</i>	113,991,578	110,605,787
Prepays		103,210	95,485
Inventory		<u>62,792</u>	<u>64,550</u>
		<u>114,157,580</u>	<u>110,765,823</u>
Accumulated Surplus	<i>(Note 19)</i>	<u>\$ 117,025,497</u>	<u>\$ 111,324,025</u>

Commitments and Contingencies (Note 15)
Significant Events (Note 28)



 Director of Financial Services

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF OPERATIONS
AS AT DECEMBER 31, 2020

	<u>2020</u>	<u>Budget 2020</u> (Note 20)	<u>2019</u>
Revenue			
Taxation <i>(Note 22)</i>	\$ 11,962,782	\$ 11,944,314	\$ 11,600,354
Sale of Services <i>(Note 23)</i>	4,014,713	4,049,866	3,976,114
Investment Income	279,681	266,600	528,984
Licence, Permits, Rentals & Penalties <i>(Note 24)</i>	910,582	797,701	1,018,152
Grants <i>(Note 25)</i>	4,401,211	23,622,116	6,842,495
Donations & contributed tangible capital assets	2,588,706	2,259,044	2,114,949
Loss on foreign exchange	(2,531)	-	(15,931)
Loss on disposal of tangible capital assets	(38,647)	-	(104,904)
Development fees	78,447	939,850	77,000
Gas tax funds utilized <i>(Note 11)</i>	303,100	1,418,286	893,245
	<u>24,498,044</u>	<u>45,297,777</u>	<u>26,930,458</u>
Expenses			
General government services	2,439,412	2,970,327	2,780,011
Protective services	1,935,494	2,134,294	1,443,022
Transportation services	2,383,547	2,609,187	2,250,325
Garbage services	429,609	527,487	527,606
Cemetery services	25,910	33,665	29,068
Development services	614,932	1,140,809	573,622
Recreation and cultural services	2,903,436	7,587,491	2,897,536
Parks operation services	958,428	1,403,061	1,093,968
Sewer	4,042,452	3,538,037	2,854,002
Water	3,063,352	5,579,704	1,778,406
	<u>18,796,572</u>	<u>27,524,062</u>	<u>16,227,567</u>
Annual Surplus	5,701,472	17,773,715	10,702,891
Accumulated Surplus, beginning of year	<u>111,324,025</u>	<u>111,324,025</u>	<u>100,621,134</u>
Accumulated Surplus - end of year	<u>\$ 117,025,497</u>	<u>\$ 129,097,740</u>	<u>\$ 111,324,025</u>

See accompanying notes to the consolidated financial statements

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF CASH FLOWS
AS AT DECEMBER 31, 2020

	2020	2019
Operating Transactions		
Annual Surplus	\$ 5,701,472	\$ 10,702,891
Less non-cash items included in surplus:		
Amortization	3,872,923	3,489,917
Loss on disposal of tangible capital assets	38,647	104,904
Actuarial adjustments on debenture debt	(51,502)	(46,059)
Contributed tangible capital assets	(2,328,281)	(1,949,543)
	7,233,260	12,302,110
Change in		
Accounts receivable	3,068,530	(1,217,407)
Prepaid expenses	(7,725)	(6,098)
Inventory	1,758	9,682
Accounts payable and accrued liabilities	901,433	188,407
Post employment benefits	56,700	30,000
Deferred revenues	883,424	48,279
Refundable deposits and other	546,437	(58,264)
Restricted reserves	11,151	32,290
Development cost charge reserve	758,170	550,717
Gas tax reserve	132,973	(32,734)
Cash provided by operating transactions	13,586,110	11,846,983
Capital Transactions		
Proceeds on sale of tangible capital assets	16,845	50,552
Cash used to acquire tangible capital assets	(4,985,924)	(14,609,476)
Cash used by capital transactions	(4,969,079)	(14,558,924)
Repayment of long-term debt and equipment financing		
Proceeds of long-term financing	-	6,000,000
Repayment of debt	(812,838)	(660,706)
Net increase (decrease) in cash from financing	(812,838)	5,339,294
Increase in Cash and Short-Term Deposits	7,804,193	2,627,353
Cash and Short-Term Deposits - Beginning of Year	24,653,055	22,025,702
Cash and Short-Term Deposits - End of Year	\$ 32,457,247	\$ 24,653,055

See accompanying notes to the consolidated financial statements

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF CHANGES IN NET FINANCIAL ASSETS
AS AT DECEMBER 31, 2020

	<u>2020</u>	<u>Budget 2020</u> (Note 20)	<u>2019</u>
Annual Surplus	\$ 5,701,472	\$ 17,773,715	\$ 10,702,891
Acquisition of tangible capital assets	(7,314,206)	(33,262,196)	(16,559,019)
Amortization of tangible capital assets	3,872,923	3,436,284	3,489,917
Loss on sale of tangible capital assets	38,647	-	104,904
Proceeds from sale of tangible capital assets	16,845	-	50,552
Decrease in inventories	1,758	-	9,682
Increase in prepaids	(7,725)	-	(6,098)
Change in Net Financial Assets	<u>2,309,714</u>	<u>(12,052,197)</u>	<u>(2,207,171)</u>
Net Financial Assets, beginning of year	<u>558,203</u>		<u>2,765,374</u>
Net Financial Assets, end of year	<u>\$ 2,867,917</u>		<u>\$ 558,203</u>

See accompanying notes to the consolidated financial statements

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

The Town of Ladysmith (the Town) was incorporated in 1904 under the provisions of the British Columbia Municipal Act. Its principal activities are the provision of local government services in the Town, as governed by the *Community Charter* and the *Local Government Act*.

Note 1 - Significant Accounting Policies

The notes to the consolidated financial statements are an integral part of these financial statements. They provide detailed information and explain the significant accounting and reporting policies and principles that form the basis of these statements. They also provide relevant supplementary information and explanations which cannot be expressed in the consolidated financial statements.

(a) Basis of Presentation

It is the Town's policy to follow Canadian public sector accounting standards for local governments and to apply such principles consistently. The financial resources and operations of the Town have been consolidated for financial statement purposes and include the accounts of all of the funds of the Town.

The consolidated financial statements are prepared using the accrual basis of accounting. The accrual basis of accounting records revenue as it is earned and measurable. Expenses are recognized as they are incurred and measurable based upon the receipt of goods and services or the creation of an obligation to pay.

The consolidated financial statements reflect the assets, liabilities, revenues and expenses and changes in fund balances and financial position of the Town. These consolidated financial statements consolidate the following operations:

General Revenue Fund	General Capital Fund
Water Revenue Fund	Water Capital Fund
Sewer Revenue Fund	Sewer Capital Fund
Reserve Fund	

(b) Reporting Entity

The consolidated financial statements include the assets, liabilities, revenue and expenses of the reporting entity. The reporting entity is comprised of all the funds, agencies, local boards, and committees of the Council which are controlled by the Town. Control is defined as the power to govern the financial and reporting policies of another organization with the

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 1 - Significant Accounting Policies - (b) Reporting Entity (continued)

expected benefits or risk of loss to the Town. The controlled organizations are consolidated after adjusting their accounting policies to a basis consistent with the accounting policies of the Town. Interfund and intercompany balances and transactions have been eliminated. The controlled organizations include DL 2016 Holdings Corporation, a wholly owned subsidiary of the Town.

(c) Tangible Capital Assets

Tangible capital assets are recorded at cost less accumulated amortization and are classified according to their functional use. Cost includes all amounts that are directly attributable to the acquisition, construction, development or betterment of the asset. Donated assets are recorded at their estimated fair value upon acquisition. Certain tangible capital assets for which historical cost information is not available have been recorded at current fair market values discounted by a relevant inflation factor. Certain assets are disclosed at a nominal value as the determination of current fair market value was not available. The Town does not capitalize interest charges as part of the cost of its tangible capital assets.

Tangible capital assets are amortized over their estimated useful life on the straight-line method at the following annual rates:

General Tangible Capital Assets

Land	Indefinite
Land Improvements	15 to 75 years
Buildings	25 to 40 years
Equipment, Furniture and Vehicles	5 to 60 years

Engineering Structures

Roads and Sidewalks	20 to 75 years
Storm and Sewer	25 to 75 years
Water	20 to 80 years

Constructions in progress contain capital projects underway but not yet complete or put into use. Once put into use, the asset will be amortized based on the above annual rates for the applicable category of work performed.

Certain assets have historical or cultural value including works of art, historical documents as well as historical and cultural artifacts that are not recognized as tangible capital assets

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 1 - Significant Accounting Policies – (c) Tangible Capital Assets (continued)

because a reasonable estimate of the future benefits associated with such property cannot be made. Intangibles, Crown lands and other natural resources are not recognized as tangible capital assets.

(d) Cash and Short-Term Deposits

Cash and short-term deposits have maturities of three months or less from the date of acquisition, reported in Canadian funds using the exchange rate of the prescribed bank as of December 31.

(e) Restricted Reserves and Deferred Revenues

Receipts which are restricted by the legislation of senior governments or by agreement with external parties are deferred and reported as restricted reserves. When qualifying expenses are incurred, restricted reserves are brought into revenue at equal amounts, in accordance with Revenue Recognition policy 1(g). These revenues are comprised of the amounts shown in Note 9, 10, and 11.

Revenues received from non-government sources in advance of expenses which will be incurred in a later period are deferred until the associated purchase or expense is incurred.

(f) Use of Estimates

The preparation of financial statements in accordance with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expense during the reporting period. Significant areas requiring the use of management estimates relate to the collectability of accounts receivable, accrued liabilities, post-employment benefits, provisions for contingencies and amortization rates, useful lives and salvage values for determining tangible capital asset values. Actual results could differ from those estimates. Liabilities for contaminated sites are estimated based on the best information available regarding potentially contaminated sites that the Town is responsible for. Adjustments, if any, will be reflected in operations in the period of settlement.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 1 - Significant Accounting Policies (continued)

(g) Revenue Recognition

Taxation revenues are recognized at the time of issuing the property tax notices for the fiscal year. Fees and charges revenue are recognized when the services are rendered. Investment income is accrued as earned. Gain (loss) on foreign exchange has been recognized in the Statement of Operations using the exchange rate in effect on December 31, 2020.

Other revenues are recognized when earned in accordance with the terms of the agreement, when the amounts are measurable and when collection is reasonably assured.

The Town recognizes a government transfer as revenue when the transfer is authorized and all eligibility criteria, if any, have been met. Grants and donations are recognized in the financial statements in the period which the events giving rise to the transfer occur, eligibility criteria are met, and reasonable estimates of the amount can be made. A government transfer with stipulations giving rise to an obligation that meets the definition of a liability is recognized as a liability (deferred revenue). In such circumstances, the Town recognizes the revenue as the liability is settled.

Deferred revenue represents user charges and other fees which have been collected, for which the related services have yet to be provided. These amounts will be recognized as revenue in the fiscal year the services are provided.

(h) Non-financial Assets

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations. The change in non-financial assets during the year, together with the excess of revenues over expenses, provides the change in net financial assets for the year.

(i) Inventory

Inventory is valued at the lower of cost and net realizable value, determined on an average cost basis.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 1 - Significant Accounting Policies (continued)

(j) Liability for contaminated sites

A liability for remediation of a contaminated site is recognized at the best estimate of the amount required to remediate the contaminated site when contamination exceeding an environmental standard exists, the Town of Ladysmith is either directly responsible or accepts responsibility, it is expected that future economic benefits will be given up, and a reasonable estimate of the amount is determinable. The best estimate of the liability includes all costs directly attributable to remediation activities and is reduced by expected net recoveries based on information available at December 31, 2020.

Included in tangible capital assets are specific properties that have been determined to be contaminated in excess of Provincial environmental standards and that require remediation activities. As the Town has not accepted responsibility for the contamination, no liability has been recorded for the estimated remediation costs. Future events may confirm the Town's responsibility, at which point a liability would be recorded. Any remediation activities that occur prior to the determination of responsibility will be expensed as incurred.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 2 - Cash and Short-Term Deposits

Cash and short-term deposits were comprised as follows:

	<u>2020</u>	<u>2019</u>
Cash	\$ 31,642,537	\$ 23,845,187
Short-term deposits	<u>814,710</u>	<u>807,868</u>
	<u>\$ 32,457,247</u>	<u>\$ 24,653,055</u>

Included in Cash is a deposit of \$180,168 (the equivalent of \$141,903 US Funds based on the exchange rate at the Ladysmith and District Credit Union on December 31, 2020). Short-term deposits consist of short-term investments in the Municipal Finance Authority of B.C. money market fund. The market value is equal to the carrying value.

Included in cash and short-term deposits are the following restricted amounts that are expended in accordance with the terms of the restricted reserves.

	<u>2020</u>	<u>2019</u>
Restricted reserves	\$ 485,631	\$ 474,480
Federal gas tax reserve	1,607,008	1,474,035
Development cost charges reserve	<u>4,472,558</u>	<u>3,714,388</u>
Total restricted cash	<u>\$ 6,565,197</u>	<u>\$ 5,662,903</u>

Note 3 - Financial Instruments

The Town as part of its operations carries a number of financial instruments. It is management's opinion the Town is not exposed to significant interest, currency or credit risk arising from these financial instruments, except as otherwise disclosed. The Town is exposed to currency risk on its US dollar bank account. Unless otherwise noted in Note 2, the fair value of these financial instruments approximates their carrying values.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 4 - Accounts Receivable

	<u>2020</u>	<u>2019</u>
Property taxes	\$ 926,947	\$ 852,318
Other government	611,262	3,807,963
User fees and other	1,033,536	981,267
Developer receivables	5,139	5,139
Employee receivables	7,606	6,333
	<u>\$ 2,584,490</u>	<u>\$ 5,653,020</u>

Note 5 - Accounts Payable and Accrued Liabilities

	<u>2020</u>	<u>2019</u>
General	\$ 1,784,974	\$ 1,462,671
Other governments	469,554	204,763
Salaries and wages	147,687	273,802
Contractor holdbacks	1,952,085	1,507,649
Accrued interest	107,684	111,666
	<u>\$ 4,461,984</u>	<u>\$ 3,560,551</u>

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 6 - Post-Employment Benefits

The Town provides compensated absences to its employees to a maximum of 120 days. The Town also allows employees to defer unused vacation without any maximum. Any deferred vacation time remaining at retirement or termination is paid out at that time. The amount recorded for these benefits is based on an actuarial evaluation done by an independent firm using a projected benefit actuarial valuation method prorated on services. The last actuarial valuation was calculated at August 31, 2017 and has been extrapolated to December 31, 2020. The change in the liability in the financial statements in respect of obligations under the plan amounts to \$56,100 (\$30,000 - 2019).

The accrued post-employment benefits are as follows:

	<u>2020</u>	<u>2019</u>
Balance, beginning of year	\$ 262,400	\$ 232,400
Current service costs	31,300	29,600
Benefits paid	(48,700)	(17,600)
Actuarial loss	74,100	18,000
Past service credit	-	-
	<u> </u>	<u> </u>
Balance, end of year	<u>\$ 319,100</u>	<u>\$ 262,400</u>

The significant actuarial assumptions adopted in measuring the Town's post-employment benefits are as follows:

	<u>2020</u>	<u>2019</u>
Discount Rate	2.00%	2.70%
Expected Inflation Rate and Wage & Salary Increases	2.50%	2.50%

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 7 - Deferred Revenue

	<u>2020</u>	<u>2019</u>
Licence fees & charges	\$ 20,053	\$ 21,401
Rental payments	12,441	12,441
Property tax prepayments	570,269	441,645
Subdivisions prepayments	107,215	80,515
Recreation prepayments	30,070	30,169
Utilities prepayments	22,175	14,125
Government grant prepayments	731,332	-
Other	1,347	11,182
	<u>\$ 1,494,902</u>	<u>\$ 611,478</u>

Note 8 - Refundable Deposits and Other

	<u>2020</u>	<u>2019</u>
Developer performance deposits	\$ 841,422	\$ 373,978
Damage deposits	299,500	279,000
Other	225,282	166,789
	<u>\$ 1,366,204</u>	<u>\$ 819,767</u>

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 9 - Restricted Reserves

There are two reserves, LRC Capital and B&G Capital for the replacement of specific building components located at 630 2nd Avenue and 220 High Street.

<u>Description</u>	<u>Balance Dec. 31, 2019</u>	<u>Interest</u>	<u>Contributions</u>	<u>Expenditures</u>	<u>Balance Dec. 31, 2020</u>
Parking	\$ 107,230	\$ 1,418	\$ -	\$ -	\$ 108,648
Green Streets	1,518	20	-	-	1,538
Amphitheatre	9,862	132	500	-	10,494
B&G - Capital	50,173	692	5,064	-	55,929
LRCA/Seniors - Capital	305,697	846	2,480	-	309,022
TOTAL	\$ 474,480	\$ 3,108	\$ 8,044	\$ -	\$ 485,631

Note 10 - Development Cost Charges Reserve

Restricted reserves include Development Cost Charges (DCC's) which are charged to developers and utilized for infrastructure development.

<u>Description</u>	<u>Balance Dec. 31, 2019</u>	<u>Interest</u>	<u>Contributions</u>	<u>Expenditures</u>	<u>Balance Dec. 31, 2020</u>
DCC - Water	\$ 840,809	\$ 11,034	\$ 140,558	\$ (78,447)	\$ 913,954
DCC - Parks	861,816	12,054	148,871	-	1,022,740
DCC - Roads	850,116	12,199	204,955	-	1,067,270
DCC - Sewer	755,882	11,430	274,672	-	1,041,983
DCC - Storm	405,765	5,454	15,392	-	426,611
TOTAL	\$ 3,714,388	\$ 52,170	\$ 784,447	\$ (78,447)	\$ 4,472,558

Developers may be entitled to DCC credits in certain circumstances. There was \$41,867 provided in DCC-Water credits, \$1,358 in DCC-Parks credits, \$15,398 in DCC-Roads credits, \$2,018 in DCC-Sewer credits and \$1,450 in DCC-Storm credits (\$0 - 2019).

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 11 - Federal Gas Tax Reserve

Gas Tax funding is provided by the Government of Canada. The use of the funding is established by a funding agreement between the Town and the Union of British Columbia Municipalities. Gas Tax funding may be used towards designated public transit, community energy, water, wastewater, solid waste and capacity building projects, as specified in the funding agreements. A one-time payment of \$405,121 was received in 2019 (\$0 - 2020). The funds are recorded on the consolidated financial statements as a restricted reserve.

	<u>2020</u>	<u>2019</u>
Opening balance of unspent funds	\$ 1,474,035	\$ 1,506,769
Add: Amounts received during the year	414,804	819,763
Interest earned	21,269	40,747
Less: Gas tax funds utilized	(303,100)	(893,245)
	<u> </u>	<u> </u>
Closing balance of unspent funds	<u>\$ 1,607,008</u>	<u>\$ 1,474,035</u>

Note 12 - Obligations under Equipment Financing

The total equipment financing outstanding with the Municipal Finance Authority of British Columbia as at December 31, 2020 was \$857,420 (\$915,645 - 2019).

The Town has entered into equipment loans for the following purchases:

- 1) A five year equipment loan agreement with the Municipal Finance Authority of British Columbia which commenced May 2017 for the purchase of a 2012 Spartan fire truck. This was formerly a capital lease. The remaining obligation will be repaid with monthly loan payments in the amount of \$3,291 including interest at a monthly varying rate (December, 2020 was 1.2%). The balance of the loan at December 31, 2020, which is included in equipment financing, is \$219,594 (\$254,960 - 2019). Loan to expire May 2022.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 12 - Obligations under Equipment Financing (continued)

2) A five year equipment loan agreement with the Municipal Finance Authority of British Columbia which commenced September 2018 for the purchase of a 2018 Spartan fire truck. The remaining obligation will be repaid with monthly loan payments in the amount of \$2,835 including interest at a monthly varying rate (December, 2020 was 1.2%). The balance of the loan at December 31, 2020, which is included in equipment financing, is \$637,825 (\$660,685 - 2019). Loan to expire September 2023.

There are two equipment loans payable to the Municipal Finance Authority. The future minimum loan payments under the equipment loan obligation are as follows:

2021	\$ 65,652
2022	44,112
2023	187,703
2024	559,953

Interest in the consolidated statement of operations is calculated as \$15,285 (\$23,829 - 2019).

The total equipment financing issued and outstanding with the MFA as at December 31, 2020 was \$857,420 (\$915,645 as at December 31, 2019). This balance is made up of:

	<u>Balance</u> <u>Dec. 31, 2019</u>	<u>Principal</u> <u>Payments</u>	<u>Balance</u> <u>Dec. 31, 2020</u>	<u>Interest</u>
Spartan Fire Truck	\$ 254,960	\$ 35,366	\$ 219,594	\$ 4,130
Pumper Truck	<u>660,685</u>	<u>22,860</u>	<u>637,826</u>	<u>11,155</u>
	<u>\$ 915,645</u>	<u>\$ 58,226</u>	<u>\$ 857,420</u>	<u>\$ 15,285</u>

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 13 – Short-term Financing

The total short-term financing outstanding with the Municipal Finance Authority of British Columbia as at December 31, 2020 was \$952,700 (\$952,700 – 2019). The Town entered into a short-term financing agreement which commenced September 2018 to borrow up to \$1,000,000 to purchase 1260 Churchill Place. As of December 31, 2020 \$952,700 in short-term financing was executed. Interest is charged at a daily varying rate (December 31, 2020 was 1.21). The full amount borrowed must be repaid by 2023.

Short-term interest in the consolidated statement of operations is calculated at \$15,627 (\$23,824 – 2019).

Note 14 - Debenture Debt

The Town of Ladysmith secures its long-term borrowing through the Municipal Finance Authority of BC (MFA). As a condition of each borrowing, a portion of the debenture proceeds is retained by the MFA as a debt reserve fund. As at December 31, 2020, the cash balance of the Town's debt reserve funds was \$228,114 (\$223,515 – 2019). Debt reserve funds are not recorded elsewhere in the financial statements.

The total long-term debt issued and outstanding with the MFA as at December 31, 2020 was \$16,156,313 (\$16,962,428 as at December 31, 2019). This balance is made up of:

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 14 - Debenture Debt (continued)

	Original Amount	Balance Dec 31, 2019	Principal Payments	Balance Dec 31, 2020	Interest	Actuarial Adjustment	Interest Rate
<u>General Capital Fund</u>							
RCMP Building Issue #97 Term 2006-2031	\$ 2,750,000	\$ 1,652,082	\$ 109,950	\$ 1,542,132	\$ 48,125	\$ (43,916)	1.75%
<u>Water Capital Fund</u>							
Water Improvements Issue #118 Term 2012-2037	1,000,000	810,346	31,598	778,748	34,000	(7,586)	3.40%
Water Filtration Plant Issue #147 Term 2019-2044	6,000,000	6,000,000	164,567	5,835,433	159,600	-	2.66%
<u>Sewer Capital Fund</u>							
Sewer Treatment Plant Issue #138 Term 2016-2036	10,000,000	8,500,000	500,000	8,000,000	164,455	-	1.88%
	<u>\$ 19,750,000</u>	<u>\$ 16,962,428</u>	<u>\$ 806,115</u>	<u>\$ 16,156,313</u>	<u>\$ 406,180</u>	<u>\$ (51,502)</u>	

The following principal payments are payable over the next five years:

	General		Water		Sewer		Total
	Principal Repayment	Actuarial Sinking Fund Earnings	Principal Repayment	Actuarial Sinking Fund Earnings	Principal Repayment	Actuarial Sinking Fund Earnings	Net
2021	\$ 66,033	48,315	\$ 188,579	13,787	\$ 500,000	-	\$ 816,714
2022	66,033	52,889	188,579	20,187	500,000	-	827,687
2023	66,033	57,645	188,579	26,791	500,000	-	839,049
2024	66,033	62,593	188,579	33,608	500,000	-	850,813
2025	66,033	67,738	188,579	40,643	500,000	-	862,993
Thereafter	396,197	526,590	3,414,921	2,121,348	5,500,000	-	11,959,057

Debt interest, net of actuarial adjustment included in the consolidated statement of operations, is calculated at \$354,678 (\$339,425 - 2019).

On February 18, 2020, the electors approved an additional \$6 million dollars in long-term debt to increase the Town's water supply. This new debt has not been executed.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 15 - Commitments and Contingencies

(a) Contingent Liabilities

- i) The Town, as a member of the Cowichan Valley Regional District, is jointly and severally liable for operational deficits or long term debt related to functions in which it participates.
- ii) The loan agreements with the Municipal Finance Authority provide that if the Authority does not have sufficient funds to meet payments on its obligations it shall make payments from the Debt Reserve Fund which in turn is established by a similar Debt Reserve Fund in the Town and all other borrowing participants. If the Debt Reserve Fund is deficient the Authority's obligations become a liability of the regional district and may become a liability of the participating municipalities.
- iii) There were various claims made against the Town as at December 31, 2020 for incidents that arose in the ordinary course of operations. In the opinion of management and legal counsel, the outcomes of the lawsuits, now pending, are not determinable. As the outcomes are not determinable at this time, no amount has been accrued in the financial statements. Should any loss result from the resolution of these claims, such loss will be charged to operations in the year of resolution.

(b) Pension Liability

The Town and its employees contribute to the Municipal Pension Plan (a jointly trustee pension plan). The board of trustees, representing plan members and employers, is responsible for administering the plan, including investment of assets and administration of benefits. The plan is a multi-employer defined benefit pension plan. Basic pension benefits are based on a formula. As at December 31, 2019, the plan has about 213,000 active members and approximately 106,000 retired members. Active members include approximately 41,000 contributors from local governments.

Every three years, an actuarial valuation is performed to assess the financial position of the plan and adequacy of plan funding. The actuary determines an appropriate combined employer and member contribution rate to fund the plan. The actuary's calculated contribution rate is based on the entry-age normal cost method, which produces the long-term rate of member and employer contributions sufficient to provide benefits for average future entrants to the plan. This rate may be adjusted for the amortization of any actuarial funding surplus and will be adjusted for the amortization of any unfunded actuarial liability.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 15 - Commitments and Contingencies – (b) Pension Liability (continued)

The most recent valuation for the Municipal Pension Plan as of December 31, 2018, indicated a \$2.866 billion funding surplus for basic pension benefits on a going concern basis.

The Town of Ladysmith paid \$499,569 (2019 - \$483,383) for employer contributions to the Plan in fiscal 2020.

The next valuation will be as at December 31, 2021, with results available in 2022.

Employers participating in the plan record their pension expense as the amount of employer contributions made during the fiscal year (defined contribution pension plan accounting). This is because the plan records accrued liabilities and accrued assets for the plan in aggregate, resulting in no consistent and reliable basis for allocating the obligation, assets and cost to individual employers participating in the plan.

(c) Reciprocal Insurance Exchange Agreement

The Town is a subscribed member of the Municipal Insurance Association of British Columbia (The "Exchange") as provided by Section 3.02 of the Insurance Act of the Province of British Columbia. The main purpose of the Exchange is to pool the risks of liability so as to lessen the impact upon any subscriber. Under the Reciprocal Insurance Exchange Agreement the Town is assessed a premium and specific deductible for its claims based on population. The obligation of the Town with respect to the Exchange and/or contracts and obligations entered into by the Exchange on behalf of its subscribers in connection with the Exchange are in every case several, and not joint and several. The Town irrevocably and unconditionally undertakes and agrees to indemnify and save harmless the other subscribers against liability losses and costs which the other subscriber may suffer.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 15 - Commitments and Contingencies (continued)

(d) Service Agreements & Rental Payments

Rental payments under operating leases are expensed as incurred.

Service Agreements

	2020	2019
Ladysmith & District Historical Society	\$ 28,038	\$ 42,550
Ladysmith Resources Centre Association	42,978	42,137
Ladysmith Chamber of Commerce & Visitor Centre	60,400	43,400
	\$ 131,416	\$ 128,087

In 2017, the Town entered into a 5-year Service Agreement with the Ladysmith & District Historical Society (LDHS) for the occupancy, operation and management of the museum and archives. The Town provided a one-time additional payment of \$18,100 in 2019 (\$0 - 2020). The future payments are expected to be \$28,537 - 2021, and \$29,046 - 2022.

Also in 2017, the Town entered into a 5-year Service Agreement with the Ladysmith Resources Centre Association (LRCA). The future payment is expected to be \$43,838 - 2021.

The Town provides the Ladysmith Chamber of Commerce & Visitor Centre annual funding to operate the visitor centre and provide support services for local businesses. The agreement is year-to-year. In July of 2020, the Town entered into 2-year pilot project with the Ladysmith Chamber of Commerce to promote economic development and tourism services. The annual payments are \$17,000 in 2020 and \$17,000 in 2021.

	2020	2019
132c Roberts Street - office space	\$ 28,598	\$ 27,998
17 & 25 Roberts Street - parking lot	8,700	8,400
	\$ 37,298	\$ 36,398

The Town entered into a 3-year lease with Ivory Tower Investments Ltd for the use of office space at 132c Roberts Street. The future monthly payments are \$2,506 for 2021 and 2022.

In 2017, the Town entered into a 3-year lease agreement with Paul Jorjorian for the rental of the 17 & 25 Roberts Street Parking Lot. The future monthly payment is \$775 for 2021, \$800 for 2022, and \$825 for 2023.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 16 - Significant Taxpayers

The Town is reliant upon 10 taxpayers for approximately 11.91% (12.88% - 2019) of the total property tax revenue which includes Western Forest Products at approximately 6.50% (6.72% - 2019) of the total property tax revenue.

Note 17 - Funds Held in Trust

These funds account for assets which must be administered as directed by agreement or statute for certain beneficiaries; in particular, these funds are for the Cemetery Trust Fund. In accordance with PSAB recommendations on financial statement presentation, trust funds are not included in the Town's Financial Statements. A summary of trust fund activities by the Town is as follows:

	<u>2020</u>	<u>2019</u>
Assets		
Cash and short term investment	<u>\$ 164,942</u>	<u>\$ 161,557</u>
Equity		
Opening balance	\$ 161,557	\$ 159,737
Interest	2,153	4,065
Transfer interest to fund cemetery costs	(2,153)	(4,065)
Contributions	3,385	1,820
Refunds	<u>-</u>	<u>-</u>
Balance, end of year	<u>\$ 164,942</u>	<u>\$ 161,557</u>

Note 18 - Comparative Figures

Certain comparative figures have been reclassified to conform to the current year's presentation.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 19 - Accumulated Surplus

The Town segregates its accumulated surplus in the following categories:

	<u>2020</u>	<u>2019</u>
Appropriated Equity <i>(Note 26)</i>		
Continuing projects	\$ 3,482,640	\$ 4,098,375
General fund	5,545,769	5,096,526
Water fund	2,665,835	3,022,446
Sewer fund	943,580	934,395
	<u>12,637,824</u>	<u>13,151,741</u>
Unappropriated Equity		
General fund	1,753,516	1,619,889
Water fund	616,151	616,151
Sewer fund	1,412,450	1,874,945
General capital fund	254,812	233,910
Sewer capital fund	14,943	14,942
Water capital fund	446,073	446,073
	<u>4,497,945</u>	<u>4,805,911</u>
Reserve Funds		
Reserve funds <i>(Note 26)</i>	<u>3,864,577</u>	<u>1,591,351</u>
Equity in Tangible Capital Assets	<u>96,025,150</u>	<u>91,775,023</u>
Total Accumulated Surplus	<u><u>\$ 117,025,497</u></u>	<u><u>\$ 111,324,025</u></u>

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 20 - Annual Budget

Fiscal plan amounts represent the Financial Plan Bylaw adopted by Council on May 5th, 2020.

The Financial Plan anticipated the use of surpluses accumulated in previous years to balance against current year expenses in excess of current year revenues. In addition, the Financial Plan anticipated capital expenses rather than amortization expense.

The following shows how these amounts were combined:

Financial Plan Balance for the year	\$	-
Add back:		
Amortization		(3,436,284)
Proceeds from new debt		(7,430,000)
Transfers to/from own funds		(5,609,964)
Less:		
Principal payments on debt		987,767
Capital expenditures per budget		42,391,743
Capital Expenditures expensed according to Tangible Capital Asset Policy		(9,129,547)
Adjusted Annual Surplus	\$	17,773,715

Note 21 - DL 2016 Holdings Corporation (“DL 2016”)

The Town of Ladysmith has an investment in DL 2016 Holdings Corporation, a wholly owned subsidiary company of the Town.

The Town of Ladysmith leases portions of its waterfront from the Province of British Columbia parts of which are subleased to DL 2016 for use as a marina.

DL 2016 has entered into operation and maintenance agreement and a license agreement with the Ladysmith Maritime Society (LMS) for the operation and management of the lease area. A portion of the moorage revenues from LMS are owed to DL 2016.

Pursuant to these agreements DL 2016 could provide security for debt financing in order for LMS to implement capital improvements to the lease area.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 22 – Taxation

Taxation revenue comprises the following amounts less transfer to other governments:

	<u>Actuals 2020</u>	<u>Actuals 2019</u>
Taxes Collected:		
General municipal purposes	\$ 8,720,390	\$ 8,450,342
Grants in lieu and 1% utility tax	173,002	172,097
Water and sewer parcel tax	3,069,391	2,977,916
School district	3,070,875	3,130,367
Regional hospital district	1,056,358	971,645
Regional district	1,583,873	1,480,883
BCAA and MFA	93,350	81,817
Library	429,596	414,149
	<u>\$ 18,196,835</u>	<u>\$ 17,679,217</u>
 Less transfer to other governments		
Province of BC (school taxes)	3,070,875	3,130,367
Cowichan Valley Regional Hospital District	1,056,358	971,645
Cowichan Valley Regional District	1,583,873	1,480,883
BC Assessment & Municipal Finance Authority	93,350	81,817
Vancouver Island Regional Library	429,596	414,149
	<u>6,234,052</u>	<u>6,078,861</u>
	 <u>\$ 11,962,782</u>	 <u>\$ 11,600,354</u>
Net taxation for municipal purposes		

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 23 - Sale of Services

	<u>Actuals 2020</u>	<u>Actuals 2019</u>
Administration recoveries	\$ 42,616	\$ 75,809
Cemetery services	22,705	21,580
Fire service agreements	85,475	88,504
Public Works recoveries	5,969	24,947
Recreation services	200,245	565,681
Sewer utility fees	1,615,628	1,466,705
Solid waste fees	674,628	664,979
Water utility fees	1,367,447	1,067,908
	<u>\$ 4,014,713</u>	<u>\$ 3,976,114</u>

Note 24 - Licences, Permits, Rentals & Penalties

	<u>Actuals 2020</u>	<u>Actuals 2019</u>
Facility Rentals & Leases	\$ 280,352	\$ 470,925
Fines	2,440	3,990
Licences	86,825	89,586
Penalties and interest	129,142	124,404
Permits, Licences & Fees	411,823	329,247
	<u>\$ 910,582</u>	<u>\$ 1,018,152</u>

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 25 – Grants

	<u>Actuals 2020</u>	<u>Budget 2020</u>	<u>Actuals 2019</u>
Operating Grants			
Traffic Fines Revenue	\$ 60,081	\$ 55,613	\$ 55,613
Small Communities	459,947	463,119	463,119
CVRD Recreation	165,361	166,145	150,818
COVID Restart Plan	2,343,000	-	-
Other	48,857	16,900	34,882
	<u>3,077,246</u>	<u>701,777</u>	<u>704,432</u>
Capital Grants			
Arts & Heritage Hub (Phase I)	\$ -	\$ 3,834,370	\$ -
Childcare Space Creation	-	875,110	-
Downtown Patio	13,490	-	-
Downtown Public Washroom	-	109,500	-
Emergency Support Service Program	17,437	-	-
Golf Course Trail & Net	3,516	-	3,386
ICBC Sign Reflectors	18,350	18,350	-
Machine Shop	974,534	978,209	742,051
Poverty Reduction	17,075	-	-
Stocking Lake Dam Repair	-	175,000	-
Tree Replacements	2,700	4,800	4,000
UV Pilot Study	147,766	10,000	-
Water Filtration Plant	-	-	5,388,626
Water Supply Infrastructure	-	16,910,000	-
Waterfront Stage 1 Remediation	129,097	-	-
Youth Communication Plan	-	5,000	-
	<u>1,323,965</u>	<u>22,920,339</u>	<u>6,138,063</u>
Total Grants	<u>\$ 4,401,211</u>	<u>\$ 23,622,116</u>	<u>\$ 6,842,495</u>

These notes form an integral part of these consolidated financial statements.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 26 – Reserves & Appropriated Equity

	Balance Dec. 31, 2019	Interest Allocated	Contributions	Funding	Balance Dec. 31, 2020
RESERVES					
Amenity Funds	\$ 99,470	\$ 1,381	\$ 16,000	\$ -	\$ 116,852
Covid Safe Restart	-	-	2,343,000	116,524	2,226,476
Municipal Office reserve	415,000	-	60,000	-	475,000
Perpetual Safety Fund	13,552	181	-	-	13,733
Sale Real Property	1,036,094	13,524	-	44,699	1,004,919
Tax Sale	27,234	364	-	-	27,598
TOTAL RESERVES	\$ 1,591,351	\$ 15,449	\$ 2,419,000	\$ 161,223	\$ 3,864,577
APPROPRIATED EQUITY					
General Operating Fund					
Continuing Projects	1,268,089	-	2,081,879	1,268,089	2,081,879
Future Projects	3,056,176	-	553,224	424,477	3,184,922
Equipment	869,665	-	271,935	306,219	835,382
Land & Building	218,284	-	214,139	1,935	430,487
Tax Contingency	7,986	-	-	-	7,986
Snow & Ice Removal	50,000	-	-	-	50,000
Infrastructure Deficit	411,890	-	236,525	236,266	412,150
Solid Waste	482,525	-	142,316	-	624,841
	<u>6,364,614</u>	<u>-</u>	<u>3,500,018</u>	<u>2,236,985</u>	<u>7,627,646</u>
Water Operating Fund					
Continuing Projects	2,533,515	-	1,058,070	2,533,515	1,058,070
Future Projects	2,498,371	-	339,428	696,039	2,141,760
MFA Surplus Refunds	524,076	-	-	-	524,076
Water Operating Fund Total	<u>5,555,961</u>	<u>-</u>	<u>1,397,498</u>	<u>3,229,554</u>	<u>3,723,906</u>
Sewer Operating Fund					
Continuing Projects	296,771	-	342,691	296,771	342,691
Future Projects	934,395	-	74,186	65,000	943,581
Sewer Operating Fund	<u>1,231,166</u>	<u>-</u>	<u>416,877</u>	<u>361,771</u>	<u>1,286,272</u>
TOTAL APPROPRIATED EQUITY	\$ 13,151,741	\$ -	\$ 5,314,393	\$ 5,828,310	\$ 12,637,824
TOTAL RESERVES & APPROPRIATED EQUITY	\$ 14,743,092	\$ 15,449	\$ 7,733,393	\$ 5,989,533	\$ 16,502,401

These notes form an integral part of these consolidated financial statements.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 27 - Segmented Information

The Town is a diversified municipal government institution that provides a wide range of services to its citizens such as roads, water, sewer and drainage infrastructure, fire protection, police protection (RCMP), cemetery, recreation centre, garbage collection and parkland. Distinguishable functional segments have been separately disclosed in the segmented information. The nature of the segments and the activities they encompass are as follows:

General Government Services

The City Manager is the liaison between Council and the Town departments and staff. The Corporate Services Department supports the legislated activities of Council, and provides information to citizens with respect to Council/Committee processes, reporting procedures and decisions, and Town activities. Also included in General Government Services is the Finance Department, Information Technology, Human Resources, and Waterfront Area Plan Implementation.

Protective Services

Protection is comprised of fire protection, policing, and bylaw enforcement:

- Bylaw enforcement administers, monitors, and seeks compliance with the bylaws enacted by the Mayor and Council to regulate the conduct of affairs in the Town of Ladysmith.
- Fire protection is provided by the fire department, whose volunteer members receive compensation for each callout in which they take part.
- Policing is provided under contract with the RCMP operating from a detachment building located in and owned by the Town of Ladysmith.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 27 - Segmented Information (continued)

Transportation, Solid Waste and Cemetery

The Transportation (Public Works) Department is responsible for the infrastructure of the Town. Public works provides and maintains Town's roads, sidewalks, street lights, signage and line markings, storm drainage and hydrants.

Solid Waste (Public Works) is responsible for the garbage collection, kitchen organics and recycling programs operating in the Town of Ladysmith. Solid waste collection is performed by a contractor.

Cemetery (Public Works) Department provides cemetery services including the maintenance of the cemetery grounds.

Development

The Development Services Department provides short-term and long-term land use planning services. Long-term Planning includes work with the community on reviewing the Town's Official Community Plan, developing new Neighbourhood Plans, the Trail Plan and the review of relevant bylaws. Short term Planning includes the processing of development applications.

The Town of Ladysmith's Development Services and Public Works Departments work together to regulate all construction within the Town. This is achieved through the use of the Town of Ladysmith's Building and Plumbing Bylaw, the British Columbia Building Code, the British Columbia Fire Code and other related bylaws and enactments with the Town of Ladysmith.

Recreation and Culture

The Parks, Recreation and Culture Department contribute to the quality of life and personal wellness of the community through the provision of a variety of special events, programs, services and facilities. The Frank Jameson Community Centre is the location where the majority of the programs are offered.

Parks

Parks includes and provides maintenance of beach area, trails, golf course, spray-park, ball parks, and any other civic grounds.

TOWN OF LADYSMITH
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2020

Note 27 - Segmented Information (continued)

Water

Water includes all of the operating activities related to the treatment and distribution of water throughout the Town as well as ensuring clean and safe water to the Town, supplied through underground pipes and reservoirs,

Sewer

Sewer includes all of the operating activities related to the collection and treatment of waste water (sewage) and bio-solids composting throughout the Town as well as maintaining a separate system of underground pipes to collect sewer or waste water for proper treatment prior to discharging it.

Note 28 – Significant events

- (a) In March 2020, there was a global outbreak of COVID-19 (coronavirus), which has had a significant impact on municipalities through the restrictions put in place by the Canadian, provincial and municipal governments regarding travel, municipal operations and isolation/quarantine orders. At this time, it is unknown the extent of the impact the COVID-19 outbreak may have on the Town of Ladysmith as this will depend on future developments that are highly uncertain and that cannot be predicted with confidence. These uncertainties arise from the inability to predict the ultimate geographic spread of the disease, and the duration of the outbreak, including the duration of travel restrictions, office closures and disruptions, and quarantine/isolation measures that are currently, or may be put, in place by Canada and other countries to fight the virus.

TOWN OF LADYSMITH
STATEMENT OF OPERATIONS BY SEGMENT
FOR THE YEAR ENDED DECEMBER 31, 2020

SCHEDULE I

	General Government		Protective Services		Transportation, Garbage & Cemetery Services		Development Services	
	2020	2019	2020	2019	2020	2019	2020	2019
REVENUE								
Tax	\$ 8,893,392	\$ 8,622,439	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sale of services	42,617	75,809	86,150	93,554	699,326	685,985	-	-
Investment income & MFA Refunds	279,681	528,984	-	-	-	-	-	-
Licence, Permits, Rentals & Penalties	89,199	88,413	163,206	186,137	159,479	129,362	312,732	259,422
Grants	2,802,947	463,119	60,081	55,613	31,840	2,630	129,097	-
Donations & contributed property	16,000	-	7,035	200	1,576,383	1,476,165	-	-
Loss on foreign exchange	(2,531)	(15,931)	-	-	-	-	-	-
Gain (loss) on disposal	(27,727)	(47,138)	-	-	16,845	50,552	-	-
Development fees	-	-	-	-	-	67,000	-	-
Gas tax fund utilized	-	-	-	-	46,035	870,028	-	-
Total revenue	12,093,578	9,715,695	316,472	335,504	2,529,909	3,281,723	441,829	259,422
EXPENSES								
Contracted Services	368,567	507,875	1,264,658	747,895	644,247	682,000	67,035	62,575
Service Agreements/Grants In Aid	172,972	185,263	-	-	-	-	-	-
Insurance	62,286	56,798	19,487	25,302	-	-	-	-
Interest	15,627	23,824	19,547	32,185	-	-	-	-
Materials & Supplies	60,876	51,052	99,255	83,522	137,107	95,310	11,671	7,349
Utilities & Telephone	15,180	14,451	6,173	26,797	148,947	153,689	4,846	4,608
Wages & Benefits	1,705,469	1,735,904	304,106	302,391	930,328	916,015	515,810	475,630
Other	(205,483)	(33,525)	41,384	44,048	56,762	92,599	11,442	19,332
Amortization	243,919	238,370	180,884	180,881	921,674	867,385	4,128	4,128
Total expenses	2,439,412	2,780,011	1,935,494	1,443,022	2,839,066	2,806,999	614,932	573,622
Surplus (Deficit)	\$ 9,654,166	\$ 6,935,683	\$ (1,619,021)	\$ (1,107,518)	\$ (309,157)	\$ 474,724	\$ (173,103)	\$ (314,199)

TOWN OF LADYSMITH
STATEMENT OF OPERATIONS BY SEGMENT
FOR THE YEAR ENDED DECEMBER 31, 2020

SCHEDULE I – CONTINUED

Recreation & Culture Services		Parks Operations Services		Sewer Operations Services		Water Operations Services		Total Actual	Total Actual
2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
\$ -	\$ -	\$ -	\$ -	\$ 1,291,500	\$ 1,219,735	\$ 1,777,891	\$ 1,758,181	\$ 11,962,782	\$ 11,600,354
200,245	565,681	3,300	20,057	1,615,628	1,466,705	1,367,447	1,068,323	4,014,713	3,976,114
-	-	-	-	-	-	-	-	279,681	528,984
145,963	319,430	-	-	21,469	20,534	18,535	14,854	910,582	1,018,152
1,215,088	921,240	14,392	11,267	147,766	-	-	5,388,626	4,401,211	6,842,495
12,400	137,000	2,336	50	331,892	357,191	642,660	144,343	2,588,706	2,114,949
-	-	-	-	-	-	-	-	(2,531)	(15,931)
-	-	-	-	(2,276)	(105,889)	(25,489)	(2,429)	(38,647)	(104,904)
-	-	-	10,000	-	-	78,447	-	78,447	77,000
-	6,085	-	2,902	257,065	14,229	-	-	303,100	893,245
<u>1,573,696</u>	<u>1,949,436</u>	<u>20,028</u>	<u>44,276</u>	<u>3,663,044</u>	<u>2,972,504</u>	<u>3,859,490</u>	<u>8,371,898</u>	<u>24,498,044</u>	<u>26,930,458</u>
512,660	365,151	33,627	182,667	1,187,875	226,401	702,925	235,867	4,781,593	3,010,431
-	-	-	-	-	-	-	-	172,972	185,263
55,811	46,852	4,580	4,304	40,911	39,425	16,902	11,220	199,977	183,901
-	28	-	-	164,455	173,823	186,257	143,780	385,884	373,639
136,299	132,637	108,225	120,573	325,106	175,014	294,131	139,235	1,172,671	804,693
186,034	206,542	10,323	7,612	167,284	153,428	72,965	14,755	611,751	581,882
1,734,056	1,869,742	444,552	459,391	620,944	540,003	862,922	618,386	7,118,186	6,917,463
39,788	41,547	106,515	83,809	189,709	217,479	240,497	215,089	480,614	680,377
238,788	235,038	250,607	235,611	1,346,169	1,328,429	686,754	400,075	3,872,923	3,489,917
<u>2,903,436</u>	<u>2,897,536</u>	<u>958,428</u>	<u>1,093,968</u>	<u>4,042,452</u>	<u>2,854,002</u>	<u>3,063,352</u>	<u>1,778,406</u>	<u>18,796,572</u>	<u>16,227,567</u>
<u>\$ (1,329,740)</u>	<u>\$ (948,101)</u>	<u>\$ (938,400)</u>	<u>\$ (1,049,691)</u>	<u>\$ (379,409)</u>	<u>\$ 118,502</u>	<u>\$ 796,138</u>	<u>\$ 6,593,492</u>	<u>\$ 5,701,472</u>	<u>\$ 10,702,891</u>

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF TANGIBLE CAPITAL ASSETS
FOR THE YEAR ENDED DECEMBER 31, 2020

SCHEDULE II

	<u>Land</u>		<u>Land Improvements</u>		<u>Buildings</u>		<u>Vehicle Furniture & Equipment</u>		<u>Transportation</u>
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>
COST									
Opening Balance	\$ 10,492,216	\$ 9,911,216	\$ 9,259,385	\$ 8,957,453	\$ 23,714,208	\$ 23,673,513	\$ 8,931,746	\$ 9,117,960	\$ 29,247,225
Add: Additions	26,365	581,000	299,683	316,082	2,054,162	148,941	791,818	195,898	1,066,059
Less: Disposals	-	-	26,000	14,150	27,290	108,246	385,912	382,112	-
Less: Write-downs	-	-	-	-	-	-	-	-	-
Closing Balance	<u>10,518,581</u>	<u>10,492,216</u>	<u>9,533,068</u>	<u>9,259,385</u>	<u>25,741,080</u>	<u>23,714,208</u>	<u>9,337,652</u>	<u>8,931,746</u>	<u>30,313,284</u>
ACCUMULATED AMORTIZATION									
Opening Balance	-	-	3,708,963	3,467,017	7,387,229	6,722,614	4,679,079	4,503,637	16,591,401
Add: Amortization	-	-	263,537	253,398	695,912	667,338	538,593	513,123	653,211
Less: Write-downs	-	-	-	-	-	-	-	-	-
Less: Disposals	-	-	4,511	11,452	12,301	2,723	369,174	337,681	-
Closing Balance	<u>-</u>	<u>-</u>	<u>3,967,989</u>	<u>3,708,963</u>	<u>8,070,840</u>	<u>7,387,229</u>	<u>4,848,498</u>	<u>4,679,079</u>	<u>17,244,612</u>
Net Book Value	<u>\$ 10,518,581</u>	<u>\$ 10,492,216</u>	<u>\$ 5,565,079</u>	<u>\$ 5,550,422</u>	<u>\$ 17,670,240</u>	<u>\$ 16,326,979</u>	<u>\$ 4,489,154</u>	<u>\$ 4,252,667</u>	<u>\$ 13,068,672</u>

TOWN OF LADYSMITH
CONSOLIDATED STATEMENT OF TANGIBLE CAPITAL ASSETS
FOR THE YEAR ENDED DECEMBER 31, 2020

SCHEDULE II (CONTINUED)

Linear Infrastructure											
Transportation	Sanitary Sewer		Storm		Water		Assets Under Construction		Total		
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	
\$ 27,091,211	\$ 36,292,304	\$ 35,946,824	\$ 9,262,196	\$ 8,708,158	\$ 17,835,367	\$ 16,937,080	\$ 16,116,516	\$ 4,786,319	\$ 161,151,162	\$ 145,129,734	
2,175,360	1,344,687	347,413	743,208	554,482	16,060,473	909,647	948,447	11,735,065	23,334,902	16,963,887	
19,346	213,885	1,933	-	444	142,297	11,360	16,020,696	404,868	16,816,080	942,459	
-	-	-	-	-	-	-	-	-	-	-	
<u>29,247,225</u>	<u>37,423,106</u>	<u>36,292,304</u>	<u>10,005,404</u>	<u>9,262,196</u>	<u>33,753,543</u>	<u>17,835,367</u>	<u>1,044,267</u>	<u>16,116,516</u>	<u>167,669,984</u>	<u>161,151,162</u>	
15,984,274	9,801,838	8,811,591	2,553,569	2,430,628	5,823,296	5,517,832	-	-	50,545,375	47,437,593	
626,464	1,000,640	991,814	134,346	123,385	586,684	314,395	-	-	3,872,923	3,489,917	
-	-	-	-	-	-	-	-	-	-	-	
19,337	211,609	1,567	-	444	142,297	8,931	-	-	739,892	382,135	
<u>16,591,401</u>	<u>10,590,869</u>	<u>9,801,838</u>	<u>2,687,915</u>	<u>2,553,569</u>	<u>6,267,683</u>	<u>5,823,296</u>	<u>-</u>	<u>-</u>	<u>53,678,406</u>	<u>50,545,375</u>	
<u>\$ 12,655,824</u>	<u>\$ 26,832,237</u>	<u>\$ 26,490,466</u>	<u>\$ 7,317,489</u>	<u>\$ 6,708,627</u>	<u>\$ 27,485,860</u>	<u>\$ 12,012,071</u>	<u>\$ 1,044,267</u>	<u>\$ 16,116,516</u>	<u>\$ 113,991,578</u>	<u>\$ 110,605,787</u>	

STAFF REPORT TO COUNCIL

Report Prepared By: Infrastructure Services
Reviewed By: Geoff Goodall, Director of Infrastructure Services
Meeting Date: June 15, 2021
File No:
Re: **Subdivision Land Agreement – Drakensburg Development Corporation – Thetis Drive Subdivision**

RECOMMENDATION:

That Council authorize the Mayor and the Corporate Officer to sign the Land Transfer Agreement between the Town and Drakensburg Development Corporation for the transfer of lands associated with the 11 lot subdivision on Thetis Drive.

EXECUTIVE SUMMARY:

Drakensburg Development Corporation is completing a subdivision of 11 lots on Thetis Drive. Section 510 of the *Local Government Act* allows land to be taken for park dedication up to 5% of the total area of Lots 1 through 11. Additional lands beyond the 5% are being given in this subdivision and the lands are encumbered with rights-of-way for hydro and gas, both of which do not permit park dedication. Therefore the lands are being given to the Town as fee simple utilizing a Land Transfer Agreement (Attachment A).

PREVIOUS COUNCIL DIRECTION:

N/A

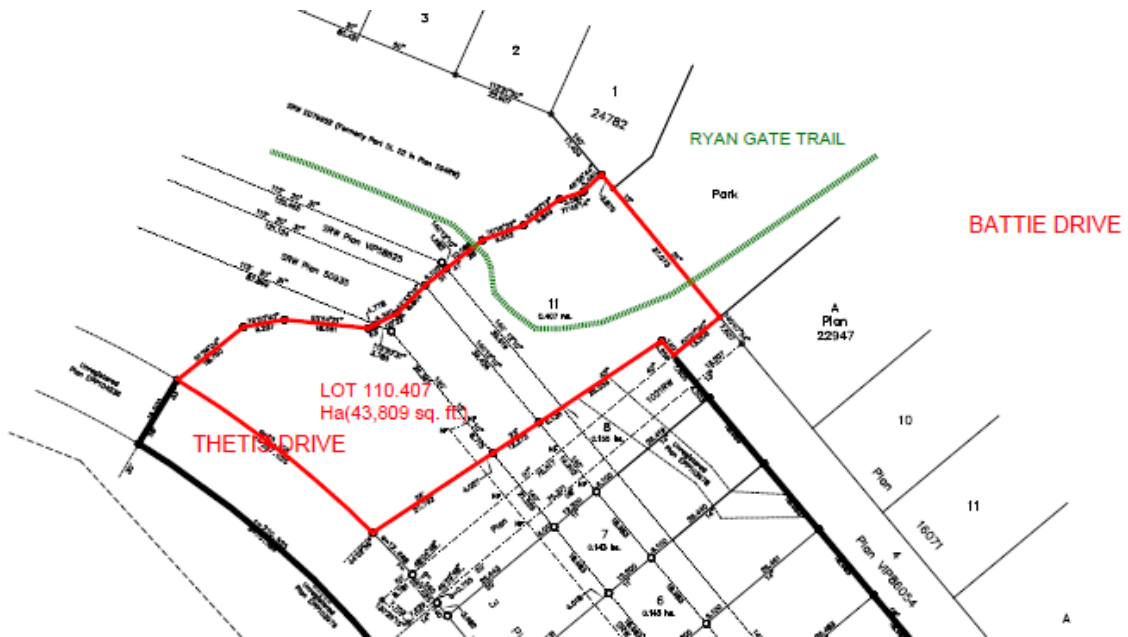
INTRODUCTION/BACKGROUND:

Section 510 of the *Local Government Act* allows the Approving Officer to take up to 5% of the total area being subdivided for park dedication. Normally as part of subdivision, park dedication would be completed concurrently with the subdivision.

Drakensburg Development Corporation is completing a subdivision of 11 lots on Thetis Drive. As part of the Preliminary Layout Approval (PLA) preparation, the Approving Officer consulted with the Director of Parks, Recreation & Culture to determine suitable park dedication. The land identified was recommended and was included as a requirement in the PLA. The land being given for park exceeds the 5% requirement as much of it is riparian, in addition there are both hydro and gas rights-of-way over the property. Hydro and gas will not agree to have the lands dedicated as park, likely due to concerns that may come from conflicts with their rights-of-way and park use. Although free simple land comes with less protection than park dedicated lands, staff feel the riparian aspects of the land limits its future use to those consistent with

park/natural lands.

To facilitate the transfer of the fee simple lands, staff have had a Land Transfer Agreement prepared by our lawyer that must be executed by the Mayor and Corporate Officer.



ALTERNATIVES:

Council can choose to:

1. Not accept the land transfer agreement and request that staff seek an alternative solution.

FINANCIAL IMPLICATIONS:

N/A

LEGAL IMPLICATIONS:

Staff have worked with a lawyer to develop the agreement.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

N/A

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

N/A

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |

Not Applicable

ALIGNMENT WITH STRATEGIC PRIORITIES:

Infrastructure

Economy

Community

Not Applicable

Waterfront

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

A. Land Transfer Agreement

ATTACHMENT A

LAND TRANSFER AGREEMENT

THIS AGREEMENT dated for reference this day of , 2021.

BETWEEN:

DRAKENSBURG DEVELOPMENT CORPORATION (Inc. No. BC0946055)
852 Fort Street
Victoria, B.C. V8W 1H8
("Drakensburg")

OF THE FIRST PART

AND:

TOWN OF LADYSMITH
410 Esplanade, PO Box 220
Ladysmith, British Columbia
V9G 1A2
(the "Town")

OF THE SECOND PART

WHEREAS:

A. Drakensburg is the owner in fee simple of lands located in the Town of Ladysmith legal described as:

PID: 027-765-199

Lot 3 District Lot 52 Oyster District Plan VIP86054

(the "**Parent Parcel**");

B. Drakensburg intends to subdivide the Parent Parcel through the deposit in the Land Title Registry of Subdivision Plan EPP90583, a copy of which is attached as Schedule "A" to this Agreement (the "**Subdivision Plan**");

C. Drakensburg has offered to transfer to the Town that part of the Parent Parcel identified as Lot 11 on the Subdivision Plan, (the "**Lands**") in satisfaction of Drakensburg's requirement to provide park land under section 510 of the Local Government Act, RSBC 2015 c.1 (the "**Local Government Act**");

D. Drakensburg wishes to voluntarily contribute any portion of the Lands that exceeds the five percent of Lots 1 to 11 on the Subdivision Plan that the Town can require under section 510 of the Local Government Act; and

- E. The Town wishes to accept Lot 11 as Drakensburg's requirement under section 510 of the Local Government Act, on the terms and conditions contained in this Agreement.

NOW THEREFORE in consideration of one dollar (\$1.00), the covenants and agreements contained in this Agreement, and other good and valuable consideration, the sufficiency of which is hereby affirmed, the parties agree as follows:

1.0 DEFINITIONS

- 1.1 In this Agreement the following terms shall have the following meanings:

"Agreement" means this Agreement, including its Recitals and Schedules.

"Contaminants" means any explosives, radioactive materials, asbestos materials, urea formaldehyde, chlorobiphenols, hydrocarbon contaminants, underground or above ground tanks, pollutants, contaminants, hazards, corrosive or toxic substances, special waste, hazardous waste or waste of any kind or any other substance the storage, manufacture, disposal, handling, treatment, generation, use, transport, remediation or release into the environment of which is prohibited, controlled, regulated or licensed under Environmental Laws.

"Environmental Laws" means any and all statutes, laws, regulations, orders, bylaws, standards, guidelines, protocols, criteria, permits, codes of practice, and other lawful requirements of any federal, provincial, municipal or other governmental authority having jurisdiction over the Lands, now or hereafter in force relating in any way to the environment, environmental assessment, health, occupational health and safety, protection of any form of plant or animal life, product liability, or transportation of dangerous goods, including the principles of common law and equity.

"Improvements" means all buildings, improvements, structures and fixtures attached to and forming part of the Lands.

"Material Loss" means any loss or damage to the Improvements occurring prior to the passing of risk which cannot be substantially repaired or replaced within sixty (60) days.

"Permitted Encumbrances" means all exceptions, reservations, legal notations, liens, charges, and encumbrances listed in attached Schedule "B".

"Property" means the Lands and Improvements.

2.0 TRANSFER OF THE PROPERTY

- 2.1 Drakensburg agrees to transfer the Property to the Town, on the terms and conditions contained in this Agreement, a good and marketable freehold title to the

Property, free and clear of all liens, charges and encumbrances, except for the Permitted Encumbrances.

- 2.2 The transfer described in section 2.1 shall occur on or before the date that is 10 Business Days after all required signatures for registration of the Subdivision have been obtained, provided that all such signatures are obtained on or before August 31, 2021 (the “**Transfer Date**”).
- 2.3 The transfer described in section 2.1 shall occur on an “all or nothing basis” and concurrently with registration of the Subdivision Plan, all charges required by the Town’s approving officer as a condition of subdivision, and the release of any financial charges against title to the Property (collectively the “**Registration Documents**”).
- 2.4 The Parties shall not make any adjustments with respect to utilities, or any other amount normally adjusted between the vendor and purchaser of real property.

3.0 REPRESENTATIONS AND WARRANTIES

3.1 Drakensburg's Representations and Warranties

Drakensburg represents and warrants to the Town that as of the date of this Agreement and as of the date of transfer of the Lands:

- (a) Drakensburg is not a non-resident of Canada within the meaning of the *Income Tax Act* (Canada);
- (b) Drakensburg is the registered and beneficial owner of the Property, and has good and marketable title to the Property free and clear of all liens, charges, and encumbrances except for the Permitted Encumbrances;
- (c) no lien under the *Builders Lien Act* exists or is claimed with respect to the Property nor any part of the Property;
- (d) there are no actions, proceedings, investigations or claims, pending or to Drakensburg’s knowledge threatened, that would interfere with the use and enjoyment of the Property or that if decided adversely could materially affect the ability of Drakensburg to comply with its obligations hereunder or that relate to the presence of Contaminants in, on or migrating from the Property;
- (e) Drakensburg has fully disclosed to the Town any environmental reports, site assessments, audits, studies, permits, licences and records in the possession or control of Drakensburg with respect to the Property and relating to the Contaminants or Environmental Laws and Drakensburg has not obtained or performed any environmental reports, site assessments, audits or other studies with respect to the Property except as disclosed in writing to the Town;

- (f) Drakensburg is a body corporate duly incorporated and validly existing under the laws of British Columbia and duly qualified to purchase and own the Property and Drakensburg has full power, authority and capacity to enter into this Agreement and carry out the transactions contemplated herein, and any action required to allow Drakensburg to carry out the transactions contemplated hereby have been duly and validly authorized by all necessary corporate proceedings.

3.2 Survival of Drakensburg's Representations and Warranties

The representations and warranties contained in section 3.1 shall survive the Transfer of the Property and shall continue in full force and effect for the benefit of the Town after the transfer notwithstanding any independent inquiry or investigation by the Town.

4.0 **CONDITIONS**

4.1 Town's Conditions Precedent

The transfer of the Property is subject to the following conditions precedent being in effect or satisfied within the time herein provided:

- (a) on or before August 31, 2021 approval of the Town's approving officer of the Subdivision Plan;
- (b) on or before August 31, 2021, registration of the Subdivision Plan in the Land Title Office; and
- (c) on or before August 31, 2021, approval of this Agreement by the council of the Town.

- 4.2 In consideration of Ten (\$10.00) Dollars non-refundable paid by the Town to Drakensburg and other good and valuable consideration, the receipt and sufficiency of which are acknowledged by Drakensburg, Drakensburg agrees not to revoke its acceptance of the terms of this Agreement while this Agreement remains subject to any of the conditions precedent in section 4.1. The parties agree that this Agreement will become an unconditional contract for the transfer of the Property upon the satisfaction or waiver of all of the conditions precedent in section 4.1.

4.3 Waiver

The conditions precedent contained in section 4.1 are necessary preconditions of this Agreement and may not be waived by either party. If the conditions in section 4.1 are not satisfied within the time therein provided, this Agreement shall be void.

5.0 **RISK/POSSESSION**

5.1 The Passing of Risk

The Property is at the risk of Drakensburg until the Transfer Date.

5.2 Possession

The Town shall have the right to vacant possession of the Property on the Transfer Date, subject only to:

- (a) all exceptions, reservations, provisos contained in the original Crown grant; and
- (b) the Permitted Encumbrances referred to in section 1.1 above.

6.0 CLOSING PROCEDURE

6.1 The transfer of the Property will occur on the Transfer Date.

6.2 Drakensburg's Documents

On or before the Transfer Date, Drakensburg's solicitor will prepare the following:

- (a) a certificate regarding GST registration and status; and
- (b) such other documents and assurances as may be reasonably required by Drakensburg to give full effect to the intent and meaning of this Agreement.

6.3 Town's Documents

On or before the Transfer Date, the Town's solicitor will prepare the following:

- (a) a Form A Freehold Transfer for the Property (the "**Transfer**");
- (b) a certificate regarding GST registration and status; and
- (c) such other documents and assurances as may be reasonably required by the Town to give full effect to the intent and meaning of this Agreement.

6.4 Delivery of Transfer Documents

The closing documents referred to in section 6.2(a) will be delivered to the Town's solicitors at least 3 days before the Transfer Date.

The closing documents referred to in section 6.3(a) to (b) will be delivered to Drakensburg's solicitors at least 5 days before the Transfer Date. The executed Transfer shall be returned to the Town's solicitors at least 2 days before the Transfer Date.

6.5 Registration

The Town will cause the Town's solicitors to file the Transfer in the appropriate Land Title Office promptly following the receipt by the Town's solicitors of the executed Transfer and documents and assurances referred to in section 6.2, and concurrently with the registration by Drakensburg's solicitors of the Subdivision Plan and all other Registration Documents, via an electronic meet, and on an "all or nothing" basis.

6.6 Closing

Upon final registration of the Transfer in the Land Title Office of the Town's freehold title to the Property subject only to the Permitted Encumbrances, the Town will cause the documents and assurances referred to in section 6.2 to be released to Drakensburg.

6.7 Concurrent Requirements

It is a condition of this Agreement that all requirements of this section 6.0 are concurrent requirements and it is specifically agreed that nothing will be completed on the Closing Date until everything required to be paid, executed and delivered on the Closing Date has been so paid, executed and delivered and until the Town's solicitors have satisfied themselves as to the Purchaser's title under section 6.

6.8 Election

If on the Transfer Date any of the representations or warranties made by Drakensburg are untrue (in any material respect) or Drakensburg is in default in any material respect under any of the covenants and agreements to be observed or performed by Drakensburg under this Agreement, the Town may elect not to complete the transfer of the Property under this Agreement or to complete the transfer of the Property under this Agreement, in either case without prejudice to any rights or remedies the Town may have in respect of the Drakensburg's breach or default.

7.0 MISCELLANEOUS

7.1 Time

Time is of the essence of this Agreement and the transactions contemplated in this Agreement notwithstanding the extension of any of the dates under this Agreement.

7.2 Relationship of the Parties

Nothing in this Agreement shall be construed so as to make the Town a partner of Drakensburg, and Drakensburg shall indemnify and save the Town harmless from any and all costs, expenses, damages, claims, or liabilities which may be incurred with respect to the Property before the Transfer Date which the Town is not

obligated to assume under this Agreement, and this provision shall survive the Transfer Date or the termination of this Agreement.

7.3 Notices

(a) Each notice sent pursuant to this Agreement ("**Notice**") shall be in writing and shall be sent to the relevant Party at the relevant address, facsimile number or e-mail address set out below. Each such Notice may be sent by registered mail, by commercial courier, by facsimile transmission, or by electronic mail.

(b) The Contact Information for the parties is:

Drakensburg Construction Ltd.	Town of Ladysmith
INSERT CONTACT INFO	INSERT CONTACT INFO
Attention:	Attention:
Email:	Email

(c) Each Notice sent by electronic mail ("E-Mail Notice") must show the e-mail address of the sender, the name or e-mail address of the recipient, and the date and time of transmission, must be fully accessible by the recipient, and unless receipt is acknowledged, must be followed within twenty-four (24) hours by a true copy of such Notice, including all addressing and transmission details, delivered (including by commercial courier) or sent by facsimile transmission.

(d) Subject to S. 7.3(f) through (h) each Notice shall be deemed to have been given or made at the following times:

- (i) if delivered to the address (including by commercial courier), on the day the Notice is delivered;
- (ii) if sent by registered mail, seven (7) days following the date of such mailing by sender;
- (iii) if sent by facsimile transmission, on the date the Notice is sent by facsimile transmission; or
- (iv) if sent by electronic mail, on the date the E-Mail Notice is sent electronically by e-mail by the sender.

- (e) If a Notice is delivered, sent by facsimile transmission or sent by electronic mail after 4:00 p.m., or if the date of deemed receipt of a Notice falls upon a day that is not a Business Day, then the Notice shall be deemed to have been given or made on the next Business Day following.
- (f) Notice given by facsimile transmission in accordance with the terms of this Section 7.3 will only be deemed to be received by the recipient if the sender's facsimile machine generates written confirmation indicating that the facsimile transmission was sent.
- (g) If normal mail service, facsimile or electronic mail is interrupted by strike, slow down, force majeure or other cause beyond the control of the parties, then a Notice sent by the impaired means of communication will not be deemed to be received until actually received, and the party sending the Notice shall utilize any other such services which have not been so interrupted or shall personally deliver such Notice in order to ensure prompt receipt thereof.
- (h) Each Party shall provide Notice to the other Party of any change of address, facsimile number, or e-mail address of such Party within a reasonable time of such change.

7.4 Subdivision Costs

Drakensburg shall pay all costs associated with subdividing the Lands from the Parent Parcel, including surveying costs and costs associated with preparing and registering the Subdivision Plan.

7.5 Land in Satisfaction of Park Dedication Requirement

Both parties acknowledge that the Lands are being provided for the purposes of satisfying Drakensburg's park land dedication requirement under section 510 of the Local Government Act regarding subdivision of Lots 1 through 11 on the Subdivision Plan. For certainty, the parties agree that the transfer of the Property does not prevent the Town from requiring further park or cash in lieu under section 510 of the Local Government Act for any subdivision of that part of the Parent Parcel marked "Rem 3" on the Subdivision Plan.

7.6 Donative Intent

- 1.1 Drakensburg acknowledges and agrees that the Lands exceed the five percent of Lots 1 to 11 of the Parent Parcel that the Town is authorized to require under section 510 of the Local Government Act for the subdivision of said lots from the Parent Parcel. Drakensburg hereby expresses its intention to provide any portion of the Lands that exceeds the five percent requirement to the Town as amenities for the benefit of the public, without any expectation of payment or reward of any kind. Drakensburg further releases, waives and forever discharges the Town from

and against any claims, actions, or causes of action, whether based in contract, tort or equity, for damages or losses, for the recovery of costs incurred, including legal expenses, or for unjust enrichment, in connection with provision of the Lands to the Town.

7.7 Further Assurances

Each of the parties shall, at the expense of the other party, execute and deliver all such further documents and do such further acts and things as the other party may reasonably request from time to time to give full effect to this Agreement.

7.8 Assignment

The Town may assign its rights under this Agreement with the prior written consent of Drakensburg, not to be unreasonably withheld.

7.9 Non-merger

None of the provisions of this Agreement shall merge in the transfer of the Property or any other document delivered on the Transfer Date, and the provisions of this Agreement shall survive the Transfer Date.

7.10 Payment of Fees

Each party shall pay its own legal fees. The Town shall be responsible for all registration fees payable in connection with registration of the transfer of the Property. Drakensburg shall be responsible for the costs of clearing title of any Encumbrances other than Permitted Encumbrances.

7.11 Goods and Services Tax

The Town is registered for GST purposes, and will self-assess any GST payable as a result of the Transfer and account directly to the Canada Revenue Agency therefor.

7.12 Binding Effect

This Agreement shall enure to the benefit of and be binding upon the parties, their respective heirs, executors, administrators, and other legal representatives and, to the extent permitted in this Agreement, their respective successors and assigns.

7.13 No Derogation from Statutory Powers

Nothing in this Agreement shall be interpreted as prejudicing or impairing the Town in the exercise of any statutory legislative powers under the *Local Government Act*, the *Community Charter* or any other enactment all of which may be executed as if this Agreement had not been exercised. Without limiting the generality of the foregoing, nothing in this Agreement shall be interpreted as

prejudicing or impairing the Town's approving officer in determining whether to approve the Subdivision Plan.

7.14 Extended Meanings

Words importing the singular number include the plural and vice versa, and words importing the masculine gender include the feminine and neuter genders.

7.15 Headings

The headings are for convenience of reference only and shall not affect the construction or interpretation of this Agreement.

7.16 Articles

For the purposes of this Agreement, except as otherwise expressly provided herein all references in this Agreement to an article, section, subsection, paragraph, or other subdivision, or to a schedule, is to the article, section, subsection, paragraph or other subdivision of or schedule to this Agreement unless otherwise specifically stated.

7.17 Applicable Law

This Agreement shall be interpreted in accordance with the laws of British Columbia

7.18 Waiver

Except as may be specifically agreed in writing, no action or failure to act by a party to this Agreement shall constitute a waiver of any right or duty afforded any of them under this Agreement nor shall any such action or failure to act constitute an approval of or acquiescence in any breach of this Agreement.

7.19 Entire Agreement

This Agreement constitutes the entire agreement between the parties with respect to the subject matter of the Agreement and contains all of the representations, warranties, covenants and agreements of the respective parties, and may not be amended or modified except by an instrument in writing executed by all parties. This Agreement supersedes all prior agreements, memoranda, and negotiations between the parties.

7.20 Counterparts

This Agreement may be executed in counterparts and delivered by facsimile or emailed PDF file, each of which will have the same effect as if all parties had signed the same document. Each counterpart shall be deemed to be an original.

All counterparts shall be construed together and shall constitute one and the same Agreement.

7.21 Schedules

The Schedules attached to this Agreement form part of this Agreement.

IN WITNESS WHEREOF the parties have executed this Agreement.

DRAKENSBURG DEVELOPMENT)
CORPORATION)

_____)
Name:)

_____)
Name:)

THE TOWN OF LADYSMITH)
by its authorized signatories)

_____)
Name:)

_____)
Name:)

SCHEDULE "B"

Permitted Encumbrances

(a) Charges, Liens and Interests

Exception and Reservation M76300 in favour of Esquimalt and Nanaimo Railway Company

Right of Way 27444G in favour of BC Hydro

Statutory Right of Way ED79952 in favour of BC Hydro

Statutory Right of Way ED99320 in favour of FORTISBC ENERGY (Vancouver Island) Inc.

Statutory Right of Way ED104841 in favour of FORTISBC ENERGY (Vancouver Island) Inc.

Statutory Right of Way EH122029 in favour of FORTISBC ENERGY (Vancouver Island) Inc.

Statutory Right of Way FB235712 in favour of the Town of Ladysmith

Statutory Right of Way FB235714 in favour of the Town of Ladysmith

Statutory Right of Way FB235717 in favour of the Town of Ladysmith

Statutory Right of Way FB235721 in favour of the Town of Ladysmith

STAFF REPORT TO COUNCIL

Report Prepared By: Infrastructure Services
Reviewed By: Geoff Goodall, Director of Infrastructure Services
Meeting Date: June 15, 2021
File No:
Re: **Forward Road Watermain Replacement**

RECOMMENDATION:

That Council:

1. Direct staff to facilitate the replacement of 48m of watermain on Forward Road for an estimated cost of \$58,000, with funds to come from the Water Utility Reserve, and amend the 2021 - 2025 Financial Plan accordingly.
2. Authorize the developer's contractor, Graf Concrete & Iron Inc., to complete the works while they construct the developer's portion of the Forward Road watermain as part of the development of the former Dalby's site.

EXECUTIVE SUMMARY:

In 2020 there was a watermain rupture on Forward Road which caused damage to private property. Due to a recently approved development at the former Dalby's site, the first 56m of the forward road watermain is being replaced by this developer. This leaves 48m which staff is recommending also be replaced at this time at the Town's expense and by the developer's contractor. Staff are recommending this process as it will be the most cost-effective way to complete the entire project.

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

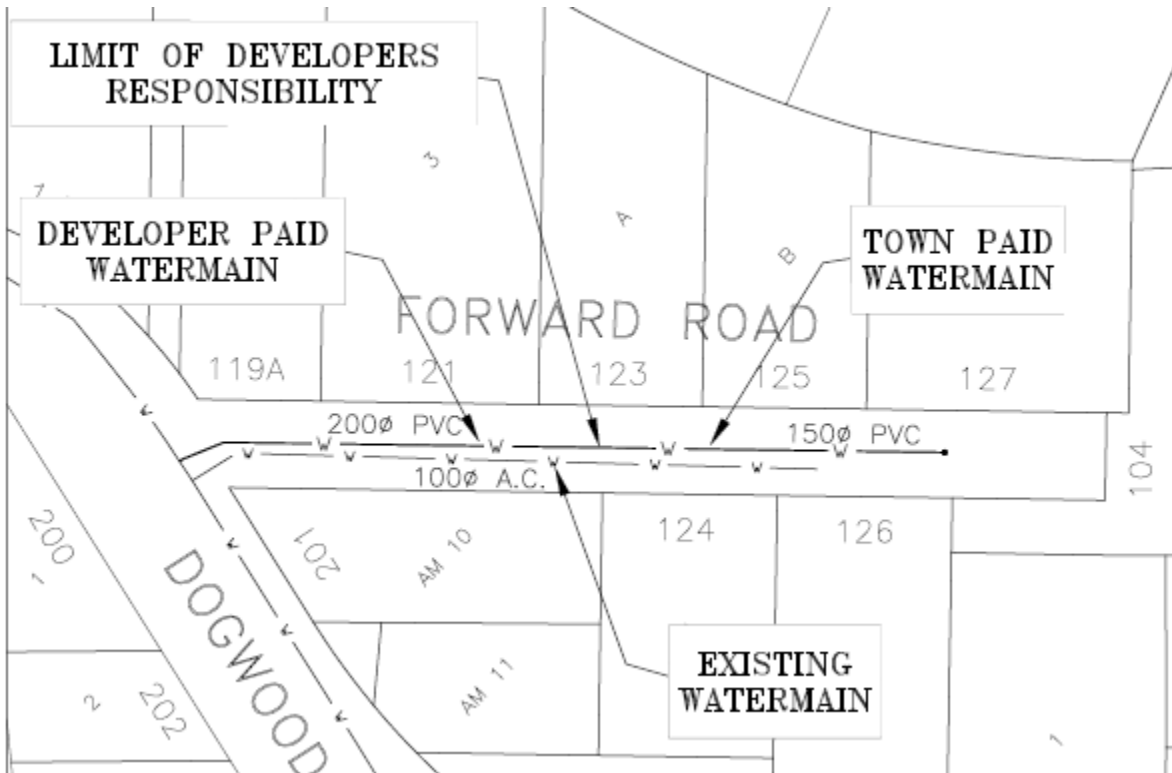
Forward Road has an existing 100mm (4inch) AC watermain along its full length. The watermain is a dead end with no flush out system at its terminus. There are currently no fire hydrants connected to this system. The actual age of the system is unknown, but likely in excess of 60 years.

In September of 2020, there was a watermain break on this main that caused damage to neighbouring properties. Due to its age and the watermain break, this main has been prioritized for replacement.

The multifamily development recently approved on Dogwood Drive will be serviced with water

from the watermain on Forward Road, this will require the upgrade of the first 56 metres of the watermain to 200mm (8 inch) diameter by the developer. This leaves approximately 48 metres of watermain to the end of Forward Road.

Staff's recommendation is this remaining section of watermain be replaced at the Town's cost. As the developer will have a contractor installing the first 54 metres of main, it is also staff's recommendation that this work be completed by this contractor (Graf Concrete & Iron Inc.).



ALTERNATIVES:

Council can choose to:

1. Not complete the additional 48 metres of watermain and direct staff to complete this work in a future year.

FINANCIAL IMPLICATIONS:

This watermain replacement was not included in the 2021 Capital Plan. The costs associated with this project will utilize funds in the Water Utility Reserve fund.

LEGAL IMPLICATIONS:

N/A

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

At the Public Hearing for the Dogwood Drive development, there were comments made by members of the public about having the watermain upgraded at the time of the development due to the recent watermain break.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

The work will be completed by a contractor and overseen by a consulting engineer. The Town's Engineering Department will provide periodic oversight and coordination with operations staff.

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|---|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input checked="" type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
| <input type="checkbox"/> Community | <input type="checkbox"/> Not Applicable |
| <input type="checkbox"/> Waterfront | |

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

STAFF REPORT TO COUNCIL

Report Prepared By: Ryan Bouma, Senior Engineering Technologist
Report Reviewed By: Geoff Goodall, Director of Infrastructure Services
Meeting Date: June 15, 2021
File No:
Re: **Retaining Wall – Ladysmith Community Marina Parking Lot**

RECOMMENDATION:

That Council direct staff to proceed with remediation of the Ladysmith Community Marina retaining wall as outlined in Option A of the staff report dated June 15, 2021.

EXECUTIVE SUMMARY:

A log retaining wall between the Ladysmith Community Marina access road and the parking area is failing. The attached geotechnical report has confirmed the condition, recommended remediation options, and additional details (Attachment A). Staff recommend remediation Option A, which includes relocating the utility building and power pole, relocating the water main, partially removing the logs, and filling the toe of the slope.

PREVIOUS COUNCIL DIRECTION:

Resolution	Meeting Date	Resolution Details
CS 2021-025	01/19/2021	That Council: 1. Direct staff to retain Tetra Tech to complete geotechnical drilling at the Ladysmith Community Marina retaining wall site for a cost of approximately \$25,000; and 2. Give early budget approval for this project so that this work can be completed as soon as possible.

INTRODUCTION/BACKGROUND:

History

Circa August 2020, staff were made aware of the failing condition of the log retaining wall at the toe of a slope in the Ladysmith Community Marina parking lot. It was observed that the logs were leaning towards the existing utility building approximately 50mm from the gutter (now touching).

Geotechnical Information

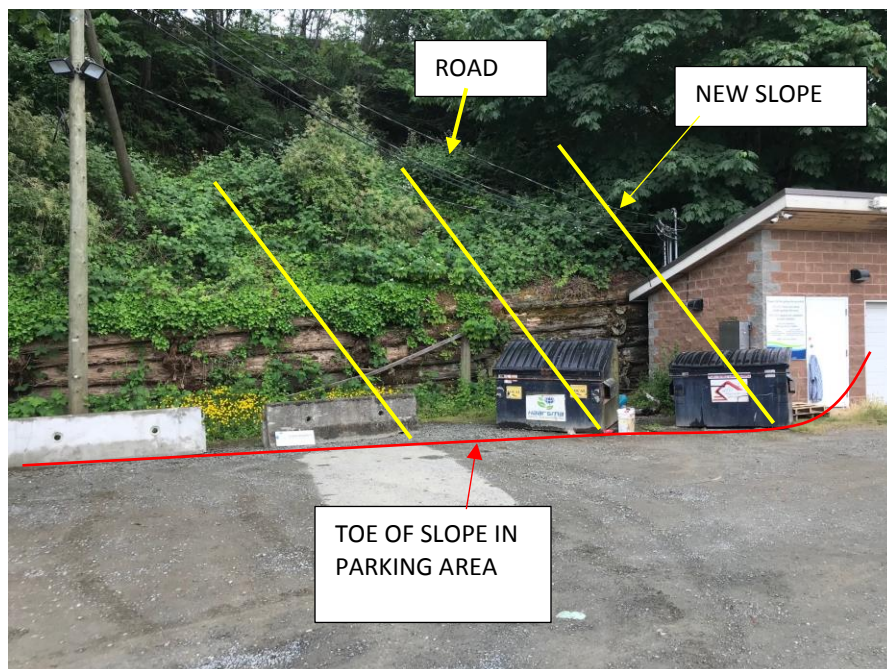
A geotechnical engineer from Tetra Tech attended the site on August 28, 2020 to visually assess the conditions and determine an investigation plan.





Test pit digging at the toe of the wall and borehole drilling along the crest of the slope were completed. In general, the subsurface conditions were found to consist of large boulders and variable fill material and it is assumed the slope and parking area are infilled foreshore. The variable nature of the fill complicates the remediation as it may settle.

Several remediation options have been presented by Tetra Tech, including reshaping the slope with various grades (Options A and B), a mechanically stabilized earth wall (Option C), and a soldier pile wall (Option D). Staff determined that the lowest cost option is to reshape the slope at a ratio of 1.5 horizontal distance to 1 vertical distance (1.5:1) (Option A); however, the toe of the slope will extend into the parking area where the existing utility building is currently sited.

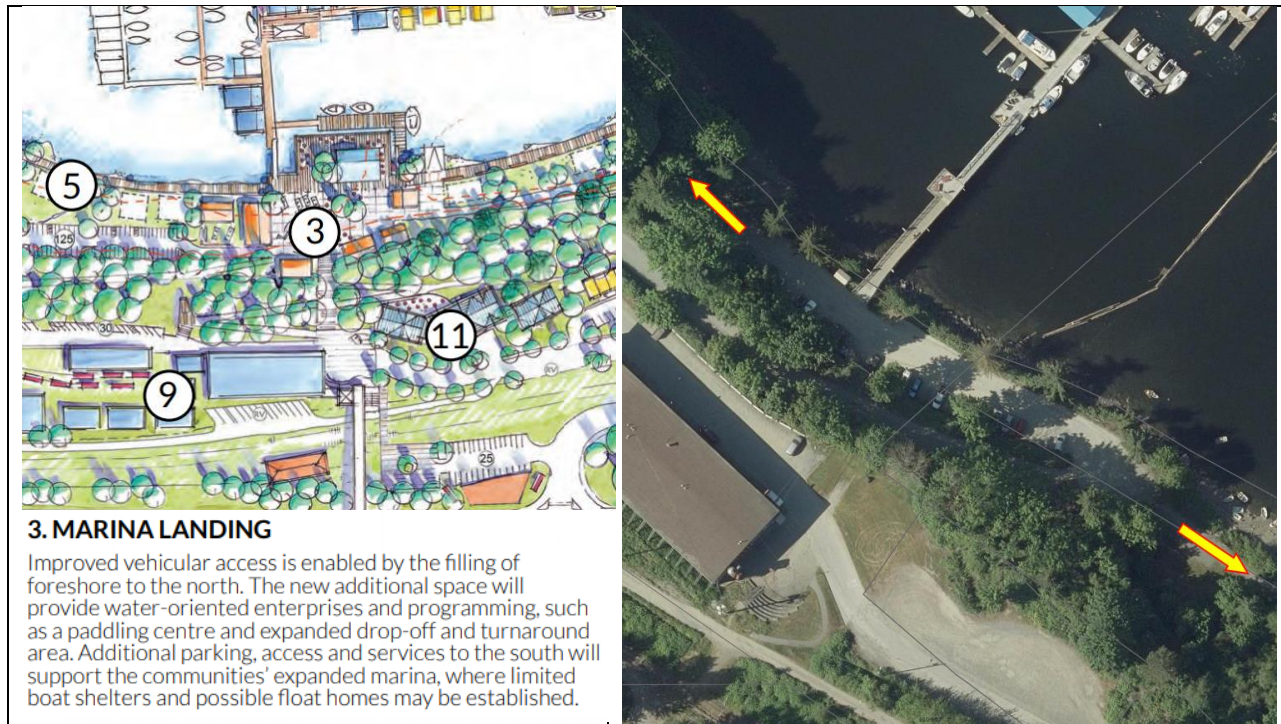


Tetra Tech has also noted that up to 150mm of settlement within the access road should be expected for Option A, therefore the water main needs to be relocated out of the settlement zone. An option comparison table is provided below.

OPTION	COST	PROS	CONS
(A) 1.5:1 Regrading	Least expensive	<ul style="list-style-type: none"> • Less space than 2:1 slope. • Less expensive than retaining walls. 	<ul style="list-style-type: none"> • Extends 3.8m into parking area. • Utility building must be relocated. • Some settlement expected in Road. • Waterline needs to be relocated. Power pole needs relocation.
(B) 2:1 Regrading	Least expensive	<ul style="list-style-type: none"> • No settlement. • Waterline can remain. • Less expensive than retaining walls/ 	<ul style="list-style-type: none"> • Extends 6.6m into parking area. • Utility building must be relocated. Power pole needs relocation/
(C) Retaining Wall	Second most expensive	<ul style="list-style-type: none"> • Utility building could be replaced in the original location. 	<ul style="list-style-type: none"> • High cost. • Requires extensive excavation of the slope. • Nearly preserves the parking area space. Utility building and power pole needs to be removed for construction.
(D) Soldier Pile Wall	Most expensive	<ul style="list-style-type: none"> • Utility building could be replaced in the original location. 	<ul style="list-style-type: none"> • Very high cost. • Specialized contractor required. • Preserves parking area space and may gain some space. Utility building and power pole needs to be removed for construction.

Access

Alternative accesses to the northwest and southeast of the parking lot were assessed by staff. The northwest route was determined to be too narrow and the southeast access would require geotechnical improvements and crosses Crown land to which the Town does not have access. Accordingly, staff have determined the only feasible access is the existing road. The Waterfront Area Plan intends to convert the access road to a pedestrian trail. The potential settlement discussed in the geotechnical section above is anticipated to be acceptable for a gravel road/trail. Ultimate future access would be created with foreshore infilling as outlined in the Waterfront Area Plan and is outside the current scope of work.



Project Costs

Project costs are not yet known; however, the bulk of the costs are expected to be a result of relocating the utility building, water main, and power pole. Regardless of the remediation option selected, the utility building and power pole would need to be reconstructed, although some options would allow them to be replaced in their existing locations. The alternative options are anticipated to be of significantly higher cost due to the need for pile driving and difficult excavation.

Multiple disciplines (civil, geotechnical, electrical, etc.) are required to complete the design and provide cost estimates. It is not yet known if a general contractor would do the work or if the Town would hire multiple contractors. Once cost estimates are known, staff will provide Council with more details and seek approval to proceed to tendering and construction.

ALTERNATIVES:

Council can choose to:

1. Direct staff to pursue an alternative remediation option.

FINANCIAL IMPLICATIONS:

Staff have budgeted \$100,000 for this project. Although cost estimates are not yet available, the total project cost is expected to greatly exceed the budget. It may be necessary to postpone one or more capital projects to fund the community marina project. Staff will update Council once cost estimates are available and request the required funding.

LEGAL IMPLICATIONS:

N/A

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

There may be restricted access to the marina parking area during construction. Parking may need to be redirected to areas such as the Machine Shop or other nearby locations.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

N/A

ALIGNMENT WITH SUSTAINABILITY VISIONING REPORT:

- | | |
|--|--|
| <input type="checkbox"/> Complete Community Land Use | <input type="checkbox"/> Low Impact Transportation |
| <input type="checkbox"/> Green Buildings | <input type="checkbox"/> Multi-Use Landscapes |
| <input type="checkbox"/> Innovative Infrastructure | <input type="checkbox"/> Local Food Systems |
| <input type="checkbox"/> Healthy Community | <input type="checkbox"/> Local, Diverse Economy |
| <input checked="" type="checkbox"/> Not Applicable | |

ALIGNMENT WITH STRATEGIC PRIORITIES:

- | | |
|---|--|
| <input type="checkbox"/> Infrastructure | <input type="checkbox"/> Economy |
| <input type="checkbox"/> Community | <input checked="" type="checkbox"/> Not Applicable |
| <input type="checkbox"/> Waterfront | |

I approve the report and recommendation(s).

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

- A. Tetra Tech Geotechnical Assessment and Remediation report (May, 2021)

Additional Geotechnical Assessment and Remediation Recommendations for Marina Failing Log Retaining Wall



PRESENTED TO
The Town of Ladysmith

MAY 11, 2021
ISSUED FOR USE
FILE: 704-ENG.VGEO03929-02

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APPENDIX SECTIONS

FIGURES

Figure 1 Testhole Plan

APPENDICES

- Appendix A Tetra Tech's Services Agreement and Limitations on the Use of this Document
- Appendix B Preliminary Assessment and Remediation Recommendations Memo (Tetra Tech, 2020)
- Appendix C Testhole Logs
- Appendix D Slope Stability Analyses Results

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Town of Ladysmith and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Town of Ladysmith, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by the Town of Ladysmith (the Town) to conduct additional geotechnical assessment and provide recommendations for the remediation of a failing log retaining wall located within the Town Marina parking lot. Tetra Tech previously completed a preliminary geotechnical assessment and provided conceptual design options for the remediation of the wall (Section 2.2, Appendix B).

Tetra Tech's scope of work was outlined in our proposal dated December 16, 2020 and is subject to our Services Agreement (PO# 35339) signed on January 28, 2021. This document presents our current understanding of the project, summarizes information obtained during a background review and additional site exploration, and presents further discussion and recommendations for remediation. This document is subject to our Limitations on the Use of This Document, provided in Appendix A.

1.1 Scope of Work

Tetra Tech's scope of work was to further assess the slope retained by the failing retaining structure (the retaining wall) and provide the Town with recommendations for remediating the slope. This scope of work included an additional site exploration to supplement our current understanding of slope conditions near the retaining wall and refine our preliminary remediation recommendations (Section 2.2, Appendix B). Detailed design tender packages and drawings are considered outside of Tetra Tech's scope of work. The Town should retain a civil engineer to prepare tender packages and drawings if required.

2.0 PROJECT UNDERSTANDING

The retaining wall is within the Town marina parking lot, located at 611 Oyster Bay Drive (Figure 1). The embankment slope retained by the wall rises to the southwest and is benched by Oyster Bay Drive. A 12 m wide gravel parking lot servicing the marina is located downslope of the retaining wall.

The retaining wall is composed of rotting timbers that are tied back into the slope with cables. No direct measurements have been made, but the Town has indicated that the wall has moved in the last few years. The retaining wall is leaning towards a relatively new building that provides power to the local marina. A BC Hydro distribution line runs to the building. One power pole located in front of the retaining wall has a timber support beam founded in the slope retained by the wall.

It is our current understanding that the Town would prefer to preserve the power building at its current location at the base of the retaining wall; however, the building may be removed if keeping it intact is cost prohibitive. The long-term development plan for the marina includes the decommissioning of Oyster Bay Drive and redevelopment of the roadway as a pedestrian trail. After some discussion, the Town has indicated that reshaping the existing embankment slope behind the retaining wall is the preferred remediation option.

2.1 Site History

The Town and others provided Tetra Tech with anecdotal evidence that the Town marina in the vicinity of Transfer Beach Park currently exists on reclaimed land. The mixed fill used to reclaim the land likely included available natural materials and may have included coal slag. The BC Ministry of Energy, Mines and Petroleum Resources "Coal Map" indicates that the Nanaimo Coal Field exists across the Ladysmith harbour, to the northeast (BCMEMP, 2020).

Mr. Bouma, P.Eng. of the Town indicated that the retaining wall is likely over 80 years old. Based on available Google Street View images, the age of the power building below the retaining wall is estimated to be around 10 years. Google Street View images from 2009 do not show the building.

2.2 Previous Work Completed

On August 28, 2020, Mr. Andrew Walker of Tetra Tech and Messrs. Ryan Bouma and Geoff Goodall of the Town visited the site for a preliminary reconnaissance and discussion of possible remediation options.

On October 15, 2020, Mr. Andrew Walker, P.Eng., and Ms. Casey Watamaniuk, EIT, GIT of Tetra Tech conducted a more detailed site reconnaissance and supervised a test pit subsurface exploration program. On December 7, 2020, Tetra Tech presented the Town with an Issued for Use memo summarizing the results of the subsurface exploration and field reconnaissance and providing several conceptual options for remediation of the retaining wall. This Issued for Use memo *Preliminary Assessment and Remediation Recommendations for a Failing Log Retaining Wall within the Town of Ladysmith Marina Parking Lot* is included in Appendix B and should be read in conjunction with this document.

Based on the above-mentioned site visits and various email correspondences with the Town, Tetra Tech has the following understanding of the conditions at the site:

- The retaining wall is slowly failing. No direct measurements have been made, but the Town has indicated that the wall has moved in the last couple of years. The wall is leaning towards a relatively new building that provides power to the local marina.
- The slope above the retaining wall is inclined at approximately 43° , and has a total height (including the retaining wall) of approximately 6 m to 9 m as measured from the base of the slope to Oyster Bay Drive.
- The slope north-west of the retaining wall is approximately 9 m high and covered by erosion protection matting, or geofabric was observed protruding from the slope. Shale bedrock outcrops along the slope to the northwest.
- The retaining wall varies from 1.5 m to 3.0 m high and is approximately 17 m – 20 m long. It is constructed of rotting timber tied back into the slope with cable and strikes in a north-west to southeast direction. The fill behind the retaining wall appears to be mixed, large ballast rock fill.
- A water line exists within Oyster Bay Drive, above the wall.
- Bedrock outcrops above Oyster Bay Drive and at the beach.
- Tetra Tech did not observe seepage within the slope retained by the failing wall or bulging in the parking lot surface at the toe of the wall.

3.0 DESIGN BASIS

Based on our project understanding outlined in Section 2.0 and the Town's preference to reshape the existing embankment slope below Oyster Bay Drive, the Canadian Highway Bridge Design Code (CHBDC S6-14; CSA, 2014) was consulted in conjunction with the CHBDC S6-14 BC MoTI Supplement (BCMoTI, 2016) as a design basis for this scope of work. Based on these codes, we have considered the embankment slope as "Other", as it is not likely a structure which falls into the importance categories of "Lifeline" or "Major-route".

Table 1 summarizes the CHBDC S6-14 (CSA, 2014) and BCMoTI (2016) performance criteria for the design of "Other" slopes and embankments.

Table 1: CHBDC S6-14 BCMoTI Supplement Performance Criteria

Category	Static Performance	Pseudo-static Performance
Other Slopes and Embankments	Factor of safety for global stability – permanent ¹ under typical ² degree of understanding and typical consequence factor ³ = 1.54	Factor of safety against slope failure = 1.1 under 475-year ground motion

- 1) Permanent embankment as defined in CHBDC S6-14 Section 6 as a structure with a service life of greater than two years.
- 2) Typical Degree of understanding for global stability as defined in Table 6.2c in BCMoTI (2016).
- 3) A Typical consequence factor as defined in CHBDC S6-14 Section 6 was assumed based on the light traffic and pedestrian use of Oyster Bay Drive.

4.0 ADDITIONAL SITE EXPLORATION

From March 10-11, 2021, Tetra Tech carried out a supplementary site exploration to further assess the current slope conditions behind the retaining wall. Mr. Andrew Walker and Mr. Eli Riedl of Tetra Tech’s Nanaimo office were on site on March 10, 2021 to supervise utility locates and hydrovacuum utility daylighting activities. Mr. Eli Riedl was on site on March 11, 2021 to supervise drilling activities and classify, log, and sample the soils and rock encountered. Details regarding the utility locate and drilling program are provided in the following sections.

During this site exploration Tetra Tech observed additional movement of the retaining wall, compared to our October 15, 2020 observations. The wall appeared to be contacting the eaves of the small power building at the toe of the slope.

4.1 Utility Locates and Hydro-vacuum

In advance of the subsurface exploration, Tetra Tech conducted a BC One Call to obtain information regarding existing utilities at the site. Kelly’s 1st Call Locating was retained to identify the locations of existing utilities and confirm the absence of utility conflicts at proposed test hole locations.

Prior to drilling, Cougar Hydrovac Inc. of Duncan, BC was retained to daylight the water line below Oyster Bay Drive at two locations in the work area. Additionally, the hydrovac truck was used to advance one geotechnical observation hole in the upslope shoulder of the road. This observation hole (VH21-01) was terminated at a depth of 1.6 m on inferred bedrock. Upon completion, all hydrovac holes were backfilled with sand and gravel by the Town. A detailed testhole log for VH21-01 is provided in Appendix C.

4.2 Drilling Program

Tetra Tech’s drilling program consisted of three testholes (BH21-01 to BH21-03) advanced within Oyster Bay Drive, upslope of the failing wall. Testhole locations are shown in Figure 1.

To discern the bedrock surface at each testhole location, testholes were advanced a minimum of 3 m into rock. This target depth was intended to differentiate between large ballast rock fill / boulders and continuous bedrock. Bedrock was encountered at depths between 0.5 m and 3.4 m below existing ground surface and testholes were terminated at depths between 4.6 m and 7.6 m. All testholes were advanced using a track mounted LS250 Minisonic rig owned and operated by Drillwell Enterprises Ltd. (Drillwell) of Duncan, BC.

Sonic drilling is performed by advancing a vibrating core in the ground with a drill bit on the end. After advancing the core through the desired sampling depth, it is withdrawn from the ground and the soil that is retained in the core is logged and sampled. An outer casing can remain in the testhole to prevent sloughing of the hole during in-situ

testing. Due to the vibration of sonic drilling, samples collected of coarse-grained materials (i.e., cobbles and gravel) often highly disturbed, preventing detailed logging of these materials. Additionally, poor recovery in loose to very loose soils or oversize material (i.e., ballast rockfill) can occur due to material not being captured properly or falling out of the barrel as it is retrieved. The drill used for this investigation advanced a 4.5” diameter core barrel and extruded samples into 6” diameter plastic sleeves. As such, the sample recovery for each run does not necessarily correspond to the run length. To correct this, Tetra Tech linearly corrected all measurements made on each run of the core recovered based on the length of core recovered and the run start and end depths. Depths to features such as bedrock were based on depths provided by the driller inferred from the behavior of the drill, measured off the drill stem. Depths provided by the driller were compared to the core to check their validity. It is also noted that, due to the heat generated by the sonic drilling process and use of water to assist the drilling process, accurate description of the moisture content of the soil and observations of groundwater conditions can’t always be obtained.

Following completion, all testholes were backfilled with drill cuttings and bentonite chips in accordance with the BC Groundwater Protection Regulation. All testholes were capped with gravel.

Testhole logs from the drilling program are presented in Appendix C.

5.0 INTERPRETED SUBSURFACE CONDITIONS

5.1 Geological Setting

Geology Victoria West of the Sixth Meridian (Map 1553A, GSC 1983) indicates that the site is generally characterized by:

Qc – Capilano Sediments: sand, gravel; silt, clay; overlying; and

KH – Upper Cretaceous Nanaimo Group (Haslam Formation): shale, siltstone; minor sandstone.

The BC Ministry of Energy, Mines and Petroleum Resources “Coal Map” (BCMoEMP, 2020) indicates that the Nanaimo Coal Field exists across the Ladysmith harbour, to the northeast.

5.2 Observed Subsurface Conditions

The conditions encountered during the subsurface explorations are generally consistent with the published surficial geology mapping. However, Capilano sediments were not encountered. Observed subsurface conditions are described in detail on the testhole logs in Appendix C and summarized in Tables 2 and 3 below. Subsurface conditions at the toe of the slope are discussed in further detail in our December 2020 Memo, attached in Appendix B.

Table 2: Interpreted Stratigraphy Summary – Upslope of the Wall

Unit	Unit Name	Start Depth (m below ground surface)	Thickness (m)	Unit Description
F4	MIXED FILL	Surface	0.5 – 2.0	Silty sand and gravel fill mixed with some angular cobbles and rock fill up to 0.45 m in diameter. Inferred to be loose to compact. This unit thickens to the south-east, as Oyster Bay Drive descends to the marina (BH21-03).
F6	INFERRED ROCK FILL	2.0	1.4	Little to no recovery; however, drilling performance and backfilling observations indicated possible oversize material and voids. Only encountered in BH21-03.
A	SHALE BEDROCK	0.5 - 3.4	Terminus	Weak, highly fractured, black shale bedrock. Brown and highly weathered for first 0.6 to 1.1 m. Depth to bedrock increases to the south-east (BH21-03). All testholes terminated on or within this unit.

Table 3: Interpreted Stratigraphy Summary - Downslope of the Wall

Unit	Unit Name	Start Depth (mbgs)	Thickness (m)	Unit Description
F1	GRAVEL PARKING LOT SURFACE	Surface	0.1	3" minus gravel parking lot surface.
F2	ROAD BASE FILL (SAND AND GRAVEL)	0.1	0.1 – 0.4	Silty sand and gravel fill with a slight organic odour, some roots, and rounded cobbles.
F3	TRENCH BACKFILL (SAND)	0.5	0.7	Silty, poorly graded sand fill used to backfill an old utility line. Only encountered in TP20-02A.
F4	MIXED FILL (SAND, GRAVEL, COBBLES, BOULDERS, ORGANICS, METAL DEBRIS)	0.2 – 0.5	2.8 – 3.0	Silty sand to sand and gravel fill mixed with angular cobbles and boulders up to 1.5 m. Includes roots, wood debris, and metal cable debris. Some disturbed clumps of sandy, organic silt observed at depth.
F5	GRAVEL FILL	3.0	0.7	Sub-rounded gravel fill with some sand, wet with a briny odour and slight hydrocarbon sheen. Mixed with some metal and wood debris. Only encountered in TP20-02B.
A	INFERRED BEDROCK	3.5 – 3.7	Terminus depth	Test pits refused on inferred bedrock surface. The surface appeared to be horizontal. Likely sedimentary rock like mudstone / shale bedrock observed in outcrop at the beach.

5.2.1 Observed Groundwater Conditions

Due to the disturbance to the soil core from the sonic drill water, indication of groundwater could not be observed during drilling upslope of the retaining wall. No seepage was observed from the walls of the completed boreholes after the sonic casing had been pulled.

Downslope of the retaining wall, groundwater seepage was observed at approximately 3.0 m depth in TP20-01 and TP20-02B. This depth generally corresponds with sea level and groundwater encountered had a briny odour. TH20-02A did not encounter groundwater.

6.0 SEISMIC SITE CLASSIFICATION

Tetra Tech has obtained seismic data for the site from Natural Resources Canada online seismic hazard calculator (NRC, 2019). Seismic hazard levels corresponding to the 475-year return period seismic event were obtained, as specified in the CHBDC S6-14 (CAS, 2014) and the BCMoTI Supplement (BCMoTI, 2016). The seismic values summarized in Table 4 are based on the 2015 National Building Code of Canada (NBCC).

Table 4: Spectral Acceleration Values for Site Class C 1:475 Year Seismic Event (NBCC, 2015)

PGA (g)	PGV (m/s)	S _a (0.2)	S _a (0.5)	S _a (1.0)	S _a (2.0)	S _a (5.0)	S _a (10.0)
0.254	0.349	0.583	0.519	0.272	0.152	0.034	0.012

Based on the subsurface conditions encountered during the site explorations, and assuming the relocated building will be placed on native material or engineered fill, this site would be classified as Site Class C, in accordance with the provisions of NBCC 2015. Design of permanent slopes / embankments on site should be based on a PGA factored by seismic coefficient F(PGA) as per Table 4.1.8.4.-H in NBCC 2015 and summarized in Table 5.

Table 5: Factored PGA for 1:475 Year Seismic Event (NBCC, 2015)

Design Seismic Event	F(PGA) Table 4.1.8.4.H	Design PGA (Site Class C) (g)
1:475	1.0	0.254

7.0 SLOPE STABILITY ANALYSES

Tetra Tech has undertaken slope stability analyses to assess the stability of the existing slope behind the retaining wall and the stability of reshaping the embankment slope to grades between 1H:1V and 2H:1V. The design basis outlined in Section 3.0 was considered for the slope stability analyses.

As the Engineers and Geoscientists of BC Retaining Wall Design Professional Practice Guidelines do not apply “where Slope Protection and/or Wall Facing is not required for stability (i.e., factor of safety of the slope without the Slope Protection and/or Wall Facing is greater than 1.5 for static conditions)” (EGBC, 2019), we have referenced this document in conjunction with the CHBDC S6-14 and BCMoTI Supplement (CAS, 2014 and BCMoTI, 2016) when assessing the stability of the reshaped embankment slope.

7.1 Global Stability

Global stability analyses for the slope were conducted using a 2-dimensional limit equilibrium slope stability analysis software, Slope/W 2019 by Geo-Slope International Ltd. Factor of Safety (FoS) values were found using the Morgenstern-Price, limit equilibrium analysis technique. Each analysis area was defined using a slip surface entry and exit range. Engineering judgement was exercised to evaluate the appropriateness of critical slip surfaces identified by the software. Both static and pseudo-static (seismic) loading conditions were analyzed.

Soil strength parameters used in the analyses are summarized in Table 6. These parameters were estimated from available information, existing slope conditions, site exploration observations, and Tetra Tech’s experience and judgement. Slope dimensions were based on approximate field measurements of the slope section behind the highest point of the retaining wall.

Due to the low volume / inconsistent traffic expected for Oyster Bay Drive, no traffic surcharge was considered in the global stability analyses.

Table 6: Material Parameters

Unit	Unit Name	Cohesion, c (kPa)	Internal Angle of Friction, ϕ (°)	Bulk Unit Weight, γ (kN/m ³)
F4	MIXED FILL (SAND, GRAVEL, COBBLES, BOULDERS, ORGANICS, METAL DEBRIS)	0	35	19
F6	INFERRED ROCK FILL	0	45	18

7.2 Pseudo-static Deformation Assessment: Bray-Travasrou Method

Where pseudo-static slope stability analyses resulted in FoS values less than unity (1.0) for the 1-in-475-year seismic event, slope performance was assessed based on deformation criteria using Method 1 in the EGBC Legislated Landslide Assessments (EGBC, 2010), after Bray and Travasarou (2007). Although provisions for deformation assessment are not outlined in the CHBDC (CSA, 2014), EGBC (2010) specifies a maximum seismic deformation of 150 mm (15 cm) for residential area slopes. For this site, the Bray-Travasrou method was used to estimate seismic slope displacements following remediation.

The shear wave velocity (V_s) of the site was estimated from Table 4.1.8.4.-A of the 2015 NBCC based on Site Classification C, although slightly lower values for the inferred rock fill were assumed. The spectral response acceleration values ($S(T)$) of the slope used in this method were determined in accordance with Section 4.1.8.4 of the 2015 NBCC. The horizontal seismic yield coefficient (k_y) required for slope movement (FoS = 1.0) was determined through Slope/W iterations.

The figures presented in Appendix D for seismic loading conditions show the FoS values and horizontal seismic yield coefficient (k_y) of the slope in the 1:475 year design seismic event.

7.3 Results

The results of the slope stability analyses are summarized in Table 7 and shown on the figures presented in Appendix D.

Table 7: Slope Stability Analyses Results

Slope Scenario	Static FoS	1:475 Pseudo-static FoS	1:475 Seismic Displacement	Appendix D Figures
Existing Condition	0.96	0.76	Not Assessed	D1, D2
1H:1V	1.2	0.81	< 500 mm	D3, D4, D5
1.5H:1V	1.5	0.92	< 150 mm	D6, D7, D8
1.75H:1V	1.7	1.0 ¹	< 100 mm	D9, D10
2H:1V	1.9	1.1	N/A	D11, D12

- 1) Seismic Displacement assessed to account for model margin of error as the resulting 1:475 Pseudo-static Factor of Safety was approximately unity

8.0 DISCUSSION AND RECOMMENDATIONS

Through discussion with the Town, we understand that the preferred option for remediation of the retaining wall consists of reshaping the existing road embankment behind the wall and below Oyster Bay Drive. Reshaping the embankment slope will require that the existing power building and power pole at the toe of the slope be relocated. The follow sections discuss Tetra Tech’s recommendations for reshaping the embankment slope and relocating the existing infrastructure.

8.1 Embankment Slope Reshaping

Based on the results of the slope stability analyses, reshaping the existing slope behind the retaining wall into a 2H:1V embankment sufficiently meets the CHBDC S6-14 and BCMoTI Supplement (CAS, 2014 and BCMoTI, 2016) performance criteria for “Other” slopes and embankments, as outlined in Section 3.0.

Considering the variable nature of the existing fill and the estimated material parameters (Table 6), flattening the slope was required to meet the performance criteria. A 2H:1V embankment slope starting approximately 1 m back from the crest of the existing slope would extend a maximum of approximately 6.5 m into the parking lot from the toe of the highest portion of the retaining wall (Appendix D, Figures D11 and D12).

As parking is already limited at the marina, we understand that the footprint of a 2H:1V embankment slope may not be optimal. Additionally, much of the existing slope may consist of large-diameter rock fill, which could not be recovered with the 4.5” diameter sonic core barrel during the site exploration. Therefore, if during construction, the existing slope is found to contain more rock fill than shown in the slope stability models (Appendix D), or if the Town forgoes adherence to the CHBDC (CSA, 2014) and accepts the associated risk of seismic deformation as presented in Table 7, the final embankment may be steepened to 1.5H:1V (Appendix D, Figures D6, D7, D8). A 1.5H:1V embankment slope starting approximately 1 m back from the crest of the existing slope would extend a maximum of approximately 3.8 m into the parking lot from the toe of the highest portion of the retaining wall. Upon decommissioning the roadway and constructing a pedestrian trailway, or if the roadway can be narrower, the crest can likely be trimmed further to flatten the slope or decrease the overall embankment footprint. Existing fill conditions should be reassessed by a qualified geotechnical engineer during construction.

Additional rock fill may be required at the toe to complete the final embankment slope. A small catchment ditch and a stacked lock block barrier (or similar barrier) may also be added to the toe of the slope to retain any soil debris or rock fall from shallow failures associated with seismic slope deformation.

We recommend removing the retaining wall logs prior to reshaping the embankment, as overtime the wood will decompose, leaving voids that may cause embankment fill to settle and redistribute. This may result in large potholes or slumping of Oyster Bay Drive. However, if the Town accepts the risk of voids and settlement as an ongoing maintenance issue, the logs may be left in place.

8.1.1.1 Water Line Relocation

If the Town accepts the risks of seismic displacement and voids / settlement within the final embankment slope as discussed above, we recommend that the water line currently located within Oyster Bay Drive be relocated. Although the gravel road surface and the global stability of the embankment may accommodate some movements, the water line may not.

If the water line is to remain within Oyster Bay Drive, we recommend adhering to the CHBDC (CSA, 2014), removing the rotting logs, and constructing a 2H:1V embankment slope. During construction, the water line could be stabilized by saddling or temporary shoring, or be temporarily relocated and reinstated after embankment reshaping is completed. It is recommended that a suitably qualified and experienced contractor be consulted for ideas to temporarily stabilizing the water line. Additionally, starting the embankment reshaping approximately 1 m back from the crest of the existing slope may interfere with the current water line alignment. Therefore, the location of the crest of the final embankment slope may need to be adjusted during construction.

8.2 Power Building and Pole Relocation

Reshaping the embankment slope of Oyster Bay Drive will require the relocation of the existing power building and BC Hydro power pole at the toe of the retaining wall.

Based on the results of the site exploration and reconnaissance, we recommend relocating these structures to the south-east or north-west of the retaining wall location. Site specific geotechnical exploration and assessment would be required for foundation and subgrade recommendations; however, the following subsections present generalized discussion.

8.2.1.1 Relocation to the South-East

- A shallow foundation on the mixed fill observed at the base of the retaining wall (Table 3) may differentially settle over time. Based on the observed slope profile and dip in the bedrock surface, this fill may be thicker in the south-east portion of the marina parking lot, increasing the risk of differential settlement to the power building.
- The slope below Oyster Bay Drive decreases in height to the south-east end of the parking lot and competent sandstone bedrock rise upslope of roadway in this area. Therefore, the risk of slope instability to a building and power pole in this area is likely marginal.

8.2.1.2 Relocation to the North-West

- The presence of bedrock upslope of the parking lot and at the beach, north-west of the retaining wall suggests that the mixed fill may decrease in thickness in the north-west portion of the parking lot. This may decrease the potential for differential settlement in this area.
- The slope below Oyster Bay Drive steepens to the north-west. Relocating the building here may increase the risk of impact from surficial slope failures, deadfall of trees, or rock fall. A concrete wall or barrier on the slope-facing wall of the building may help mitigate this risk.
- Weak shale bedrock was observed outcropping in the slope to the north-west of the retaining wall; therefore, although the slope is steeper in this area, it may be more than marginally stable.

9.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.




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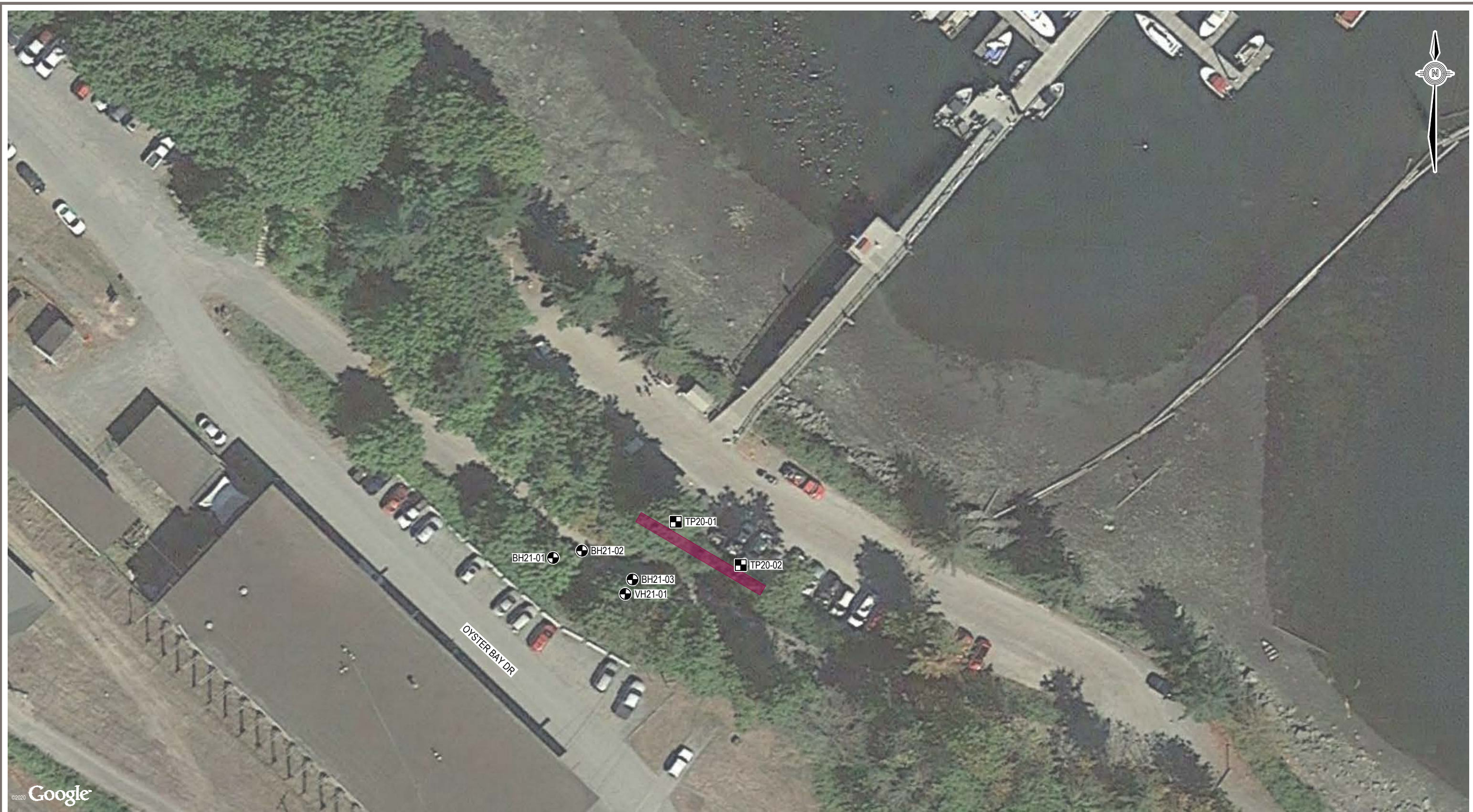
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FIGURES

Figure 1 Testhole Plan

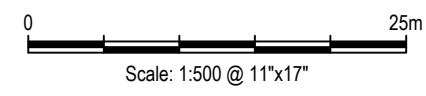


Q:\Vancouver\Drafting\Engineering\VGEO\ENG.VGEO03929-02\ENG.VGEO03929-02\Failing Log Wall ROB.dwg [FIGURE 1], April 08, 2021 - 11:15:23 am (BY: HALL, ROBERT J)

- LEGEND**
- Testhole locations
 - Testpit locations
 - Approximate retaining wall location

- NOTES**
1. Conceptual stage sketch only. Not to be used for detailed design.
 2. Image from Google Earth Pro.

ISSUED FOR USE



CLIENT



**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

TESTHOLE PLAN

PROJECT NO. ENG.VGEO03929-02	DWN RH	CKD CW	REV 0	Figure 1
OFFICE VANC	DATE April 8, 2021			

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

The Professional Document is intended for the sole use of TETRA TECH's Client (the "Client") as specifically identified in the TETRA TECH Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the "Contract" herein). TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by TETRA TECH.

Any unauthorized use of the Professional Document is at the sole risk of the user. TETRA TECH accepts no responsibility whatsoever for any loss or damage where such loss or damage is alleged to be or, in fact, caused by the unauthorized use of the Professional Document.

Where TETRA TECH has expressly authorized the use of the Professional Document by a third party (an "Authorized Party"), consideration for such authorization is the Authorized Party's acceptance of these Limitations on Use of this Document as well as any limitations on liability contained in the Contract with the Client (all of which is collectively termed the "Limitations on Liability"). The Authorized Party should carefully review both these Limitations on Use of this Document and the Contract prior to making any use of the Professional Document. Any use made of the Professional Document by an Authorized Party constitutes the Authorized Party's express acceptance of, and agreement to, the Limitations on Liability.

The Professional Document and any other form or type of data or documents generated by TETRA TECH during the performance of the work are TETRA TECH's professional work product and shall remain the copyright property of TETRA TECH.

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1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this document, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to explore, address or consider and has not explored, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.9 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.10 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historical environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional exploration and review may be necessary.

1.11 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.12 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques, and construction sequence are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.15 DRAINAGE SYSTEMS

Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function. Where temporary or permanent drainage systems are installed within or around a structure, these systems must protect the structure from loss of ground due to mechanisms such as internal erosion and must be designed so as to assure continued satisfactory performance of the drains. Specific design details regarding the geotechnical aspects of such systems (e.g. bedding material, surrounding soil, soil cover, geotextile type) should be reviewed by the geotechnical engineer to confirm the performance of the system is consistent with the conditions used in the geotechnical design.

1.16 DESIGN PARAMETERS

Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

1.17 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

1.18 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

PRELIMINARY ASSESSMENT AND REMEDIATION RECOMMENDATIONS MEMO (TETRA TECH, 2020)

To: Mr. Ryan Bouma, P.Eng. **Date:** December 7, 2020
c: **Memo No.:** 001
From: Ms. Casey Watamaniuk EIT, GIT **File:** 704-ENG.VGEO03929-01
Mr. Andrew Walker, P.Eng.
Subject: Preliminary Assessment and Remediation Recommendations for a Failing Log Retaining Wall within the Town of Ladysmith Marina Parking Lot

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) has been retained by the Town of Ladysmith (the Town) to conduct a preliminary geotechnical assessment and provide preliminary remediation recommendations for a failing log retaining wall located within the Town Marina parking lot. On August 28, 2020, Mr. Andrew Walker of Tetra Tech and Messrs. Ryan Bouma and Geoff Goodall of the Town visited the site. Mr. Andrew Walker provided an email to Ryan Bouma and Geoff Goodall on September 1, 2020 to outline some initial thoughts for geotechnical assessment and remediation.

Tetra Tech's scope of work was outlined in our proposal dated October 2, 2020 and is subject to our Services Agreement (PO# 35190) signed on October 6, 2020. This document presents our understanding of the project, summarizes information obtained during a background review and site exploration, presents a preliminary slope stability analysis, and discusses preliminary recommendations for remediation. This document is subject to our Limitations on the Use of This Document, provided in Appendix A.

1.1 Site Description

The failing log retaining wall is in the Town marina parking lot, located at 611 Oyster Bay Drive (Figure 1). The slope retained by the wall rises to the southwest and is benched by Oyster Bay Drive. An approximately 12 m wide gravel parking lot exists to the northeast of the retaining wall before the slope descends to the beach of the Ladysmith Harbour.

The slowly failing retaining wall is composed of rotting timbers that are tied back into the slope with cables. No direct measurements have been made, but the Town has indicated that the wall has moved in the last few years. The retaining wall is leaning towards a relatively new building that provides power to the local marina. A BC Hydro distribution line runs to the building. One power pole located in front of the retaining wall has a timber support beam founded in the slope retained by the failing wall.

2.0 SCOPE OF WORK

Tetra Tech's scope of work was to assess the slope retained by the failing retaining structure and provide the Town with conceptual options for remediating the slope. Our work plan, as outlined in our proposal dated October 2, 2020, included:

- Carry out a background review of readily available geotechnical information and aerial photographs;
- Test pit and/or hand probe along the slope (crest and base) with a backhoe provided by the Town;

- Carry out a site reconnaissance to measure the slope and existing retaining structure, record outcropping bedrock and any other features deemed relevant to the exploration;
- Conduct preliminary slope stability analyses and provide up to three concepts for remediation of the slope in a short technical memo; and,
- Follow up conversations with the Town to discuss the remediation options presented and if further geotechnical exploration / assessment is required.

3.0 BACKGROUND REVIEW

Tetra Tech has conducted a background review of the readily available geotechnical information summarized in the following sections. References are provided in detail at the end of this document.

3.1 Site History

The Town and others provided Tetra Tech with anecdotal evidence that the Town marina in the vicinity of Transfer Beach Park currently exists on reclaimed land. The mixed fill used to reclaim the land likely included available natural materials and may have included coal slag. The BC Ministry of Energy, Mines and Petroleum Resources “Coal Map” indicates that the Nanaimo Coal Field exists across the Ladysmith harbour, to the northeast.

Mr. Bouma indicated that the failing retaining structure is likely over 80 years old. The age of the power building impacted by the failing retaining wall is estimated to be around 10 years. Google Street View images from 2009 do not show the building.

3.2 Geological Setting

Geology Victoria West of the Sixth Meridian (Map 1553A, GSC 1983) indicates that the site is generally characterized by:

Qc – Capilano Sediments: sand, gravel; silt, clay; overlying; and

KH – Upper Cretaceous Nanaimo Group (Haslam Formation): shale, siltstone; minor sandstone.

3.3 Seismicity

Tetra Tech has obtained seismic data for the site from Natural Resources Canada online seismic hazard calculator. Seismic hazard levels corresponding to the 475-year and 2475-year return period seismic events were obtained, as specified in the EGBC (2005) “Retaining Wall Design” Professional Practice Guidelines. The seismic values included in Tables 1 and 2 are based on the 2015 National Building Code of Canada (NBCC) and have been used in preliminary slope stability analysis.

Table 1: Spectral Acceleration Values for Site Class C 1:475 Year Seismic Event (NBCC, 2015)

PGA (g)	PGV (m/s)	S _a (0.2)	S _a (0.5)	S _a (1.0)	S _a (2.0)	S _a (5.0)	S _a (10.0)
0.254	0.349	0.583	0.519	0.272	0.152	0.034	0.012

Table 2: Spectral Acceleration Values for Site Class C 1:2,475 Year Seismic Event (NBCC, 2015)

PGA (g)	PGV (m/s)	S _a (0.2)	S _a (0.5)	S _a (1.0)	S _a (2.0)	S _a (5.0)	S _a (10.0)
0.479	0.740	1.098	1.019	0.585	0.350	0.109	0.039

Based on the subsurface conditions encountered during previous site explorations, this site would be classified as Site Class C, in accordance with the provisions of NBCC 2015. The design of the slope remediation works should be based on a PGA factored by seismic coefficient F(PGA) as per Table 4.1.8.4.-H in NBCC 2015 and summarized in Table 3.

Table 3: Factored PGA Values for the 1:2,475 Year Seismic Event (NBCC, 2015)

Design Seismic Event	F(PGA) Table 4.1.8.4.H	Design PGA (Site Class C) (g)
1:475	1.0	0.254
1:2475	1.0	0.479

According to FHWA (U.S. DoTFHA, 2009), if an MSE wall system can tolerate 25 mm to 50 mm of movement, then smaller PGA's than defined in Table 3 may be used. This can be addressed in detailed design, if required.

4.0 SITE EXPLORATION

Mr. Andrew Walker, P.Eng., and Ms. Casey Watamaniuk, EIT, GIT of Tetra Tech's Nanaimo office were on site on October 15, 2020 to conduct the site reconnaissance and supervise the test pit subsurface exploration. They were met onsite by Mr. Ryan Bouma and two other representatives from the Town. The site exploration was conducted in overcast weather and temperatures of 8°C to 15°C.

4.1 Site Reconnaissance

On October 15, 2020 Tetra Tech conducted a site reconnaissance which included hand probing the slope, obtaining approximate measurements of the slope and retaining wall, recording the location of bedrock outcrops, and general visual observation of the slope conditions.

Several key field observations are described below (dimensions are visual estimates and should be considered approximate and indicative only). Select field photographs are included at the end of this document.

- The upslope shoulder of the lowest switchback of Oyster Bay Drive is characterized by large near-vertical rock bluffs consistent with the description of the Haslam Formation in Section 3.2. The rock face appears to be a near-vertical bedding plane. Near-vertically bedded bedrock was also observed in the shallow ditch upslope of the road. Ditch water appears to be running along bedrock.

- The failing retaining wall varies from 1.5 m to 3.0 m high and is approximately 17 m – 20 m long. It is constructed of rotting timber tied back into the slope with cable and strikes in a northwest to southeast direction.
- The slope above the retaining wall is inclined at approximately 43°, and has a total height (including the retaining wall) of approximately 6 m. The slope height rises to 9 m to the northwest of the failing retaining wall.
- The fill behind the retaining wall appears to be primarily composed of large ballast rock fill. The rock fill is described as large, angular boulders of similar composition to the rock observed upslope of Oyster Bay Drive. There appears to be voids of varying size between the boulders.
- A thin veneer of organic topsoil and / or old sand and gravel fill was observed mixed in with the ballast rock.
- The retained slope is vegetated by young maple trees and a thin understory of blackberries, ivy and various grasses.
- Thin erosion protection matting, or geotextile, was observed at various points on the slope to the northwest of the failing retaining wall, beneath the understory vegetation and topsoil. It is likely that the slope surface is blanketed in this material.
- No seepage was observed on or within the slope retained by the failing wall.
- No bulging of the parking lot subgrade was observed at the toe of the failing wall.
- Near-vertically bedded bedrock consistent with the description of the Haslam Formation (Section 3.2) was observed in an outcrop at the beach, on both sides of the existing pier.

4.2 Test Pit Subsurface Exploration

A total of three test pits were advanced using a 14' JCB 3CX backhoe, owned and operated by the Town. A BC One Call was conducted by the Town and utility lines were located and marked by a third-party utility locator prior to the subsurface exploration. Test pit locations were recorded using a handheld GPS.

Tetra Tech provided preferred locations for the test pits, completed on-site logging of the material encountered, and directed termination depths and backfilling. No soil samples were obtained for further testing. Two test pits were advanced to refusal on inferred bedrock (3.5 m – 3.7 m) in the gravel parking lot at the base of the failing retaining wall. One test pit uncovered an abandoned utility line at approximately 1.2 m and was relocated away from the old trench backfill. The backhoe was also used to scrub an area of the slope above the retaining wall to observe the existing backfill conditions.

Upon completion of each test pit, the excavations were backfilled to grade with the excavated soil and bucket tamped. The Town indicated they would return to reinstate the compact gravel surface of the parking lot at the test pit locations.

A plan view showing the test pit locations in relation to the wall location is provided in Figure 1. Detailed descriptions of the soil conditions encountered are presented on the logs in Appendix B.

4.2.1 Interpreted Subsurface Conditions

A summary of the stratigraphy encountered in the test pits excavated at the base of the retaining wall is provided in Table 4.

Groundwater seepage was observed at approximately 3.0 m depth in TP20-01 and TP20-02B. Groundwater depth generally corresponds with sea level and groundwater encountered had a briny odour. TH20-02A did not encounter groundwater.

Table 4: Interpreted Stratigraphy Summary

Unit	Unit Name	Start Depth (mbgs)	Thickness (m)	Unit Description
F1	GRAVEL PARKING LOT SURFACE	Surface	0.1	3" minus gravel parking lot surface.
F2	ROAD BASE FILL (SAND AND GRAVEL)	0.1	0.1 – 0.4	Silty sand and gravel fill with a slight organic odour, some roots, and rounded cobbles.
F3	TRENCH BACKFILL (SAND)	0.5	0.7	Silty, poorly graded sand fill used to backfill an old utility line. Only encountered in TP20-02A.
F4	MIXED FILL (SAND, GRAVEL, COBBLES, BOULDERS, ORGANICS, METAL DEBRIS)	0.2 – 0.5	2.8 – 3.0	Silty sand to sand and gravel fill mixed with angular cobbles and boulders up to 1.5 m. Includes roots, wood debris, and metal cable debris. Some disturbed clumps of sandy, organic silt observed at depth.
F5	GRAVEL FILL	3.0	0.7	Sub-rounded gravel fill with some sand, wet with a briny odour and slight hydrocarbon sheen. Mixed with some metal and wood debris. Only encountered in TP20-02B.
A	INFERRED BEDROCK	3.5 – 3.7	Terminus depth	Test pits refused on inferred bedrock surface. The surface appeared to be horizontal. Likely sedimentary rock similar to mudstone / shale bedrock observed in outcrop at the beach.

5.0 PRELIMINARY SLOPE STABILITY ANALYSIS

Tetra Tech has undertaken a preliminary slope stability analysis to assess the global stability of slope under existing conditions and for various slope remediation options. This analysis helped to select the three conceptual slope remediation options presented in Section 6.0 by ensuring they met or exceeded the minimum Factors of Safety (FoS) established in the EGBC Retaining Wall Design Professional Practice Guidelines (EGBC, 2019). These FoS values are summarized in Table 5.

Table 5: Minimum Factors of Safety for Long-term Global Stability (EGBC, 2019)

Loading Condition	Minimum Factor of Safety
Static	1.5
1-in-475-Year Seismic Event	1.2
1-in-2,475-Year Seismic Event	1.1

The analysis of the global stability of the slope was conducted using a 2-dimensional limit equilibrium slope stability analysis software, Slope/W 2019 by Geo-Slope International Ltd. FoS values were found using the Morgenstern Price, limit equilibrium analysis technique. Each analysis area was defined using a slip surface entry and exit range. Engineering judgement was exercised to evaluate the appropriateness of critical slip surfaces identified by the software.

As bedrock depth beneath the road is uncertain, two bedrock interface scenarios were examined: deep bedrock surface and shallow bedrock surface.

Tetra Tech has made the following assumptions for the preliminary analysis:

- 0.5 m existing wall embedment depth (did not confirm this with a test pit for fear of disturbing the wall);
- Rock is impenetrable, as weathering condition of the rock behind the slope could not be observed; and,
- Groundwater located at or near the bedrock interface.

The results of the preliminary slope stability analysis, including the material parameters used for each model, are provided in Appendix C.

5.1 Seismic Slope Deformation Assessment: Bray-Travasariou Method

Where seismic slope stability analyses resulted in FoS values less than unity (1.0) for the 1-in-2,475-year seismic event, performance of conceptual remediation options was assessed based on deformation criteria using Method 1 in the EGBC Legislated Landslide Assessments, after Bray and Travasarou (2007). EGBC specifies a maximum seismic deformation of 150 mm (15 cm) in residential area slopes.

The figures presented in Appendix C for seismic loading conditions show the horizontal seismic coefficient (k_y) required for stability (FoS = 1.0) of the slope and the estimated deformations under the 1:2,475 year design seismic event loading.

6.0 DISCUSSION AND PRELIMINARY RECOMMENDATIONS

Based on our field observations and the results of the preliminary slope stability analysis, we judge that the existing retaining wall is likely experiencing external, overturning failure due to the lateral pressures of the retained fill. As a result, the slope behind the wall has begun to move. During the site reconnaissance, we did not observe indications of slope instability, such as tension cracking or toe bulging, other than the overturning wall at the toe of the slope.

Table 6 summarizes three conceptual options for remediation of the slope. The figures provided in Appendix C show slope stability analyses results and global stability FoS values (EGBC, 2019).

Our preliminary assessment does not assess internal or external (sliding, overturning, bearing) stability of the presented conceptual slope remediation options. This will be undertaken in detailed design of the chosen option.

Table 6: Conceptual Slope Remediation Options

Bedrock Case behind Existing Wall	Slope Remediation Concept	Comments
Near Surface	Reshape and Rockery Wall (Figure 2)	<ul style="list-style-type: none"> ▪ Clear existing fill from bedrock surface; ▪ Protect bedrock surface with Rockery Protection Wall or other support; ▪ Would likely require runoff control; ▪ Protection wall must be < 3.7 m without geogrid and < 4.2 m with geogrid reinforcement; ▪ May need to relocate existing utility lines within Oyster Bay Drive; ▪ A structural retaining wall may be required to maintain the existing road surface; and, ▪ Not modelled in Slope/W.
Any	Anchored MSE Wall (Figures 3 and 4)	<ul style="list-style-type: none"> ▪ Lock block or Vegetated SierraScape facing; ▪ Depth to bedrock would influence anchor requirement and length; ▪ If bedrock is deep, large vertical excavation (~6.5 m) required to keep Oyster Bay Road accessible during construction – may be difficult/expensive to stabilize during construction; ▪ May need to relocate existing utility lines within Oyster Bay Drive; ▪ Can tolerate some movement if founded on existing mixed fill; and, ▪ Meets EGBC minimum FoS values and / or minimum displacement criteria (Table 5).
	Anchored Soldier Pile and Lagging or Secant Pile Wall (Figure 5)	<ul style="list-style-type: none"> ▪ Top down construction allows equipment to work from parking lot, keeping Oyster Bay Road accessible and leaving existing road fill and utilities in place; ▪ Piles socketed and anchored into rock would minimize deformation and provide long term stability; ▪ Lagging could be concrete panels with architectural finish or steel plating; ▪ May need a drainage course to control seepage, depending on groundwater profile; ▪ Selected pile and lagging material must be resistant to excessive weathering from marine environment; ▪ Relatively expensive; and, ▪ Meets EGBC minimum FoS values (Table 5).

The existing power building may need to be removed to complete remediation of the slope. However, this should be discussed with the selected contractor. The requirement to remove the building depends on the contractor's equipment capabilities, space requirements, and planned construction sequencing. We anticipate that a pile wall is the only remediation option that may not require the removal of the power building.

6.1 Approximate Cost Comparison

Approximate costs associated with the remedial options discussed in Table 6 are presented in the sections below. It should be noted that construction cost estimation is not Tetra Tech's area of expertise and that this is a general estimation that is provided for comparison purposes only. For more accurate cost estimates, the preliminary designs should be reviewed by an experienced earthworks or piling contractor who would develop a better estimate. Costs are highly reliant on the bedrock profile, which would be better delineated with further geotechnical exploration. Costs do not consider any contaminated soils or their removal.

6.1.1 Reshaping the Slope and Rockery Wall

As previously discussed, this remediation option is only viable with shallow near surface bedrock that extends along the road and down the slope. A small rockery wall or other support may also be required to maintain the road.

The estimated cost of works to excavate the slope and build a small rockery wall is approximately \$80,000 - \$150,000. This estimate includes removal of existing soils, construction of a short rockery wall and re-profiling the remaining slope.

6.1.2 Anchored MSE Wall

This remediation method will vary considerably depending on the bedrock profile. The estimated cost of works to construct an MSE wall is approximately \$200,000 - \$350,000. This estimate includes removal of existing soils, construction of the MSE wall, potential anchoring (depending on depth of bedrock) and re-profiling the remaining slope.

6.1.3 Anchored Soldier Pile and Lagging Wall or Secant Pile Wall

This remediation method will vary considerably depending on the bedrock profile. The estimated cost of works to construct an Anchored Soldier Pile and Lagging Wall or Secant Pile Wall is approximately \$400,000 - \$700,000. This estimate includes either installation of soldier piles with lagging or a secant pile wall (i.e., a retaining wall consisting entirely of piles). Anchors will likely be required but their length and number will depend on the underlying bedrock consistency and profile.

6.2 Recommendations for Further Work

The selection of a slope remediation concept and the associated construction costs to replace the failing retaining wall strongly depend on the depth to bedrock behind the existing wall. Therefore, we recommend that at least one geotechnical borehole is advanced in the surface of Oyster Bay Drive, above the failing retaining wall. The purpose of this borehole would be to better understand the bedrock profile behind the wall.

Due to the presence of ballast rock fill and large cobbles and boulders onsite, we recommend retaining a sonic drill rig for additional drilling. Sonic drill rigs are also able to core into rock to depths up to 3 m in moderately strong rock, which would be deep enough to proof any bedrock surface encountered.

A third-party utility locator and hydrovacuum truck contractor will also be required to locate and expose the utility line located within Oyster Bay Drive prior to drilling.

Following additional site exploration, Tetra Tech can prepare a preliminary design of the selected slope remediation concept. Specific detailed design scope and fees can be discussed with the Town but will depend on the selected slope remediation option and the involvement of a civil engineering consultant. Tetra Tech will prepare an additional scope of work and cost estimate separate from this report.

7.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Town of Ladysmith and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Town of Ladysmith, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

The conceptual design options discussed herein have not undergone detailed design methodologies and requirements outlined in the Canadian Highway Bridge Design Code and/or the "Design and Construction of Mechanically Stabilized Earth Wall and Reinforced Soil Slopes – Volume I and II" No. FHWA-NHI-10-024 published by the U.S. Department of Transportation, Federal Highway Administration.

8.0 CLOSURE

We trust this technical memo meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.



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/dr

Attachments: References
 Figures
 Photographs
 Appendix A – Tetra Tech’s Limitations of the Use of this Document
 Appendix B – Testpit Logs
 Appendix C – Slope stability Analyses Results

REFERENCES

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FIGURES

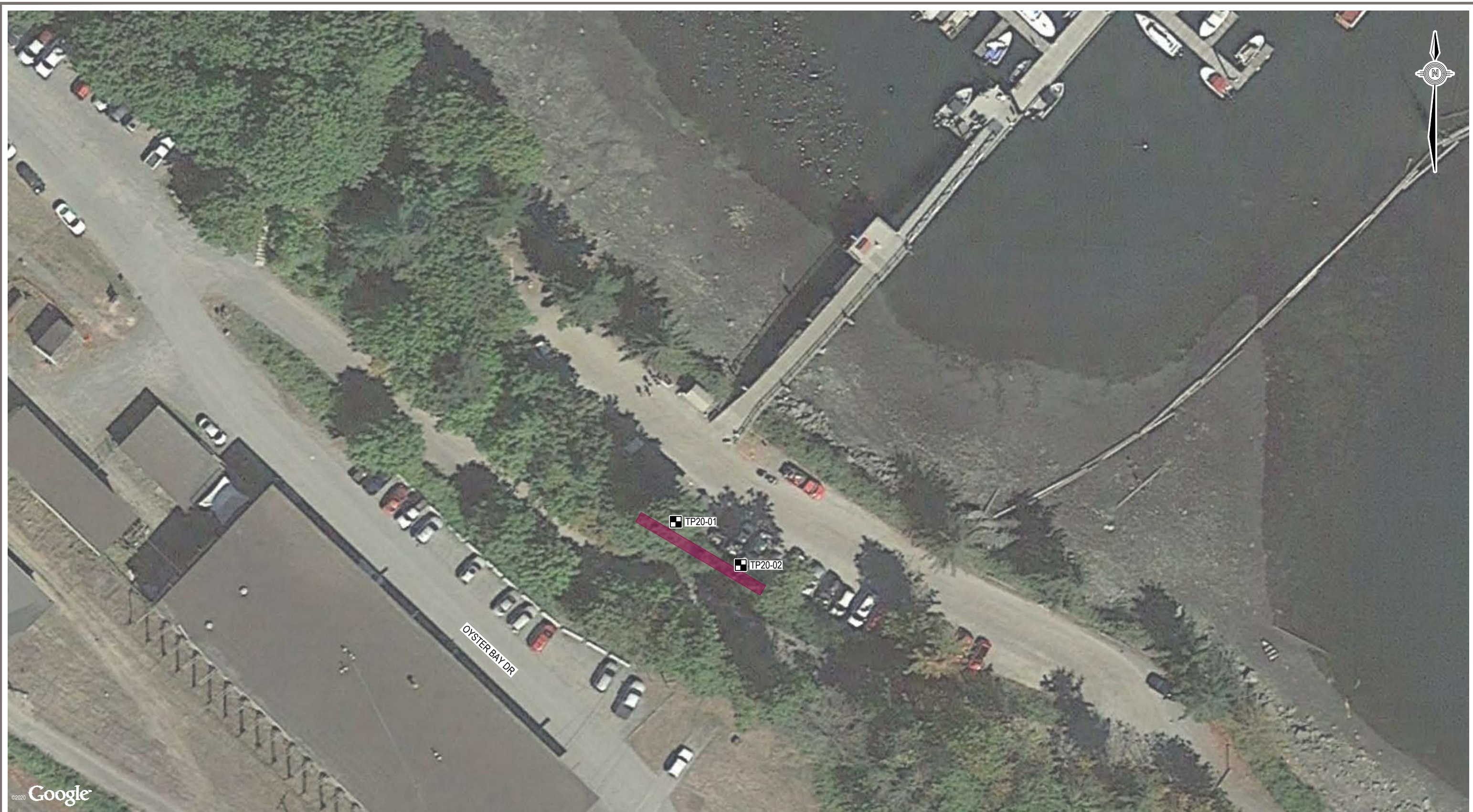
Figure 1 – Testhole Plan

Figure 2 – Slope Retention Concept Sketches: Slope Reshape and Rockery Protection Wall

Figure 3 – Slope Retention Concept Sketches: MSE Wall

Figure 4 - Slope Retention Concept Sketches: Anchored MSE Wall

Figure 5 - Slope Retention Concept Sketches: Anchored Soldier Pile Wall

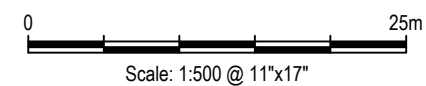


Q:\Vancouver\Drafting\Engineering\VGEO\3929-01\ENG.VGEO03929-01\Failing Log Wall ROB.dwg [FIGURE 1] December 04, 2020 - 8:48:01 am (BY: HALL, ROBERT J)

LEGEND
 ■ Testpit locations
 ■ Approximate retaining wall location

NOTES
 1. Conceptual stage sketch only. Not to be used for detailed design.
 2. Image from Google Earth Pro.

ISSUED FOR USE



CLIENT

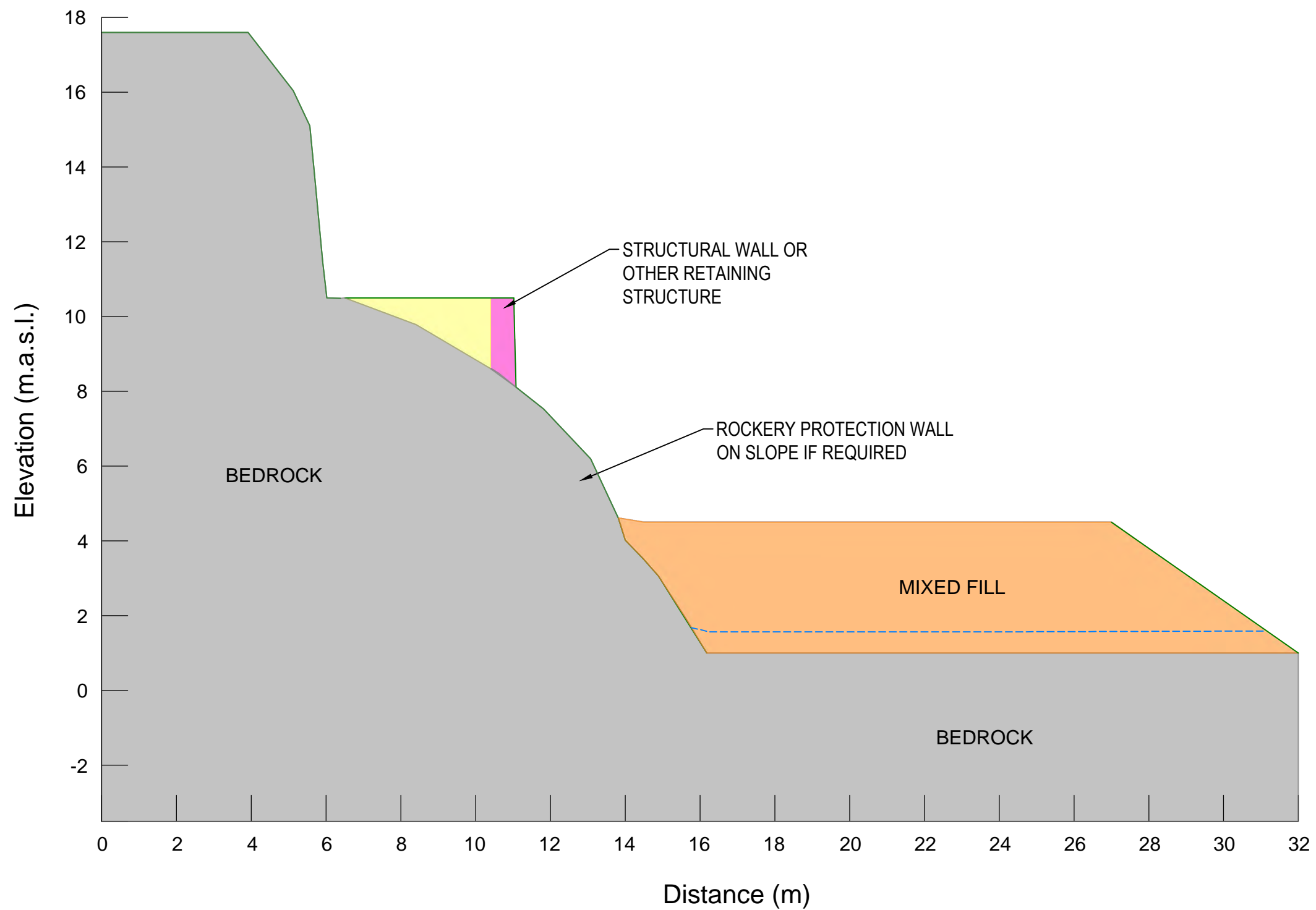


**TOWN OF LADYSMITH
 FAILING LOG RETAINING WALL**

TESTHOLE PLAN

PROJECT NO. ENG.VGEO03929-01	DWN RH	CKD CW	REV 0	Figure 1
OFFICE VANC	DATE December 4, 2020			

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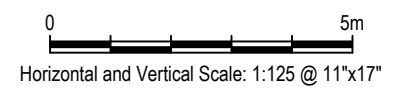


LEGEND

 Bedrock
 Granular fill
 Mixed fill
 Concrete
 Approximate groundwater table

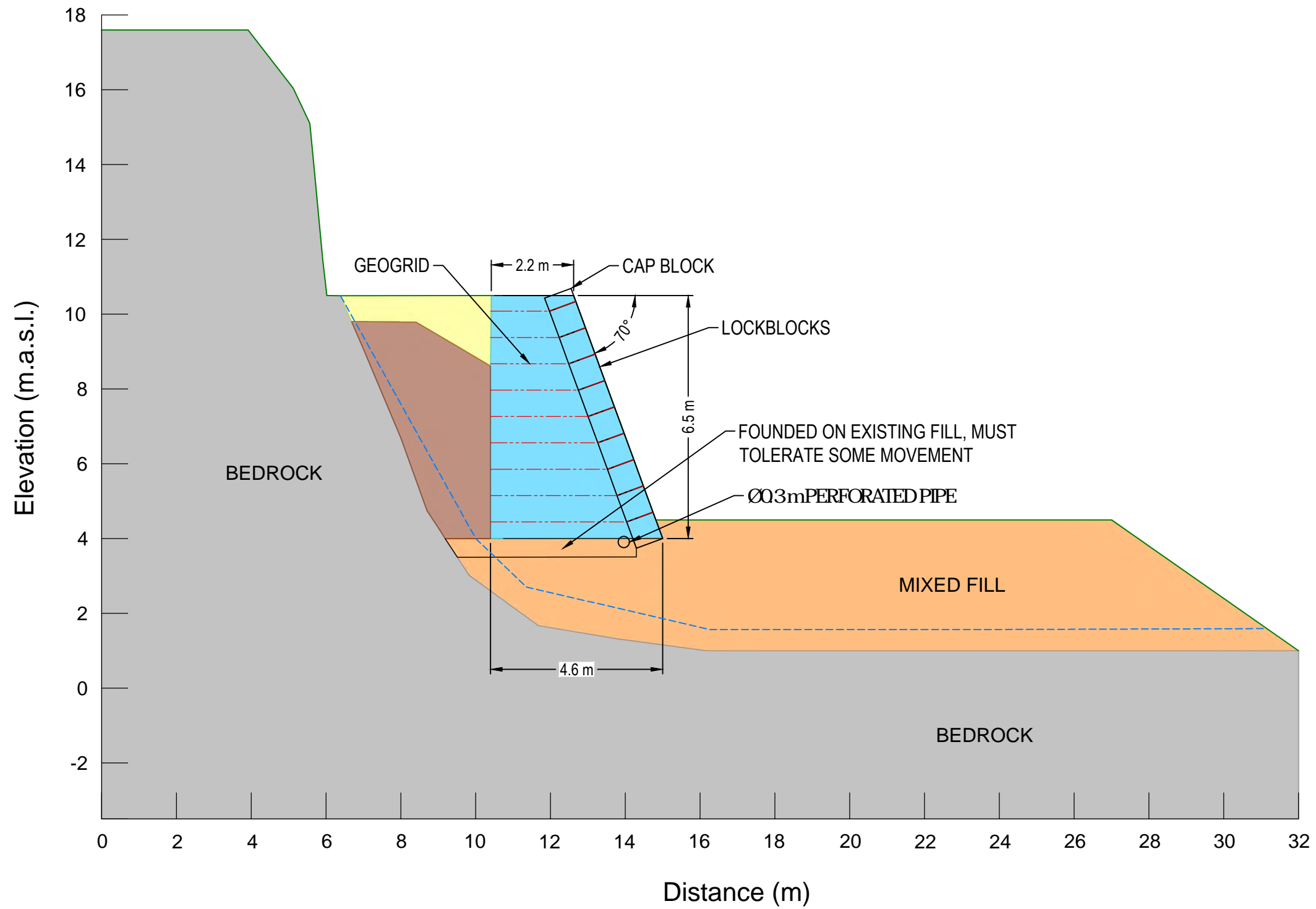
NOTES
 1. Conceptual stage sketch only. Not to be used for detailed design.

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 CLIENT		TOWN OF LADYSMITH FAILING LOG RETAINING WALL		
 TETRA TECH		SLOPE RETENTION CONCEPT SKETCHES SLOPE RESHAPE AND ROCKERY PROTECTION WALL		
PROJECT NO. ENG.VGEO03929-01	DWN RH	CKD CW	REV 0	Figure 2
OFFICE VANC	DATE December 4, 2020			

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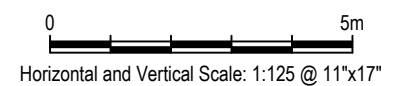


LEGEND

 Bedrock
 Granular fill
 Mixed fill
 MSE
 Rock fill
 Approximate groundwater table

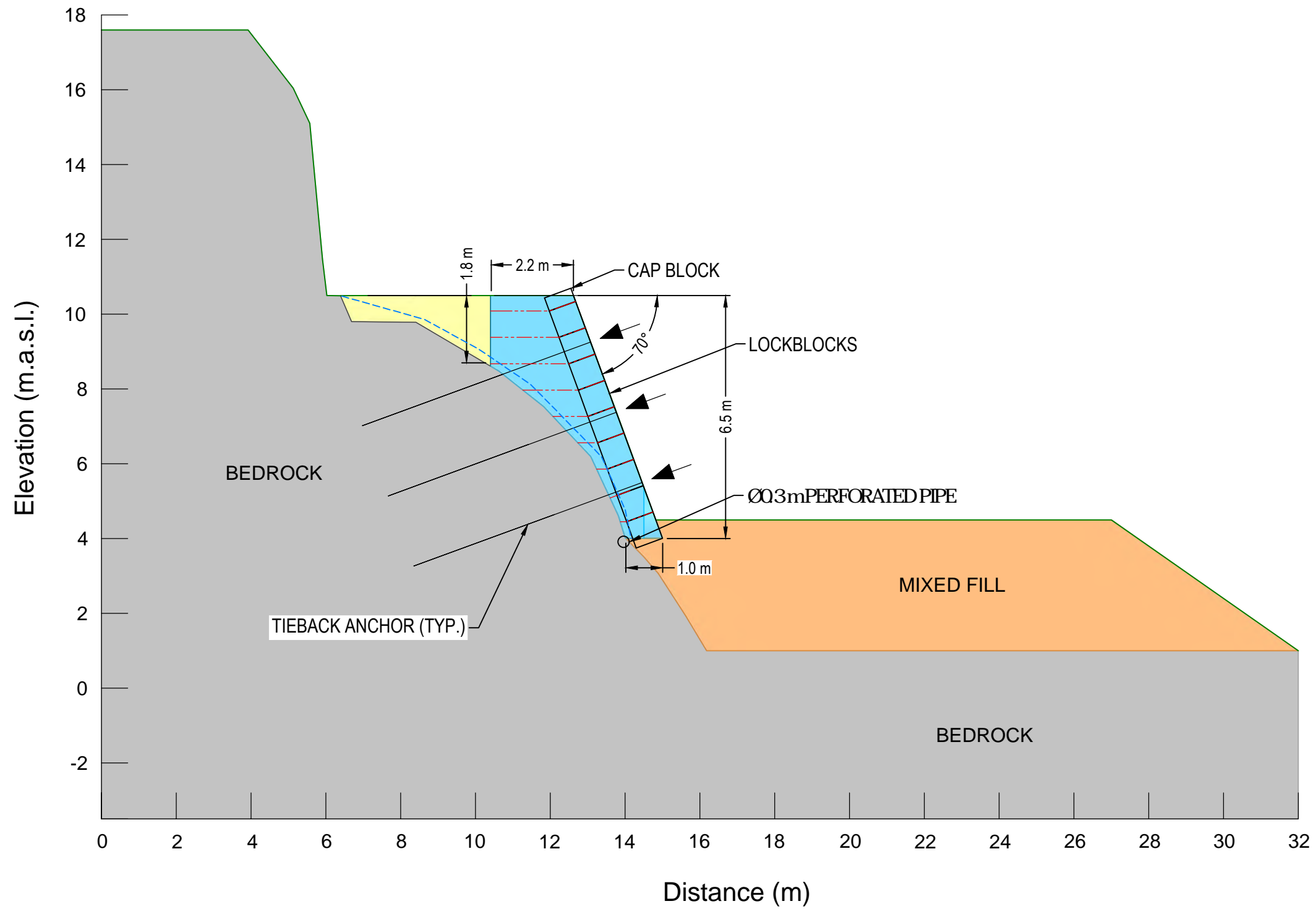
NOTES
 1. Conceptual stage sketch only. Not to be used for detailed design.

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 CLIENT		TOWN OF LADYSMITH FAILING LOG RETAINING WALL		
 TETRA TECH		SLOPE RETENTION CONCEPT SKETCHES MSE WALL		
PROJECT NO. ENG.VGEO03929-01	DWN RH	CKD CW	REV 0	Figure 3
OFFICE VANC	DATE December 4, 2020			

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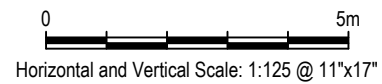


LEGEND

 Bedrock
 Granular fill
 Mixed fill
 MSE
 Approximate groundwater table

NOTES
 1. Conceptual stage sketch only. Not to be used for detailed design.

ISSUED FOR USE



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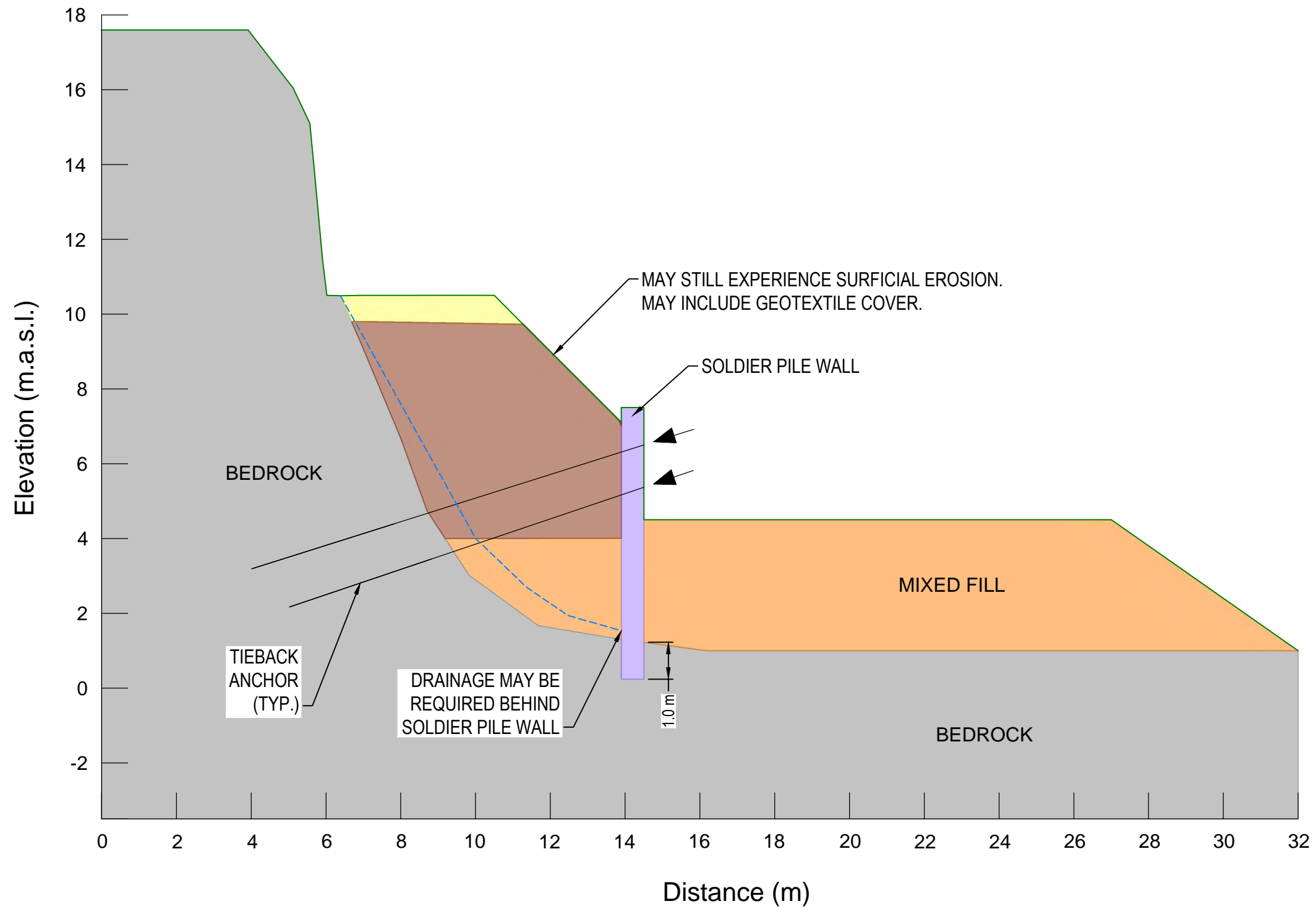
**TOWN OF LADYSMITH
 FAILING LOG RETAINING WALL**

**SLOPE RETENTION CONCEPT SKETCHES
 ANCHORED MSE WALL**

PROJECT NO. ENG.VGEO03929-01	DWN RH	CKD CW	REV 0
OFFICE VANC	DATE December 4, 2020		

Figure 4

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LEGEND

- Bedrock
- Granular fill
- Mixed fill
- Rock fill
- Soldier pile
- Approximate groundwater table

NOTES
 1. Conceptual stage sketch only. Not to be used for detailed design.

ISSUED FOR USE



CLIENT



**TOWN OF LADYSMITH
 FAILING LOG RETAINING WALL**

**SLOPE RETENTION CONCEPT SKETCHES
 ANCHORED SOLDIER PILE WALL**



PROJECT NO. ENG.VGEO03929-01	DWN RH	CKD CW	REV 0
OFFICE VANC	DATE December 4, 2020		

Figure 5

PHOTOGRAPHS

Photograph 1 – Failing Log Retaining Wall Behind Existing Power Building

Photograph 2 – Failing Log Retaining Wall, Looking Behind the Existing Power Building

Photograph 3 – Slope Northwest of Failing Retaining Wall

Photograph 4 – Erosion Protection Matting / Geotextile on Slope Northwest of Failing Retaining Wall

Photograph 5 – Oyster Bay Drive, Above Failing Retaining Wall, looking Southeast

Photograph 6 – Bedrock Upslope of Oyster Bay Drive

Photograph 7 – Bedrock Exposed in Upslope Ditch of Oyster Bay Drive



Photo 1: Failing Log Retaining Wall behind existing Power Building



Photo 2: Failing Log Retaining Wall, Looking behind the existing Power Building



Photo 3: Slope Northwest of Failing Retaining Wall



Photo 4: Erosion Protection Matting / Geotextile on Slope Northwest of Failing Retaining



Photo 5: Oyster Bay Drive, above Failing Retaining Wall, Looking Southeast



Photo 6: Bedrock Upslope of Oyster Bay Drive



Photo 7: Bedrock Exposed in Upslope Ditch of Oyster Bay Drive

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

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1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this document, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to explore, address or consider and has not explored, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.9 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.10 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historical environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional exploration and review may be necessary.

1.11 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.12 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques, and construction sequence are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.15 DRAINAGE SYSTEMS

Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function. Where temporary or permanent drainage systems are installed within or around a structure, these systems must protect the structure from loss of ground due to mechanisms such as internal erosion and must be designed so as to assure continued satisfactory performance of the drains. Specific design details regarding the geotechnical aspects of such systems (e.g. bedding material, surrounding soil, soil cover, geotextile type) should be reviewed by the geotechnical engineer to confirm the performance of the system is consistent with the conditions used in the geotechnical design.

1.16 DESIGN PARAMETERS

Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

1.17 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

1.18 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

TEST PIT LOGS

Town of Ladysmith

Testpit No: TP20-01

Project: Ladysmith Marina Log Retaining Wall
 Location: 611 Oyster Bay Drive
 Ladysmith, BC

Project No: 704-ENG.VGEO03929-01
 Ground Elev: 4.5 m
 UTM: 440377 E; 5427260 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Moisture Content	Peak		
0				10	20	30	40	
				20	40	60	80	
0		GRAVEL PARKING LOT (100 mm) SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm	[Graphical Representation: Pattern of small circles and dots]					4.5
0.5		50 mm thick crush coarse gravel layer GRAVEL (MIXED FILL), sandy, cobbly, some boulders, trace silt (as isolated clumps), well-graded, damp, brown, trace rootlets and wood debris, some metal cable debris; fine to coarse angular gravel, fine to coarse sand, angular cobbles and boulders up to 1						4.0
3.5		0.3 m thick, wet orange-brown, sandy silt lens with organic odour and significant wood debris; seepage observed in testpit wall						1.0
3.5		Testpit terminated at 3.5 m (refusal on inferred bedrock). - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement.					0	



Contractor: Town of Ladysmith

Completion Depth: 3.5 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

Completion Date: October 15, 2020

Reviewed By: [Signature] Page 263 of 331

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Town of Ladysmith

Testpit No: TP20-02A

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-01

Location: 611 Oyster Bay Drive

Ground Elev: 4.5 m

Ladysmith, BC

UTM: 440385 E; 5427253 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Peak			
0				10	20	30	40	
				20	40	60	80	
	Backhoe	GRAVEL PARKING LOT (100 mm) SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm						4
1		SAND (TRENCH BACKFILL), silty, poorly graded, damp, orange-brown, odourless; fine to medium sand						
2		Testpit terminated at 1.2 m (encountered abandoned buried utility). - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement.						3
3								2
4								1
5								0



Contractor: Town of Ladysmith

Completion Depth: 1.2 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

Completion Date: October 15, 2020

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Town of Ladysmith

Testpit No: TP20-02B

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-01

Location: 611 Oyster Bay Drive

Ground Elev: 4.5 m

Ladysmith, BC

UTM: 440386 E; 5427254 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Peak			
0				10	20	30	40	
				20	40	60	80	
0 to 3.7	Backhoe	<p>GRAVEL PARKING LOT (100 mm)</p> <p>SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm</p> <p>50 mm thick crush coarse gravel layer</p> <p>SAND (MIXED FILL), silty (as isolated clumps), gravelly, some cobbles and boulders, well-graded, damp, mottled brown, odourless, some metal cable debris, trace roots and rootlets; fine to coarse sand, fine to coarse sub-angular to angular gravel, angular cobbles and boulders up to 1.5 m</p>					4.5 to 0.8	
3.7		<p>wet, dark brown, sandy silt lens with organics; seepage observed in test pit wall</p> <p>GRAVEL (MIXED FILL), sandy to some sand, some silt, well-graded, wet, grey-brown, briney odour and slight hydrocarbon sheen, some metal and wood debris; fine to medium sub-rounded gravel, fine to coarse sand</p>					0.8 to 0.0	
4 to 5		<p>Testpit terminated at 3.7 m (refusal on inferred bedrock).</p> <ul style="list-style-type: none"> - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement. 					0.0 to -0.5	



Contractor: Town of Ladysmith

Completion Depth: 3.7 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

Completion Date: October 15, 2020

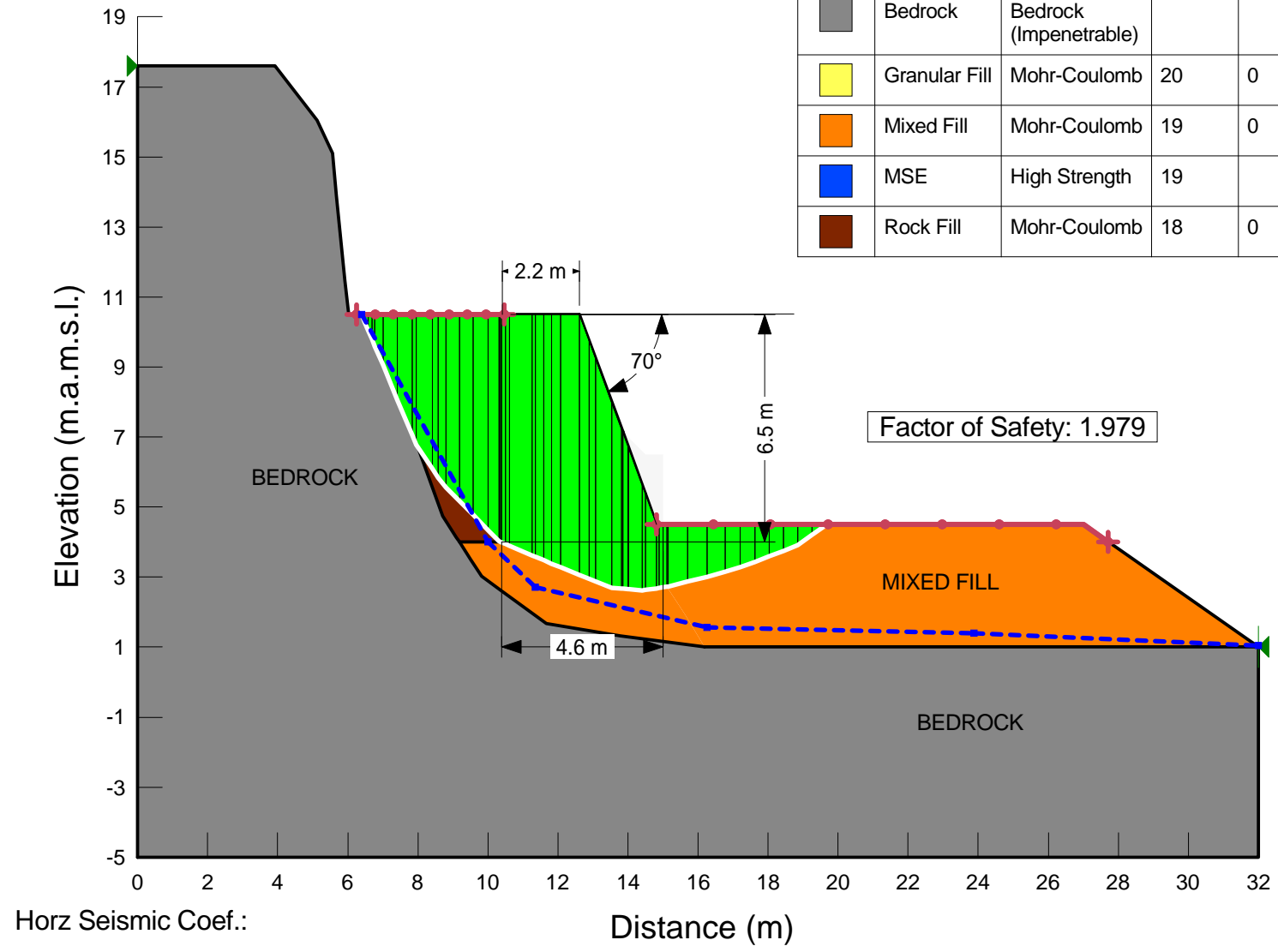
Reviewed By: [Signature]

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APPENDIX C

SLOPE STABILITY ANALYSES RESULTS

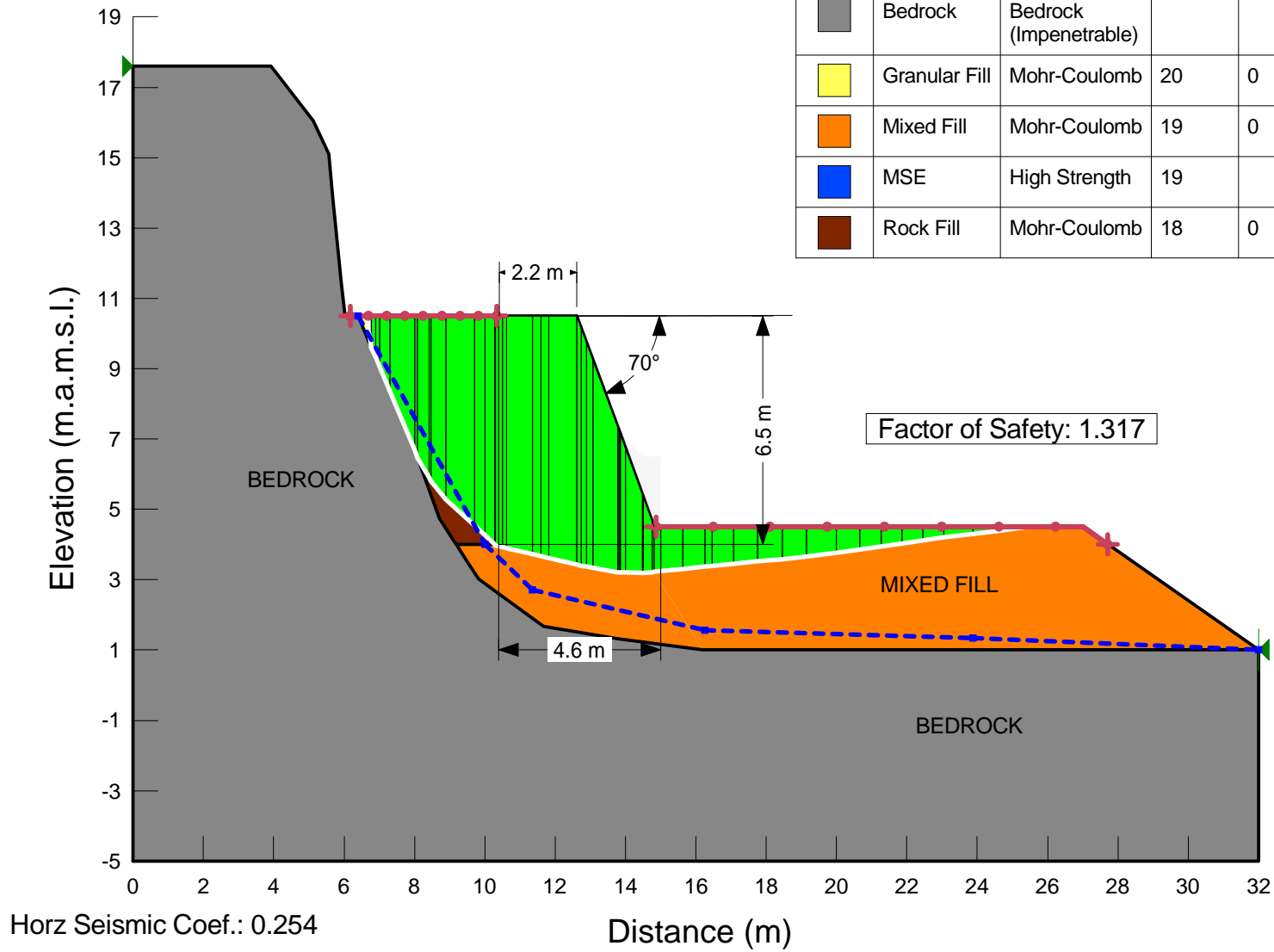
Color	Name	Model	Unit Weight (kN/m ³)	Cohesion' (kPa)	Phi' (°)
Grey	Bedrock	Bedrock (Impenetrable)			
Yellow	Granular Fill	Mohr-Coulomb	20	0	35
Orange	Mixed Fill	Mohr-Coulomb	19	0	35
Blue	MSE	High Strength	19		
Brown	Rock Fill	Mohr-Coulomb	18	0	45



MSE Wall.gsz	Name: Deep Bedrock_Static
11/25/2020	1:185

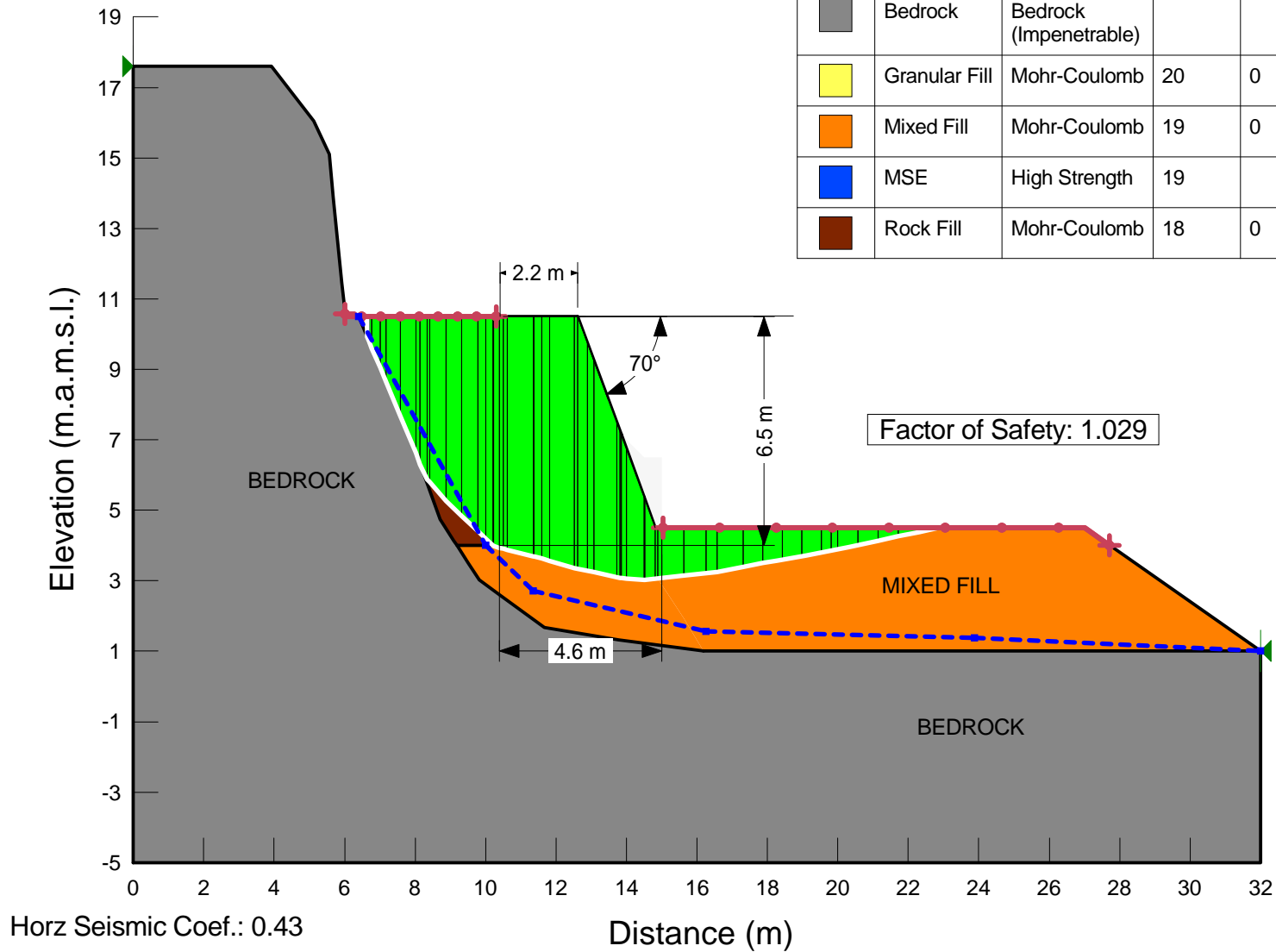
1.317

Color	Name	Model	Unit Weight (kN/m ³)	Cohesion' (kPa)	Phi' (°)
█	Bedrock	Bedrock (Impenetrable)			
█	Granular Fill	Mohr-Coulomb	20	0	35
█	Mixed Fill	Mohr-Coulomb	19	0	35
█	MSE	High Strength	19		
█	Rock Fill	Mohr-Coulomb	18	0	45



MSE Wall.gsz	Name: Deep Bedrock_475 Seismic
11/25/2020	1:185

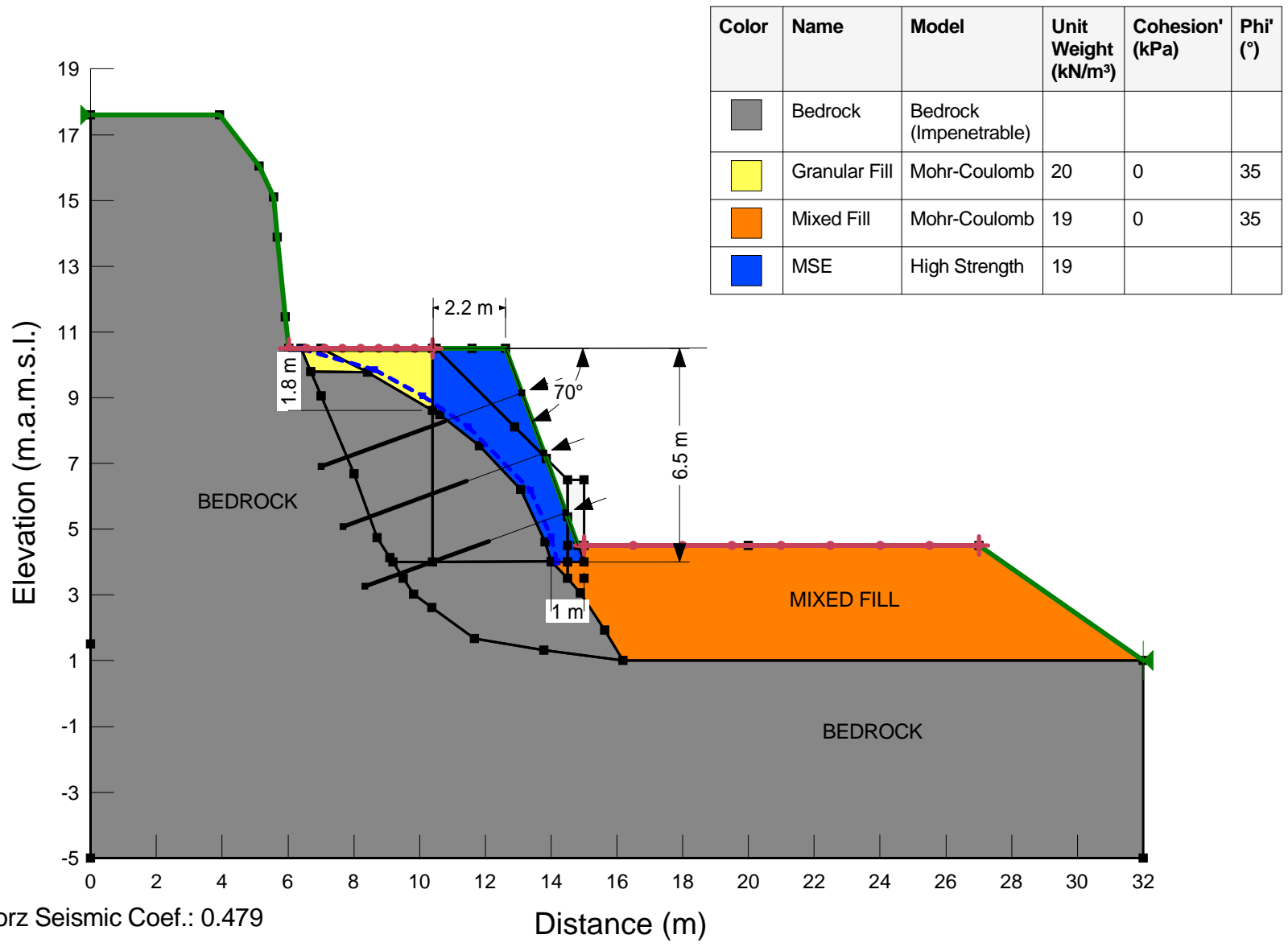
Color	Name	Model	Unit Weight (kN/m ³)	Cohesion' (kPa)	Phi' (°)
Grey	Bedrock	Bedrock (Impenetrable)			
Yellow	Granular Fill	Mohr-Coulomb	20	0	35
Orange	Mixed Fill	Mohr-Coulomb	19	0	35
Blue	MSE </td <td>High Strength</td> <td>19</td> <td></td> <td></td>	High Strength	19		
Brown	Rock Fill	Mohr-Coulomb	18	0	45



MSE Wall.gsz Name: Deep Bedrock_2475 Seismic

11/25/2020

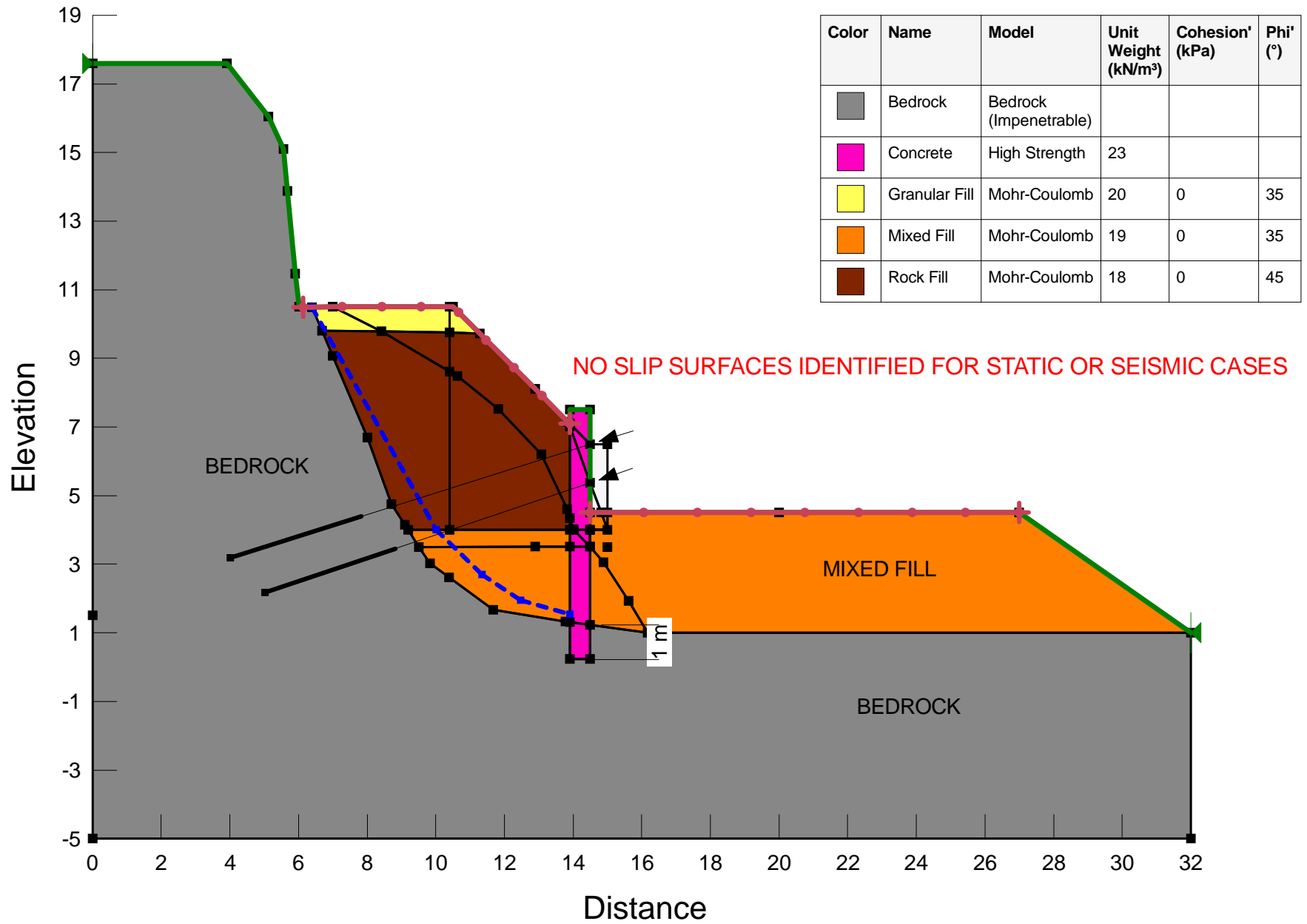
1:185



Horz Seismic Coef.: 0.479

NO SLIP SURFACES IDENTIFIED FOR STATIC OR SEISMIC CASES

MSE Wall.gsz	Name: Shallow Bedrock_2475 Seismic
11/25/2020	1:185



Soldier Pile Wall.gsz	
11/25/2020	1:163

APPENDIX C

TESTHOLE LOGS

Town of Ladysmith

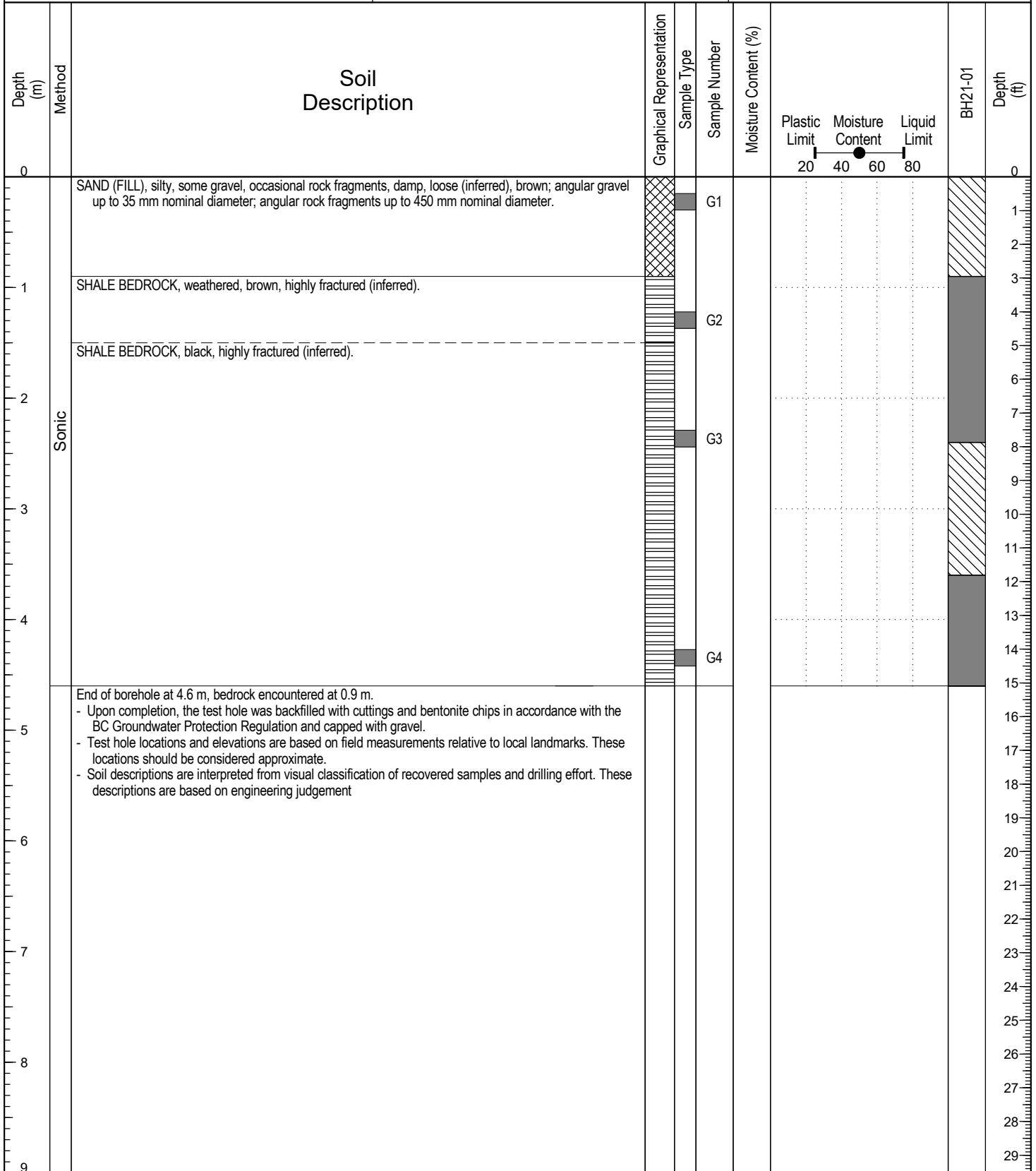
Borehole No: BH21-01

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-02

Location: 611 Oyster Bay Drive

Ladysmith, BC



Contractor: Drillwell Enterprises Ltd.

Completion Depth: 4.6 m

Drilling Rig Type: LS250 Minisonic

Start Date: March 11, 2021

Logged By: ER

Completion Date: March 11, 2021

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Town of Ladysmith

Borehole No: BH21-02

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-02

Location: 611 Oyster Bay Drive

Ladysmith, BC

Depth (m)	Method	Soil Description	Graphical Representation	Sample Type	Sample Number	Moisture Content (%)	Plastic Limit	Moisture Content	Liquid Limit	BH21-02	Depth (ft)
0		GRAVEL (FILL), some sand, some silt, damp, compact (inferred), dark brown; angular gravel up to 50 mm nominal diameter.									0
0.5		SHALE BEDROCK, weathered, brown, highly fractured (inferred).			G1						1
0.5		SHALE BEDROCK, black, highly fractured (inferred).									2
1.0											3
1.0					G2						4
1.5											5
1.5											6
2.0											7
2.0											8
2.5											9
2.5											10
3.0											11
3.0											12
3.5											13
3.5											14
4.0											15
4.0											16
4.5											17
4.5											18
5.0											19
5.0											20
5.5											21
5.5											22
6.0											23
6.0											24
6.5											25
6.5											26
7.0											27
7.0											28
7.5											29
7.5											30
8.0		End of borehole at 7.6 m, bedrock encountered at 0.5 m. - Upon completion, the test hole was backfilled with cuttings and bentonite chips in accordance with the BC Groundwater Protection Regulation and capped with gravel. - Test hole locations and elevations are based on field measurements relative to local landmarks. These locations should be considered approximate. - Soil descriptions are interpreted from visual classification of recovered samples and drilling effort. These descriptions are based on engineering judgement									25
8.0											26
8.5											27
8.5											28
9.0											29



Contractor: Drillwell Enterprises Ltd.

Completion Depth: 7.6 m

Drilling Rig Type: LS250 Minisonic

Start Date: March 11, 2021

Logged By: ER

Completion Date: March 11, 2021

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Town of Ladysmith

Borehole No: BH21-03

Project: Ladysmith Marina Log Retaining Wall
 Location: 611 Oyster Bay Drive
 Ladysmith, BC

Project No: 704-ENG.VGEO03929-02

Depth (m)	Method	Soil Description	Graphical Representation	Sample Type	Sample Number	Moisture Content (%)	Plastic Limit	Moisture Content	Liquid Limit	BH21-03	Depth (ft)
0							20	40	60		0
0 - 3.4		GRAVEL (FILL), sandy, trace silt, frequent cobbles, damp, loose (inferred), brown; subrounded to angular gravel and cobbles up to 100 mm nominal diameter.		G1							0 - 11
3.4 - 7.6	Sonic	SHALE BEDROCK, weathered, brown, highly fractured (inferred). SHALE BEDROCK, black, highly fractured (inferred).		G2							11 - 25
7.6 - 9		End of borehole at 7.6 m, bedrock encountered at 3.4 m. - Upon completion, the test hole was backfilled with cuttings and bentonite chips in accordance with the BC Groundwater Protection Regulation and capped with gravel. - Test hole locations and elevations are based on field measurements relative to local landmarks. These locations should be considered approximate. - Soil descriptions are interpreted from visual classification of recovered samples and drilling effort. These descriptions are based on engineering judgement									25 - 29



Contractor: Drillwell Enterprises Ltd.
 Drilling Rig Type: LS250 Minisonic
 Logged By: ER
 Reviewed By: [Signature]

Completion Depth: 7.6 m
 Start Date: March 11, 2021
 Completion Date: March 11, 2021
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Town of Ladysmith

Borehole No: VH21-01

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-02

Location: 611 Oyster Bay Drive

Ladysmith, BC

Depth (m)	Method	Soil Description	Graphical Representation	Moisture Content (%)	Plastic Limit	Moisture Content	Liquid Limit	Depth (ft)
0					20	40	80	0
0 - 1.6	Hydro-vacuum	SAND (FILL), gravelly, occasional cobble, damp, loose (inferred), brown; angular cobbles.						0 - 5.25
1.6 - 5.0		BEDROCK.						5.25 - 16.4
1.6		End of hydro-vacuum hole at 1.6 m, bedrock encountered. - Upon completion, the test hole was backfilled with sand and gravel by the Town of Ladysmith. - Test hole locations and elevations are based on field measurements relative to local landmarks. These locations should be considered approximate. - Soil descriptions are interpreted from visual classification of recovered samples and drilling effort. These descriptions are based on engineering judgement						



Contractor: Cougar Hydrovac Services

Completion Depth: 1.6 m

Drilling Rig Type: Hydro-vacuum

Start Date: March 10, 2021

Logged By: ER

Completion Date: March 10, 2021

Reviewed By: [Signature] Page 276 of 331

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Town of Ladysmith

Testpit No: TP20-01

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-01

Location: 611 Oyster Bay Drive

Ground Elev: 4.5 m

Ladysmith, BC

UTM: 440377 E; 5427260 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Peak			
0				10	20	30	40	
				20	40	60	80	
0		GRAVEL PARKING LOT (100 mm) SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm	[Graphical Representation: Pattern of small circles and lines representing soil texture]					4
0.5		50 mm thick crush coarse gravel layer GRAVEL (MIXED FILL), sandy, cobbly, some boulders, trace silt (as isolated clumps), well-graded, damp, brown, trace rootlets and wood debris, some metal cable debris; fine to coarse angular gravel, fine to coarse sand, angular cobbles and boulders up to 1						3
3.5		0.3 m thick, wet orange-brown, sandy silt lens with organic odour and significant wood debris; seepage observed in testpit wall						1
3.5		Testpit terminated at 3.5 m (refusal on inferred bedrock). - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement.					0	



Contractor: Town of Ladysmith

Completion Depth: 3.5 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

Completion Date: October 15, 2020

Reviewed By: [Signature]

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Town of Ladysmith

Testpit No: TP20-02A

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-01

Location: 611 Oyster Bay Drive

Ground Elev: 4.5 m

Ladysmith, BC

UTM: 440385 E; 5427253 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Peak			
0				10	20	30	40	
				20	40	60	80	
	Backhoe	GRAVEL PARKING LOT (100 mm) SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm						4
1		SAND (TRENCH BACKFILL), silty, poorly graded, damp, orange-brown, odourless; fine to medium sand						
2		Testpit terminated at 1.2 m (encountered abandoned buried utility). - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement.						3
3								
4								
5								



Contractor: Town of Ladysmith

Completion Depth: 1.2 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

Completion Date: October 15, 2020

Reviewed By: [Signature] Page 278 of 331

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Town of Ladysmith

Testpit No: TP20-02B

Project: Ladysmith Marina Log Retaining Wall

Project No: 704-ENG.VGEO03929-01

Location: 611 Oyster Bay Drive

Ground Elev: 4.5 m

Ladysmith, BC

UTM: 440386 E; 5427254 N; Z 10

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Field Vane (kPa)			Elevation (m)	
				Post-Peak	Peak			
0				10	20	30	40	
				20	40	60	80	
0 to 3.7	Backhoe	<p>GRAVEL PARKING LOT (100 mm)</p> <p>SAND and GRAVEL (FILL), silty to some silt, some to trace cobbles, well-graded, damp, brown, slight organic odour, trace roots; fine to coarse sand, fine to coarse sub-rounded gravel, rounded cobbles up to 120 mm</p> <p>50 mm thick crush coarse gravel layer</p> <p>SAND (MIXED FILL), silty (as isolated clumps), gravelly, some cobbles and boulders, well-graded, damp, mottled brown, odourless, some metal cable debris, trace roots and rootlets; fine to coarse sand, fine to coarse sub-angular to angular gravel, angular cobbles and boulders up to 1.5 m</p>					4.5 to 0.8	
3.7		<p>wet, dark brown, sandy silt lens with organics; seepage observed in test pit wall</p> <p>GRAVEL (MIXED FILL), sandy to some sand, some silt, well-graded, wet, grey-brown, briney odour and slight hydrocarbon sheen, some metal and wood debris; fine to medium sub-rounded gravel, fine to coarse sand</p>					0.8 to 0.0	
3.7 to 4.0		<p>Testpit terminated at 3.7 m (refusal on inferred bedrock).</p> <ul style="list-style-type: none"> - Upon completion, the testpit was backfilled with excavated soil and bucket-packed. - Testpit location and elevation estimated based on field measurements with a hand-held GPS and are approximate (+/- 5 m). - Soil descriptions were interpreted from visual classification of recovered samples. These estimates are based on engineering judgement. 					0.0 to 0.0	



Contractor: Town of Ladysmith

Completion Depth: 3.7 m

Drilling Rig Type: JCB 3Cx 14' Backhoe

Start Date: October 15, 2020

Logged By: CW

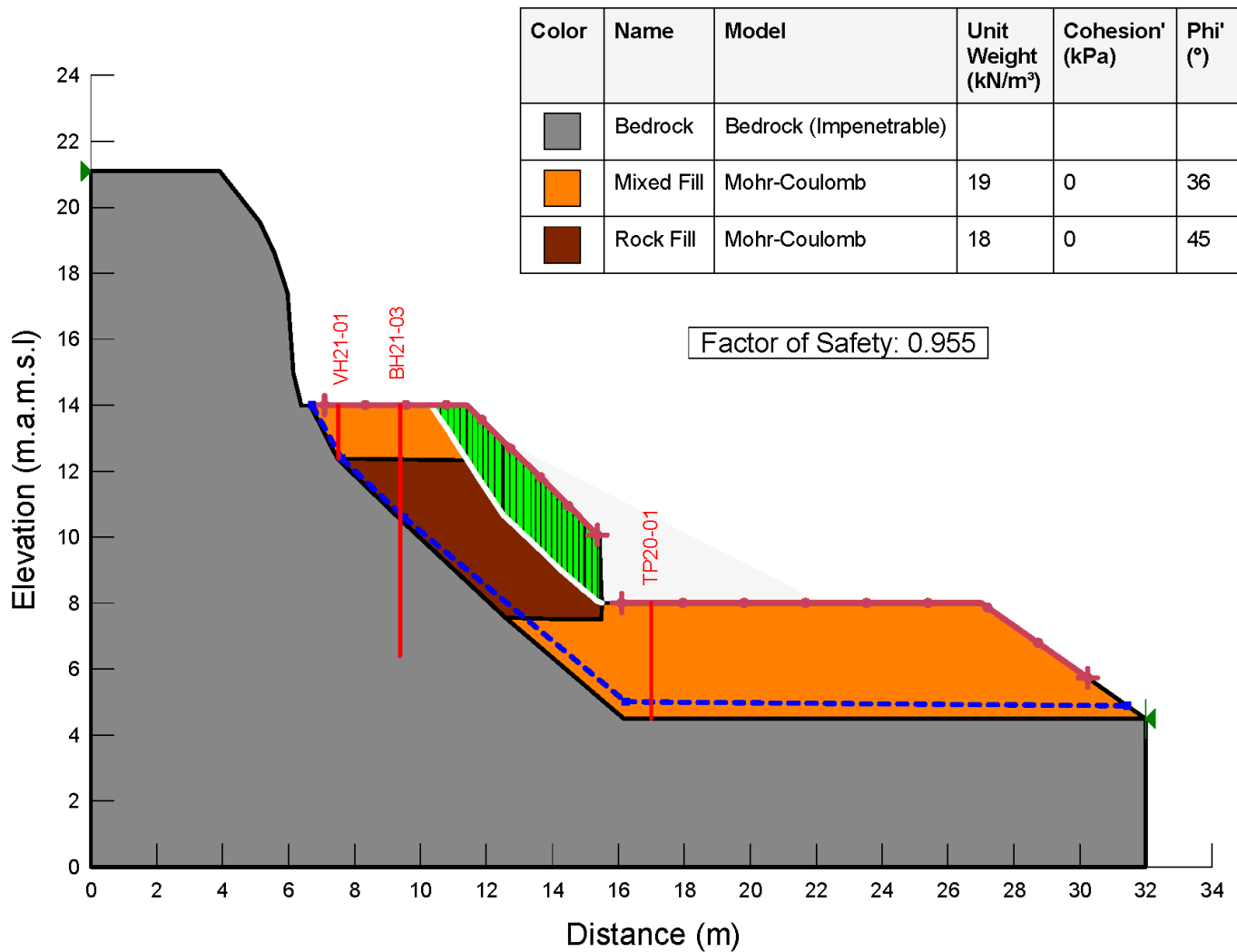
Completion Date: October 15, 2020

Reviewed By: [Signature]

Page 1 of 1

APPENDIX D

SLOPE STABILITY ANALYSES RESULTS



LEGEND

- - - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



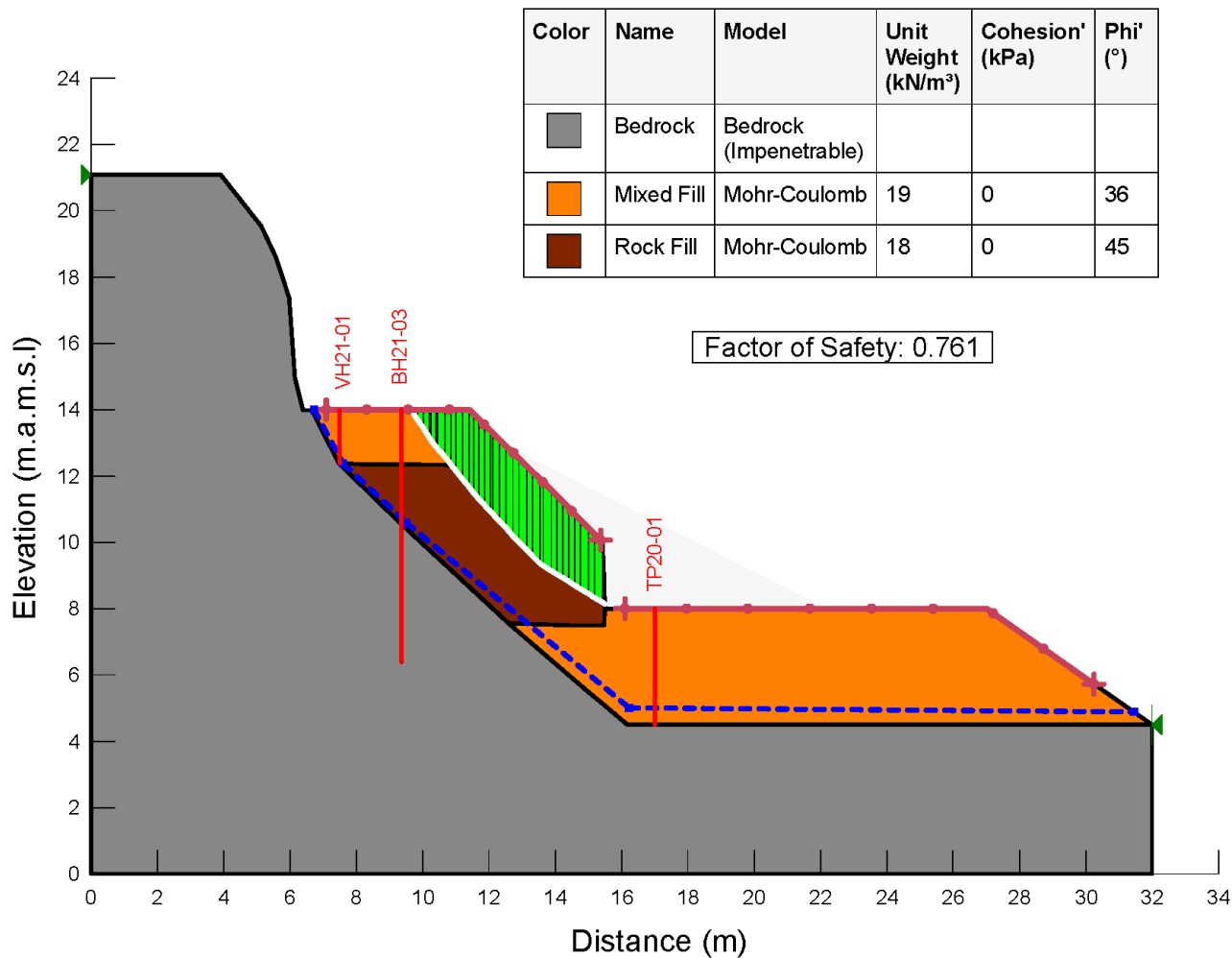
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

EXISTING CONDITIONS – STATIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D1



LEGEND

- - - - - Inferred Groundwater Table
- — — — — Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.



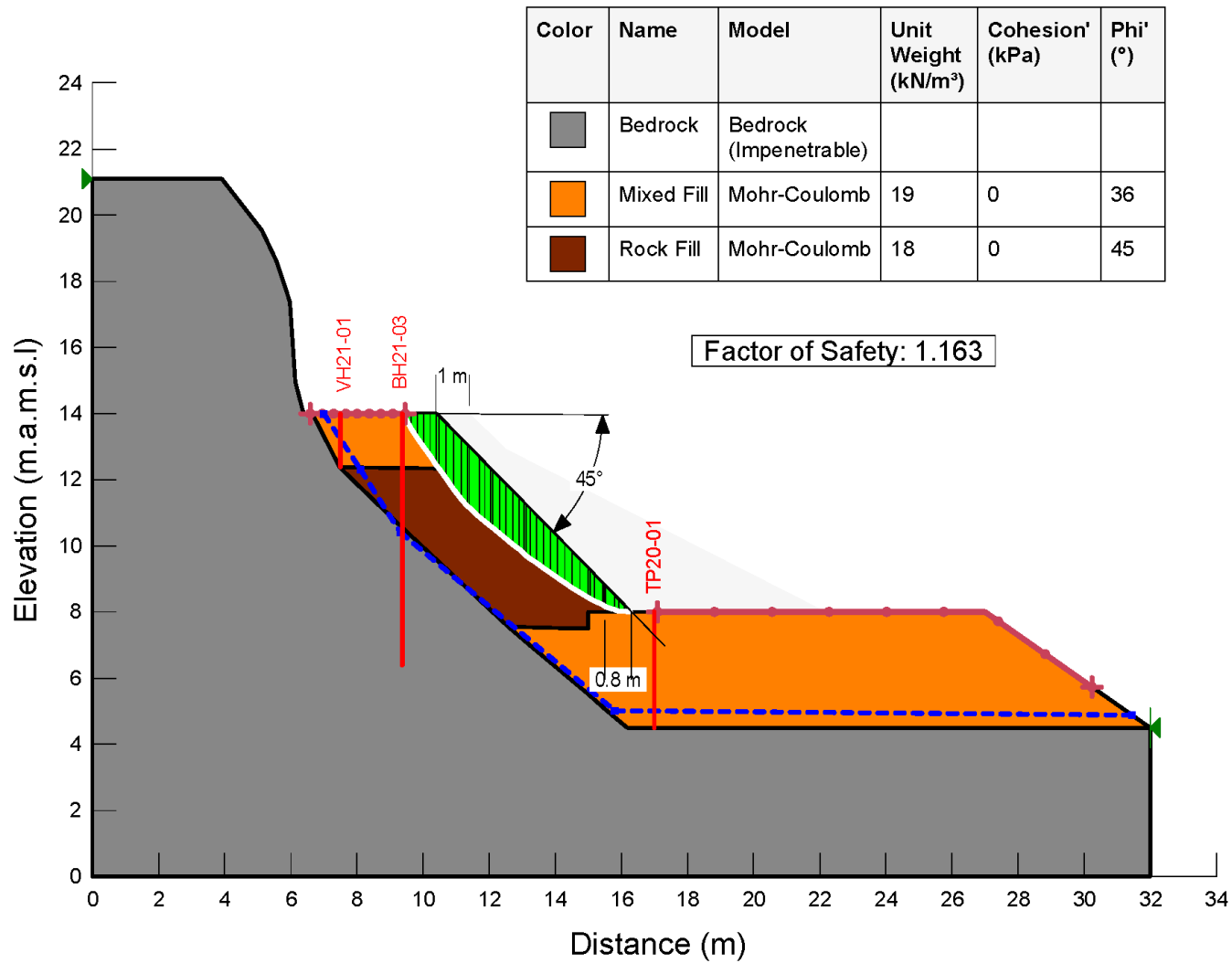
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

EXISTING CONDITIONS – 1:475 SEISMIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D2



LEGEND

- - - - - Inferred Groundwater Table
- — — — — Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



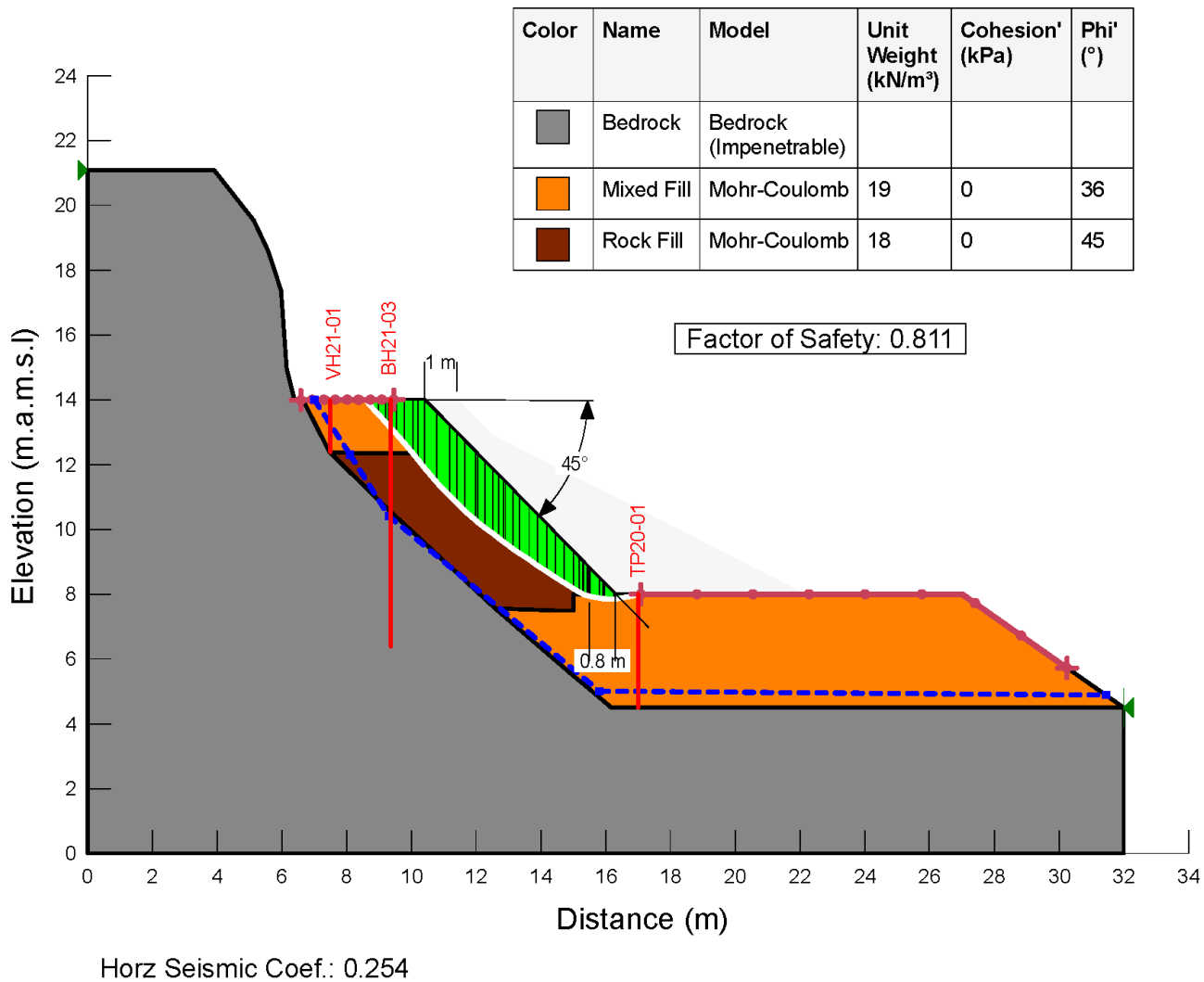
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

1H:1V SLOPE – STATIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D3



LEGEND

- Inferred Groundwater Table
- Testhole

NOTES
 Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



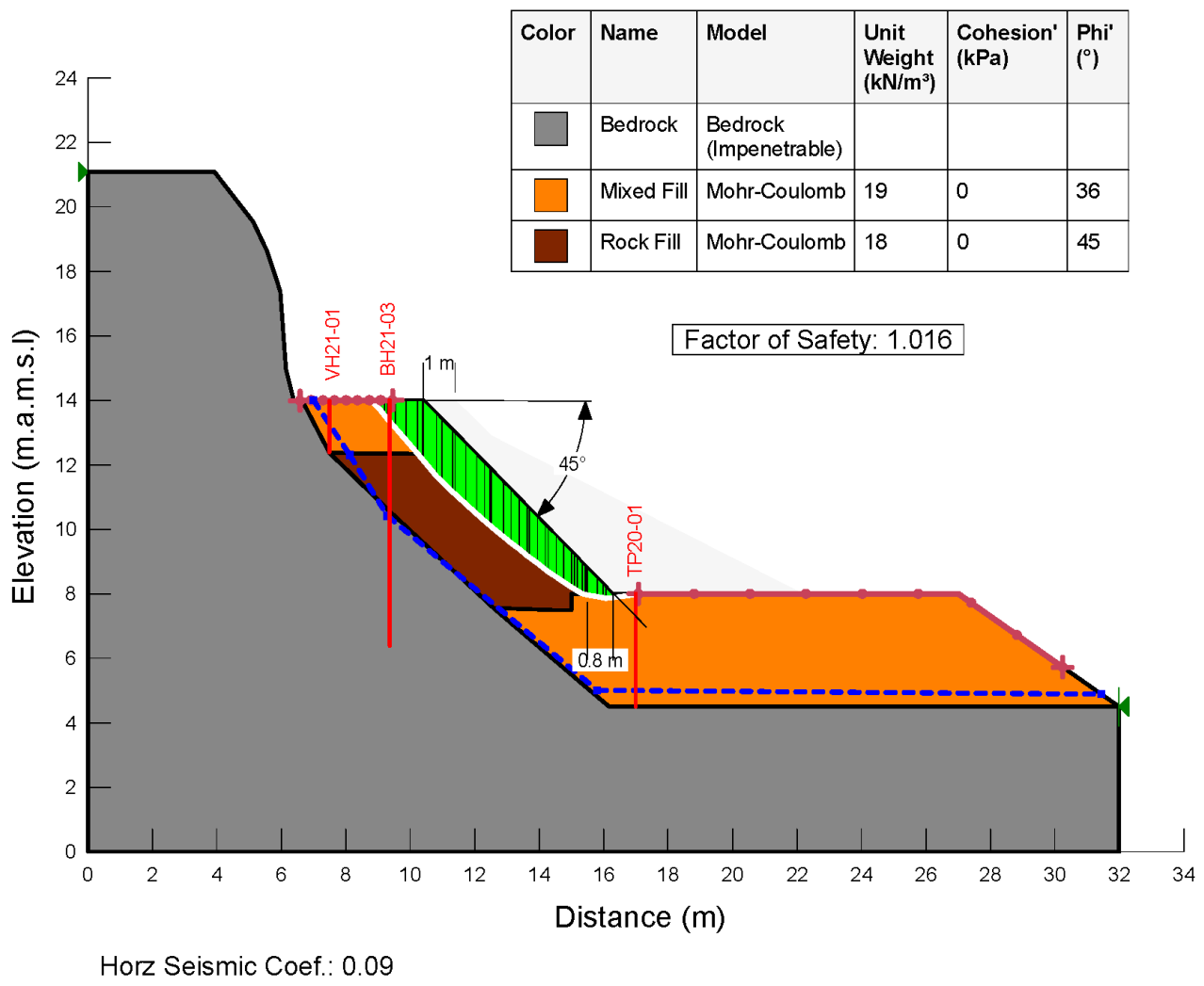
**TOWN OF LADYSMITH
 FAILING LOG RETAINING WALL**

1H:1V SLOPE – 1:475 SEISMIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D4



LEGEND

- - - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.



**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

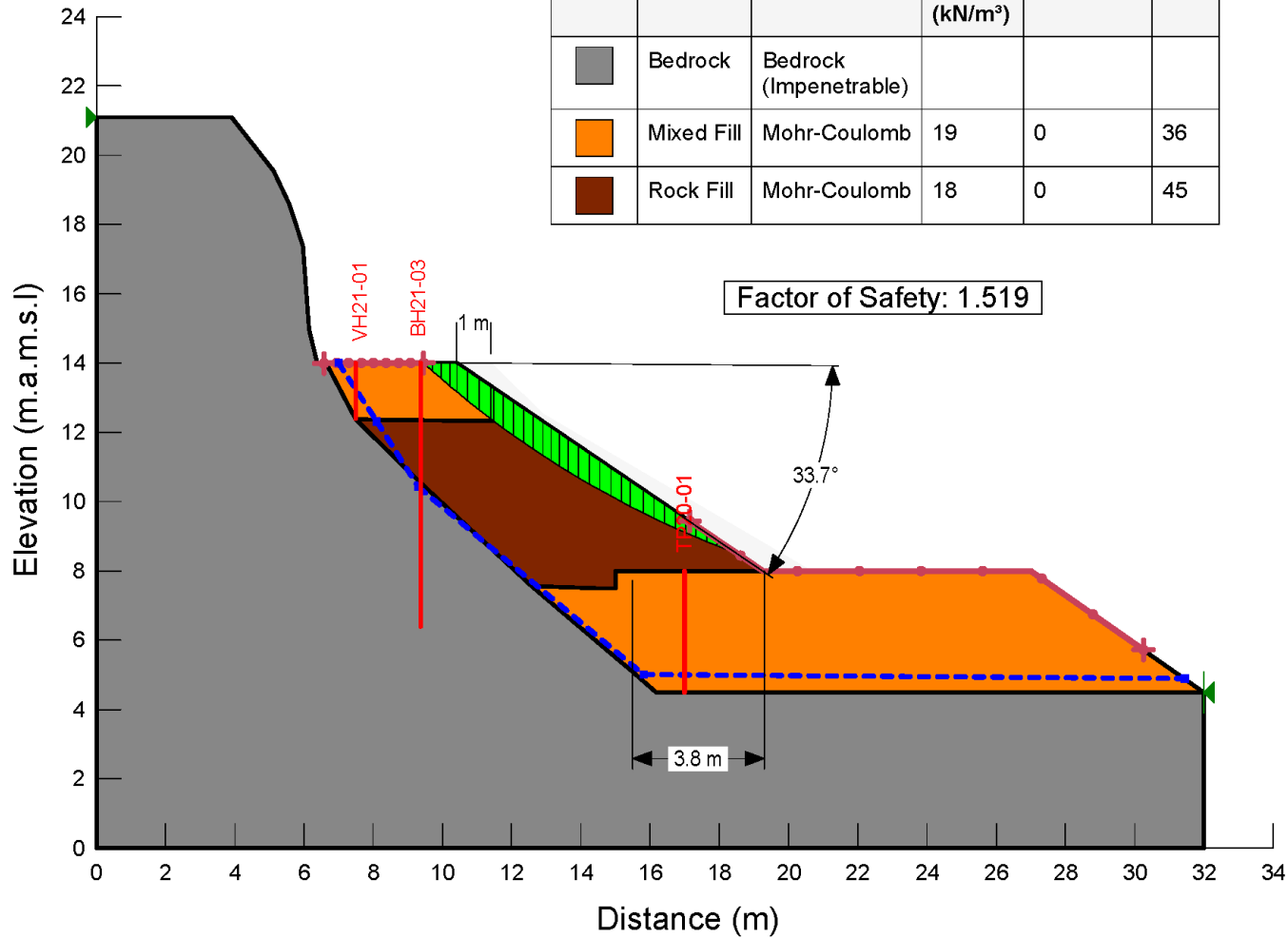
**1H:1V SLOPE – HORIZONTAL SEISMIC
YIELD COEFFICIENT (k_y)**



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D5

Color	Name	Model	Unit Weight (kN/m ³)	Cohesion' (kPa)	Phi' (°)
Grey	Bedrock	Bedrock (Impenetrable)			
Orange	Mixed Fill	Mohr-Coulomb	19	0	36
Brown	Rock Fill	Mohr-Coulomb	18	0	45



LEGEND

- - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



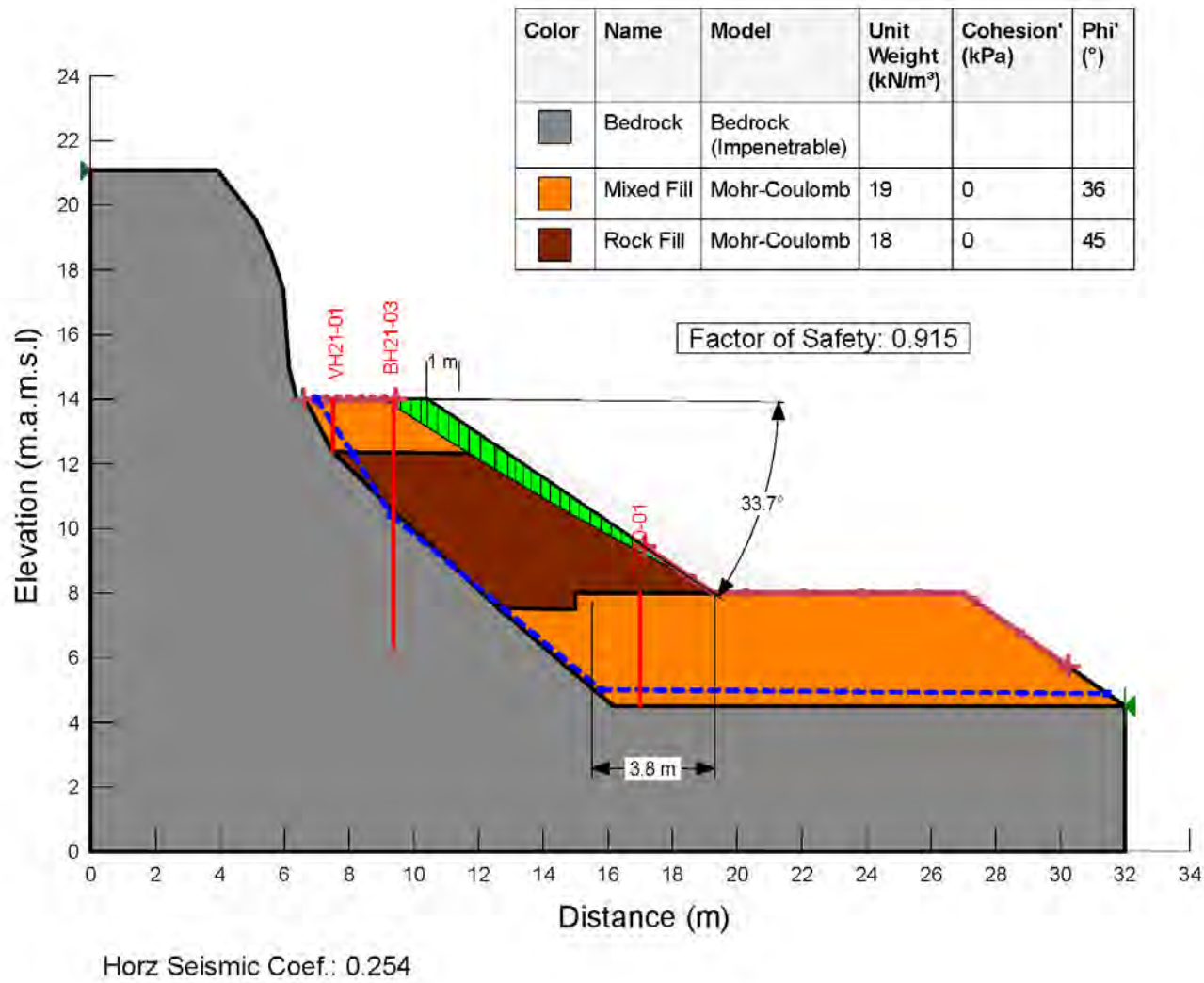
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

1.5H:1V SLOPE – STATIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D6



LEGEND

- - - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

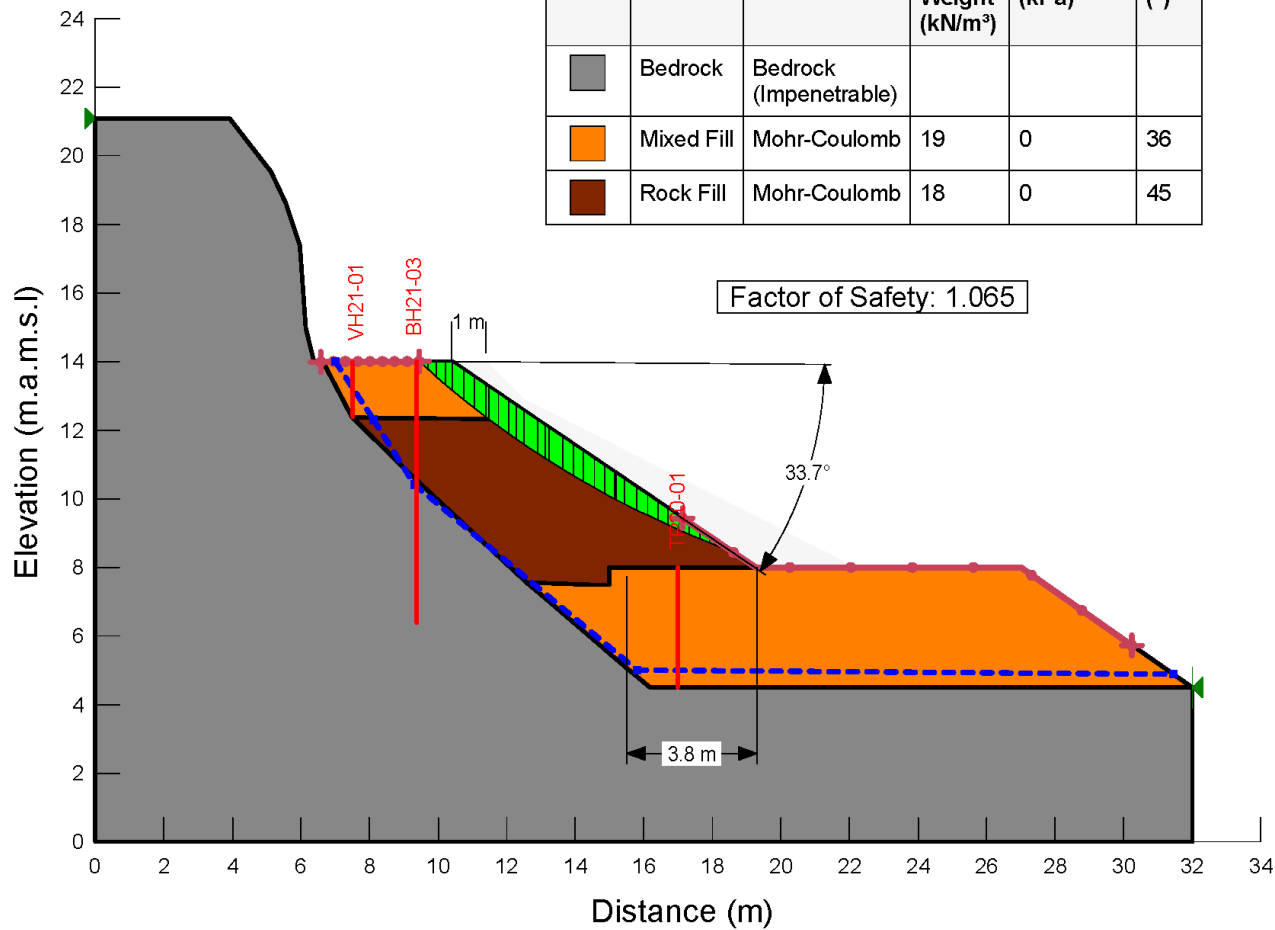
1.5H:1V SLOPE – 1:475 SEISMIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D7

Color	Name	Model	Unit Weight (kN/m ³)	Cohesion' (kPa)	Phi' (°)
Grey	Bedrock	Bedrock (Impenetrable)			
Orange	Mixed Fill	Mohr-Coulomb	19	0	36
Brown	Rock Fill	Mohr-Coulomb	18	0	45



Horz Seismic Coef.: 0.18

LEGEND

- - - - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



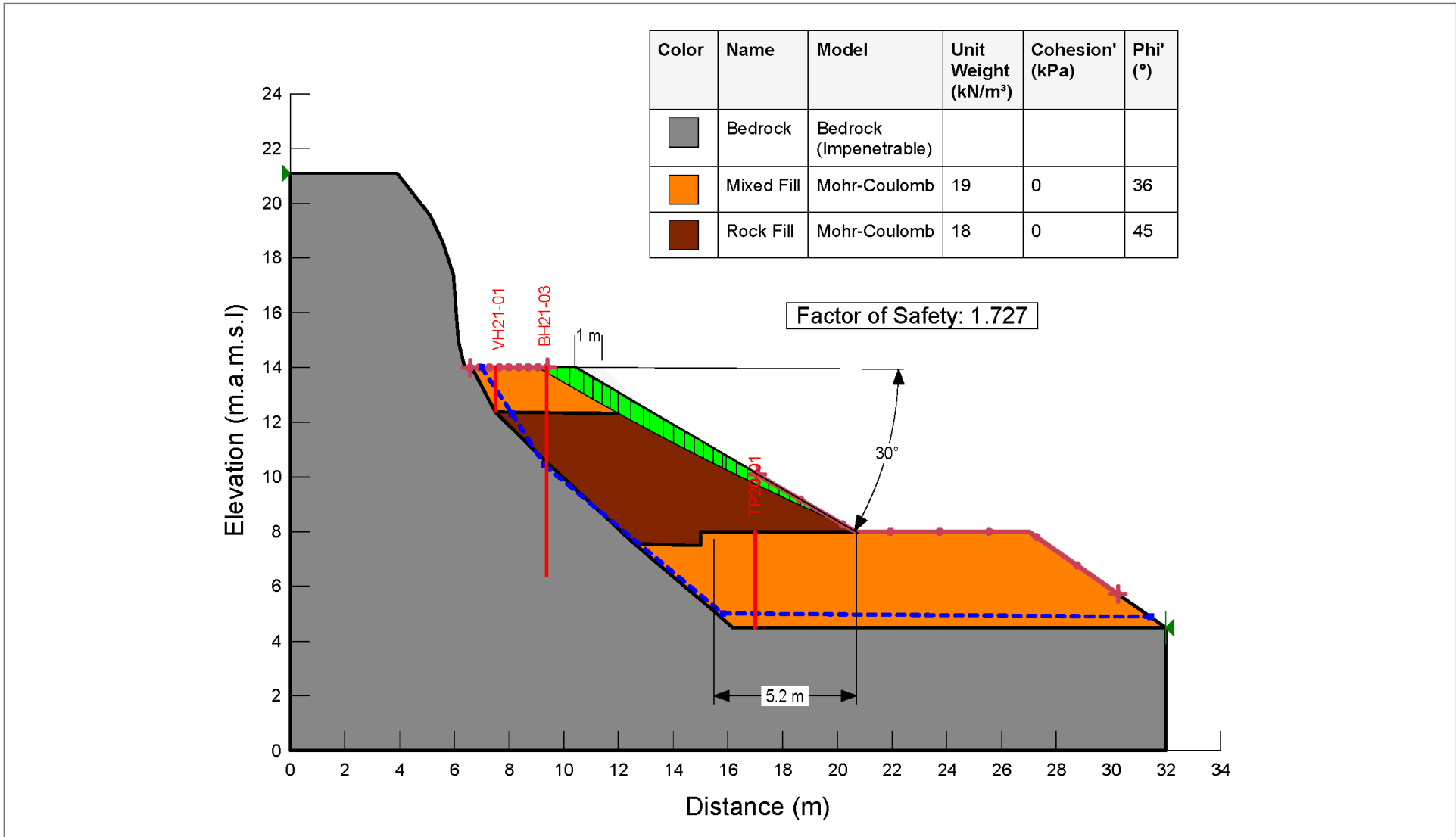
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

**1.5H:1V SLOPE – HORIZONTAL SEISMIC
YIELD COEFFICIENT (k_y)**



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D8



LEGEND

- - - - - Inferred Groundwater Table
- — — — — Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



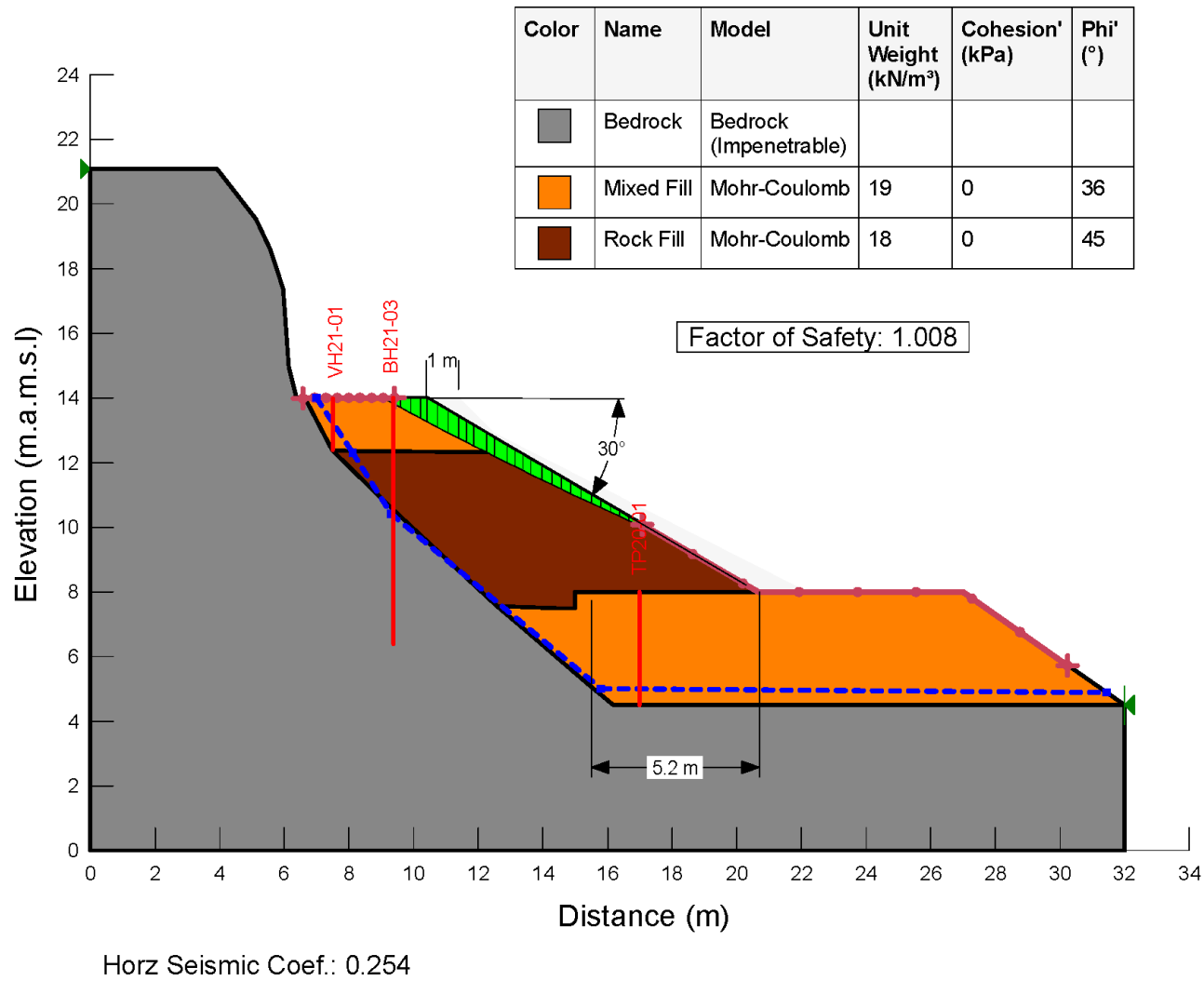
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

1.75H:1V SLOPE – STATIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D9



LEGEND

- - - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



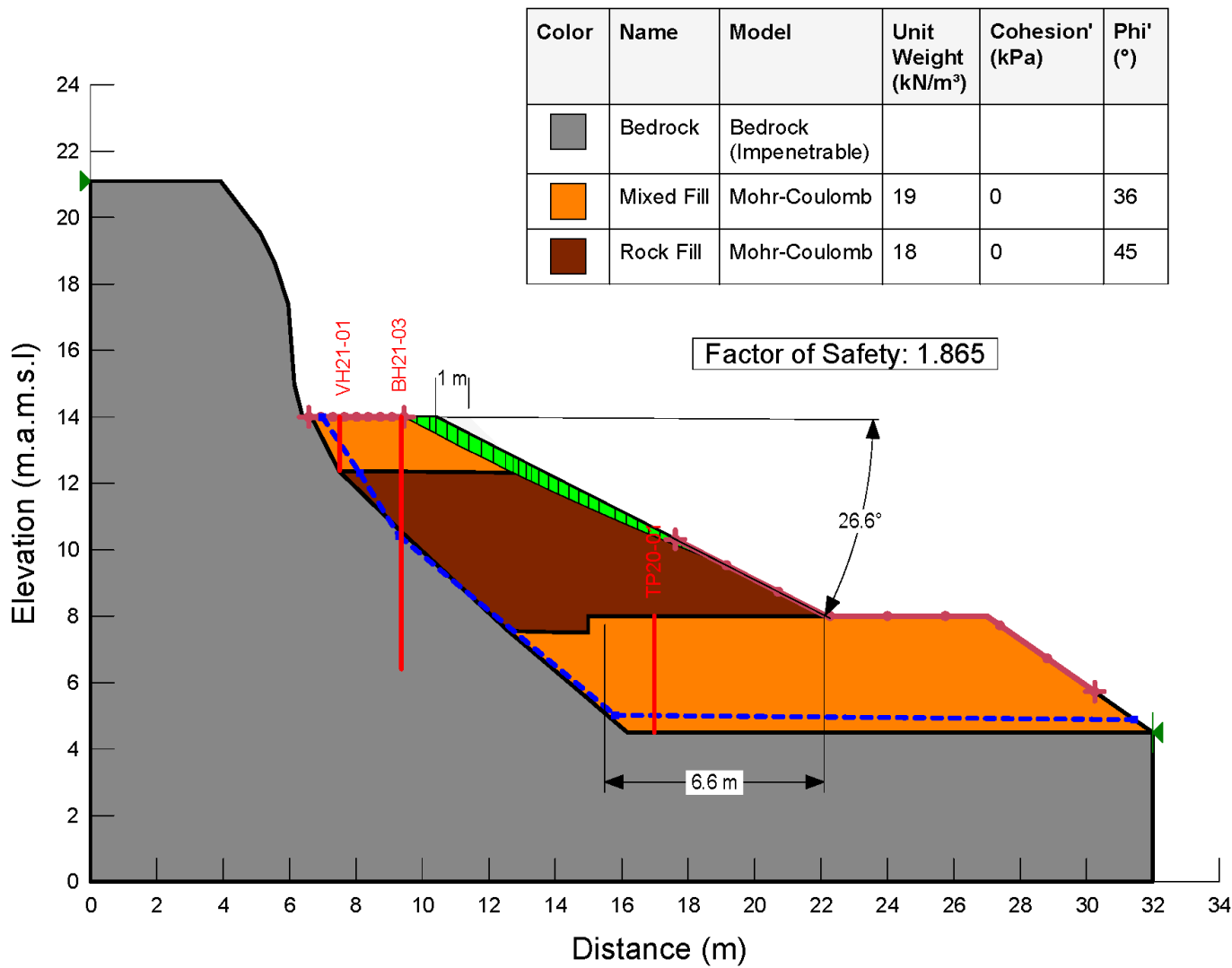
**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

1.75H:1V SLOPE – 1:475 SEISMIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D10



LEGEND

- - - - - Inferred Groundwater Table
- — — — — Testhole

NOTES
 Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



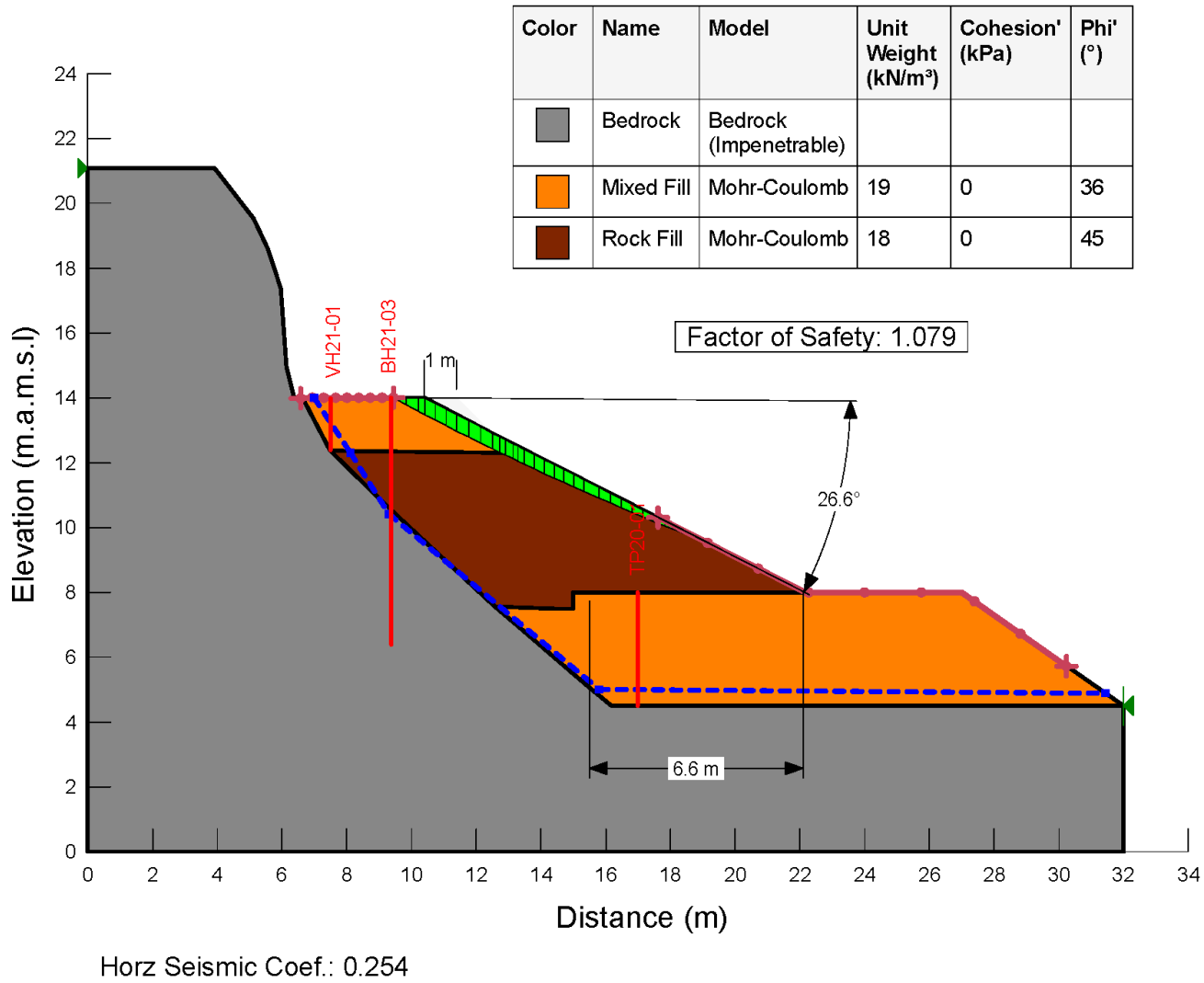
**TOWN OF LADYSMITH
 FAILING LOG RETAINING WALL**

2H:1V SLOPE – STATIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D11



LEGEND

- - - Inferred Groundwater Table
- Testhole

NOTES
Slope dimensions based on approximate field measurements of highest portion of slope behind the failing log retaining wall.

CLIENT



**TOWN OF LADYSMITH
FAILING LOG RETAINING WALL**

2H:1V SLOPE – 1:475 SEISMIC



PROJECT NO. 704-ENG.VGEO03929-02	DWN CW	CKD AW	APVD AW	REV 0
OFFICE EBA-NAN	DATE April 8, 2021			

Figure D12

BYLAW STATUS SHEET June 15, 2021

		Status
2045	Film Bylaw 2021, No. 2045	First, second and third reading, May 4, 2021.
2046	Noise Suppression Bylaw 2003, No. 1478, Amendment Bylaw 2021, No. 2046 (Filming in Ladysmith)	First, second and third reading, May 4, 2021.
2047	Official Community Plan Bylaw 2003, No.1488, Amendment Bylaw (No.62) 2021, No. 2047 (Filming in Ladysmith)	First and second reading, May 4, 2021. Referred to Stz'uminus First Nation and School District 68. Public Hearing and third reading June 1, 2021.
2048	Building and Plumbing Bylaw 1994, No. 1119, Amendment Bylaw 2021, No. 2048 (Filming in Ladysmith)	First, second and third reading, May 4, 2021.
2049	Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No.31) 2021, No. 2049 (Filming in Ladysmith)	First and second reading, May 4, 2021. Public Hearing and third reading June 1, 2021. MOTI approval required prior to adoption.
2050	Town of Ladysmith Fees and Charges Bylaw 2008, No.1644, Amendment Bylaw 2021, No. 2050 (Filming in Ladysmith)	First, second and third reading, May 4, 2021.
2060	Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 63) 2021, No. 2060 (670 Farrell Road)	First and second reading, March 16, 2021. Public Hearing, and third reading April 6, 2021.
2061	Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 33) 2021, No. 2061 (670 Farrell Road)	First and second reading, March 16, 2021. Public Hearing and third reading April 6, 2021. MOTI approval received May 3, 2021.
2064	Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 35) 2021, No. 2064 (630 Farrell Rd)	First and second reading, April 20, 2021. Public Hearing and third reading May 18, 2021. MOTI approval required prior to adoption.
2067	Road Closure and Dedication Removal Bylaw 2021, No.2067. (1130 Rocky Creek Rd)	First and second reading, June 1, 2021. Public Hearing scheduled for June 15, 2021. Notice provided and published in Chronicle on June 3 and 10, 2021, 2021. MOTI approval required prior to adoption.
2068	Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw (No. 65) 2021, No. 2068 (1130 Rocky Creek Rd)	First and second reading, June 1, 2021. Public Hearing scheduled for June 15, 2021. Conditions to be met prior to adoption
2069	Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 37) 2021, No. 2069 (1130 Rocky Creek Rd)	First and second reading, June 1, 2021. Public Hearing scheduled for June 15, 2021. MOTI approval required. Conditions to be met prior to adoption
2071	Filming Reserve Bylaw 2021, No. 2071	First, second and third reading May 4, 2021.

From: Hopps, Jesse FLNR:EX <Jesse.Hopps@gov.bc.ca>
Sent: June 3, 2021 1:55 PM
To: Jake Belobaba <jbelobaba@ladysmith.ca>
Subject: Referral Request - Land File 0228948

Hello Jake,

As discussed, attached is the referral package for the Anderson private moorage authorization, Land File 0228948.

Please note that the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) is requesting updates to the Management Plan.

These updates include:

- Using concrete or steel piles and removing all old creosote
- Design to allow light penetration to ensure eelgrass beds remain healthy
- Waste Management Discharge Agreement/Plan (sewage disposal)

I would prefer a response within 15 days, ending June 19, 2021; however, I recognize the Town of Ladysmith's procedures so please provide a response date commitment.

If you have any questions, please don't hesitate to contact me.

Thank you,

Jesse Hopps

Authorization Specialist

Ministry of Forests, Lands, Natural Resource Operations and Rural Development

South Island Natural Resource District

4885 Cherry Creek Road, Port Alberni, BC, V9Y 8E9

Phone: (250) 736-6873



Crown Land Tenure Application

Tracking Number: 100305736

Applicant Information

If approved, will the authorization be issued to an Individual or Company/Organization? Individual

Are you the Individual this application will be issued to? Yes

APPLICANT CONTACT INFORMATION

Have you considered using a BCeID? A BCeID allows you to save your application at any time and return later to complete it or check the status of your application. It only takes a few minutes to sign up for a free BCeID which also allows you to use the same ID for many other government services. Click on 'Save Application' on the bottom and then on 'Register' to sign up. You will return to this application once the sign up has been completed.

Name: Pamela Denise Anderson
 Phone:
 Daytime Phone:
 Fax:
 Email:
 Mailing Address: 303 Chemainus Road
 Ladysmith BC V9G 1X8

ELIGIBILITY

Question	Answer	Warning
----------	--------	---------

Do all applicants and co-applicants meet the eligibility criteria for the appropriate category as listed below?	Yes	
---	-----	--

Applicants and/or co-applicants who are Individuals must:

1. be 19 years of age or older and
2. must be Canadian citizens or permanent residents of Canada. (Except if you are applying for a Private Moorage)

Applicants and/or co-applicants who are Organizations must either:

1. be incorporated or registered in British Columbia (Corporations also include registered partnerships, cooperatives, and non-profit societies which are formed under the relevant Provincial statutes) or
2. First Nations who can apply through Band corporations or Indian Band and Tribal Councils (Band or Tribal Councils require a Band Council Resolution).

TECHNICAL INFORMATION

Please provide us with the following general information about you and your application:

EXISTING TENURE DETAILS

Do you hold another Crown Land Tenure? No

ALL SEASONS RESORTS

The All Seasons Resorts Program serves to support the development of Alpine Ski and non-ski resorts on Crown land. For more detailed information on this program please see the operational policy and if you have further questions please contact FrontCounter BC.

Are you applying within an alpine ski resort? No

WHAT IS YOUR INTENDED USE OF CROWN LAND?

Use the "Add Purpose" button to select a proposed land use from the drop down menu.

If you wish to use Crown land for a short term, low impact activity you may not need to apply for tenure, you may be authorized under the Permissions policy or Private Moorage policy.

To determine if your use is permissible under the Land Act please refer to either the Land Use Policy - Permissions or Land Use Policy - Private Moorage located here.

Purpose	Tenure	Period
Private Moorage	Specific Permission	More than thirty years
Residential Ancillary Private moorage for enjoyment of the landowner. This includes approximately 3-5 feet of a boathouse structure partially on Crown, but mostly on private land.	License of Occupation with Permission for Private Moorage Schedule	10 Years

ACCESS TO CROWN LAND

Please describe how you plan to access your proposed crown land from the closest public road: ~~Boat access only~~
Trans-Canada Hwy 1, Chemainus Road, Private Driveway & Water

PRIVATE MOORAGE

Private Moorage is the allocation of aquatic Crown land (inland and coastal) for private moorage facilities such as a dock or float. Moorage facilities for group or strata title/ condominium developments of over three berths are administered under the provisions of the Residential program where they have no related commercial facilities (e.g. gas bars) and are intended for private use of tenants. Group moorage with commercial activities are administered under the Marina program.

Specific Purpose: Residential Ancillary because Boathouse Private moorage for enjoyment of the landowner. This includes approximately 3-5 feet of a boathouse structure partially on Crown, but mostly on private land.
Period: ~~More than thirty years~~ **10 Years**
Tenure: ~~Specific Permission~~ **License of Occupation with Permission for Private Moorage Schedule**

MOORING BUOY
Is this only for a mooring buoy for private moorage? No

TOTAL APPLICATION AREA
Please give us some information on the size of the area you are applying for.
Please specify the area: ~~.065~~ **0.182** hectares (License of Occupation 0.002 Ha. / Permission 0.18 Ha.)

PROJECT DETAILS
Please provide us with further details on your dock.
Is the water freshwater or marine? Marine
Are you proposing 4 or more slips? No
Are you applying on behalf of a Strata corporation? No
Are you the waterfront upland owner? Yes
Are you planning to sell gas at the proposed marina? No

IMPORTANT CONSIDERATIONS
Selecting yes to any of the following questions may indicate that you will require further or additional authorizations under the Land Act or other legislation.
Is your proposed activity within the Kootenay Region? No
Is your proposed activity within the Okanagan, Kalamalka and Wood Lakes, Skaha Lake, Vaseux Lake, or Christina Lake areas? No

Is your proposed activity within the Shuswap, Mara, Mable, or Little Shuswap Lake areas? No

ADDITIONAL QUESTIONS

In many cases you might require other authorizations or permits in order to complete your project. In order to make that determination and point you in the right direction please answer the questions below. In addition, your application may be referred to other agencies for comments.

Is the Applicant or any Co-Applicant or their Spouse(s) an employee of the Provincial Government of British Columbia? No

Are you planning to cut timber on the Crown Land you are applying for? No

Are you planning to use an open fire to burn timber or other materials? No

Do you want to transport heavy equipment or materials on an existing forest road? No

Are you planning to work in or around water? Yes

1. If you will be working in or around fresh water, you will require a Water Sustainability Act Change Approval or Notification from the Province.
2. The federal Department of Fisheries and Oceans might need to review your project.
3. Review the Transport Canada website if the Navigation Protection Act applies.

Does your operation fall within a park area? No

LOCATION INFORMATION

LAND DETAILS

DRAWINGS

Please provide information on the location and shape of your Crown land application area. You can use one or more of the tools provided.

I will upload a PDF, JPG or other digital file(s)

MAP FILES

Your PDF, JPG or other digital file must show your application area in relation to nearby communities, highways, railways or other land marks.

Description	Filename	Purpose
Map	Anderson Marine Structure.pdf	Private Moorage

ATTACHED DOCUMENTS

Document Type	Description	Filename
General Location Map	Gen Location Map	Scan_20191210.pdf
Management Plan	MP	Scan_20191210.pdf
Side Profile	Side Profile	Scan_20191210.pdf

Site Photographs

Pictures

Scan_20191210.pdf

Site Plan

Site Plan

Anderson Marine Structure.pdf

PRIVACY DECLARATION

Check here to indicate that you have read and agree to the privacy declaration stated above.

REFERRAL INFORMATION

Some applications may also be passed on to other agencies, ministries or other affected parties for referral or consultation purposes. A referral or notification is necessary when the approval of your application might affect someone else's rights or resources or those of the citizens of BC. An example of someone who could receive your application for referral purposes is a habitat officer who looks after the fish and wildlife in the area of your application. This does not apply to all applications and is done only when required.

Please enter contact information below for the person who would best answer questions about your application that may arise from anyone who received a referral or notification.

Company / Organization: Pacific Industrial & Marine Ltd.
Contact Name: Brian Thacker
Contact Address: 5105 Tzouhalem Road
Contact Phone: 250-746-7271
Contact Email: pimltd@telus.net

I hereby consent to the disclosure of the information contained in this application to other agencies, government ministries or other affected parties for referral or First Nation consultation purposes.

IMPORTANT NOTICES

- Once you click 'Next' the application will be locked down and you will NOT be able to edit it any more.

DECLARATION

By submitting this application form, I, declare that the information contained on this form is complete and accurate.

APPLICATION AND ASSOCIATED FEES

Item	Amount	Taxes	Total	Outstanding Balance
Crown Land Tenure Application Fee	\$250.00	GST @ 5%: \$12.50	\$262.50	\$0.00

OFFICE

Office to submit application to: Port Alberni

PROJECT INFORMATION

Is this application for an activity or project which requires more than one natural resource authorization from the Province of BC? No

OFFICE USE ONLY

Office Port Alberni	File Number	Project Number
	Disposition ID	Client Number

Management Plan

Please describe the details of your project to the extent known. Consult the guidance document for further information on regulatory requirements, rationale for why the information is required, and how to find required information.

The scope and the timing for response will be provided. If information is requested and not received, it may result in the disallowance of the application.

Information on these topics may be required as part of the application processing and if further detail is necessary that is not part of the application and management plan received, you will be contacted and requested to provide additional information. In some circumstances, the use of a qualified professional to complete the plan may be required.

1.0 Background

1.1 Project Overview

Describe project for which authorization is requested, including construction and/or phased development details:

The existing dock and water lot has been in the family for generations. Time has taken a toll on the structure and a complete rebuild is necessary. In order to facilitate the float, it was recently removed for rebuilding the Boathouse on shore and shore abutment was previously rebuilt. Attached are pictures of the Boathouse buildings as requested.

The Anderson family maintained a Water Lot lease on the foreshore since 1962 which was recently cancelled without Pam Anderson's knowledge, when it was not renewed by the people looking after her business affairs. The dock structure had deteriorated over the years and Pam wants to rebuild it from its deteriorated condition for her own personal use. The nearest public marina is approximately 3kms away.

The existing boathouse is a two storey structure constructed of concrete block masonry on the lower boat storage area and wood frame above. It is constructed on concrete foundations to ground level.

The planned construction is to rebuild the timber trestle and float in the same location as the existing deteriorated structure. The construction will incorporate used bleached creosote timber piles at 30 ft. centres to support a 6 ft. wide timber trestle that starts at the existing concrete deck at the boathouse and extends seaward to a timber platform supporting an aluminium gangway down to a timber float secured by timber piling.

The timber trestle is 6 ft. wide x 390 ft. long and includes 13 piled bents at 30 ft. centres. The platform measures 19'-4" x 19'-4", the aluminium gangway is 4 ft. wide x 40 ft. long and the timber float is 12 ft. x 40 ft.

Public access is maintained along the shoreline since the underside of the trestle will be high enough to allow pedestrian traffic under the structure.

Yearly maintenance will be completed by the owners which are expected to be minimal.

The boat size that will be tied up to the float from time to time will be in the 10 ft.-24 ft. range with a maximum beam of 8 ft. and an expected maximum draught of 3 ft.

The upland property is owned by the applicant and has the following legal description. That part of Lot 43, Oyster District, shown outlined in red on Plan 835-R, except that part in Plans 7094 and VIP 58434 (PID: 005-068-002).

A Habitat Assessment has been completed by Castor Consultants and has been submitted to FLYNRORD as part of the referrals process. The assessment indicated eel grass species towards the end and to the right of the trestle when looking seaward.

The water is deep enough during low tide that the float will not bottom out.

If the structure is destroyed by fire, storm or other means, the new dock will conform to the General Permission guidelines to reduce environmental impacts on the ecosystem except that the General Permission Guidelines will be exceeded in that the requirement for the dock being a maximum of 60 m from the intertidal area extends well past the 60 m requirement due to the shallow mudflats and that the 60 m maximum distance needs to be extended to obtain deep water for the float.

Best Management Practice will be completed by our marine Construction Contractor using vibro installation for pile driving. The piles used are bleached creosote piles.

The dock will not be moved or added to without prior written approval.

There will be no paint, fuel or other hazardous materials stored on the dock.

1.2 Investigative Work

If any preliminary investigative work has been carried out, with or without an investigative authorization, provide details on work completed, incomplete or on-going from previous term.



Activity	Brief Description of Activity	Status (e.g. Complete, incomplete, ongoing)	Comments / Milestones
Depth Measurement	Measurement to facilitate pile lengths necessary	Complete	Used pilings ordered
Habitat Assessment	Castor Consultants has completed a Habitat Assessment of the proposed dock replacement and has submitted to DFO.	Complete	Waiting comments from DFO.

Add Row

1.4 First Nations Consultation

Describe any contact you may have had, including the name of the First Nation(s) and representatives contacted.



The following First Nations communities have been contacted through the Referrals Process by both the Applicants consultant and FLYNRORD with letters of no objection from First Nations.

- Primary First Nation - Stz'uminus First Nation - Ray Gauthier
- Hul'quminum Tribal Group -
- Ts'uubaa-asatx Nation - Aaron Hamilton
- Cowichan Tribes - Candace Charlie
- Lyackson First Nation - Karyn Scott
- Halalt First Nation - Raven August
- Penelekut Tribe - Robert Sam
- Denise James

2.0 Location

2.1 Description

Provide a general description of the location of the project:



Ladysmith Harbour
 Rebuild existing approach and dock at old water lot private residence.

2.2 Location Justification

Provide your reasons/justification of the need for this type of project at this location:



The water lot has been in the family for generations and in need of refurbishment.

2.3 Seasonal Expectations of Use

When will the Project require use of the land? Include information on key works during construction phases as well as operations phase. Please reference [reduced risk fish windows](#) as required by DFO:



Project Phase (Construction / Operations)	Brief Description of Activity / Works	Season
Const. Summer/Fall 2021	Pile driving/wood placing Work will be done during the winter using Best Management Practice for pile driving.	Summer/Fall
	Monitor if necessary Castor Consultants Ladysmith	

Add Row

3.0 Infrastructure and Improvements

3.1 Facilities and Infrastructure

Detail any new and existing facilities, infrastructure or processes proposed and any ancillary uses. Provide details of planned construction methods and materials, and construction scheduling.

Facility/Infrastructure/Process	Construction Methods/Materials	Construction Schedule
Use existing pile and new used piling as necessary	vibratory hammer	Summer/Fall 2021

Add Field

3.2 Access

Identify existing and proposed roads used for access and their use by season. Include any proposed connections to public or Forest Service Roads; traffic information including volume of traffic during construction/operation and phase or season that the traffic is expected:



Roadway/Proposed Connection	Existing/Proposed	Existing Road Classification	Road Permittee Information and Road Use Agreements	Traffic Volume		Mitigation of Traffic Effects
				Construction Phase	Operations Phase	
n/a						

Add Field

3.3 Utility Requirements and Sources

Describe utility requirements and sources, include agreements in place or underway allowing access to utilities.



None.

3.4 Water Supply

Identify water requirements for construction and operation phases (e.g. surface water and/or groundwater), including sources, location, volume and a general description of infrastructure planned to meet water supply requirements, include any agreements outside of Water Act Authorizations identified above (Section I, Authorizations, Permits or Approvals), such as Municipal water supply.

Project Phase (Construction/ Operation)	Water Requirement (e.g. Surface water or ground water, etc)	Source/location	Volume	Infrastructure Description	Agreements
None.					

Add Field

3.5 Waste Collection Treatment and Disposal

Identify any waste disposal (note septic system required), sewage, sanitation facilities and refuse disposal proposed.



Project Phase (Construction/ Operation)	Is there a water requirement (e.g. Surface water or ground water, etc)	Discharge distance to closest body of water (well, lake, etc.)	Volume of daily discharge	Infrastructure Description	Existing Agreements
None.					

Add Field

4.0 Environmental

Describe any significant impacts and proposed mitigation for the following environmental classes:

4.1 Land Impacts

4.1.1 Vegetation Removal

Is any timber removal required?

Yes No

Are any areas of vegetation to be cleared, outside of timber removal?

Yes No

4.1.2 Soil Disturbance

Will there be any areas of soil disturbance, including clearing, grubbing, excavation and levelling?

Yes No

Is the area to be excavated a Brownfield site or has the potential to be contaminated?

Yes No

Is there potential for disturbance of archaeological, paleontological fossils or historical artifacts?

Yes No

4.1.3 Riparian Encroachment

Will any works be completed within or adjacent to the riparian zone of any water body?

Yes No



4.1.4 Pesticides and Herbicides

Will there be any use of pesticides or herbicides during construction, operations and/or maintenance?

Yes No

4.1.5 Visual Impacts

Will there be any adverse effects of the projects, and any potential adverse effects on sight lines to the project area from surrounding areas likely to be used for scenic viewing by residents or other users?

Yes No

4.1.6 Archaeological Sites

Are there any known or high potential (Arch Procedure) archaeological sites within the project area?

Yes No

Have you conducted an AIA or engaged an archaeologist to assist with your investigations?

Yes No

4.1.7 Construction Methods and Materials

Identify the types of construction materials, the methods used, their impacts, and any mitigations:

Construction Material/Method	Impacts	Mitigations
Used piling vibratory hammer	None.	Not Necessary. Monitor by Castor Consultants.
Add Field		

4.2 Atmospheric Impacts

4.2.1 Sound, Odor, Gas or Fuel Emissions

Will the project construction or operation cause any of the following to disturb wildlife or nearby residents:

Sound? Yes No

Odor? Yes No

Gas? Yes No

Fuel Emissions? Yes No

4.3 Water or Land Covered by Water Impacts

4.3.1 Drainage Effects

Will the project result in changes to land drainage?

Yes No

4.3.2 Public Access

Will the project result in changes to public access?

Yes No

4.3.3 Flood Potential

Will the project result in a potential for flooding?

Yes No

4.4 Fish and Wildlife Habitat Impacts

4.4.1 Disturbance to Wildlife and Wildlife Habitat

Will the project result in adverse effects to wildlife or wildlife habitat?

[\(BC Wildlife Act\)](#)

Yes No

Will the project (construction or operations phase) occur in and around streams, lakes, estuarine or marine environments?

Yes No

Is the project (construction or operations phase) likely to increase erosion or sedimentation?

Yes No

Will the project (construction or operations phase) require water diversion?

Yes No

Will the project threaten or endanger species at risk in the area?

[Species At Risk Act](#)

Yes No

5.0 Socio-Community

5.1 Land Use

Describe the current community setting on or near the project area, including the location of non-aboriginal and aboriginal communities or known use areas.

Rebuilding existing approach and dock. No other community activity in the area.

5.1.1 Land Management Plans and Regional Growth Strategies

Are there any land and resource management plans, coastal plans, provincial, regional growth strategies or local government plans with zoning, or management policies or use restrictions in place that could limit or preclude your proposed use of the land? (Please refer to the [Union of BC Municipalities \(UBCM\)](#), and check the websites of the municipality, regional district or other organization with jurisdiction including your project area.)

Yes No

5.2 Socio-Community Conditions

5.2.1 Adjacent Users or Communities

Is the project likely to restrict public access, or the ability, or the ability of adjacent land owners or tenure holder to access their property or tenures?

Yes No

5.2.2 Existing Services

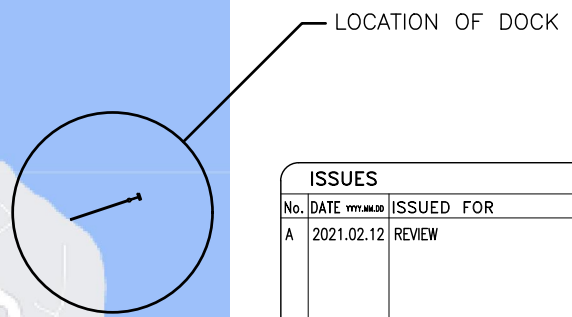
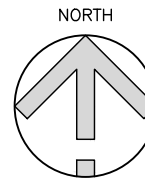
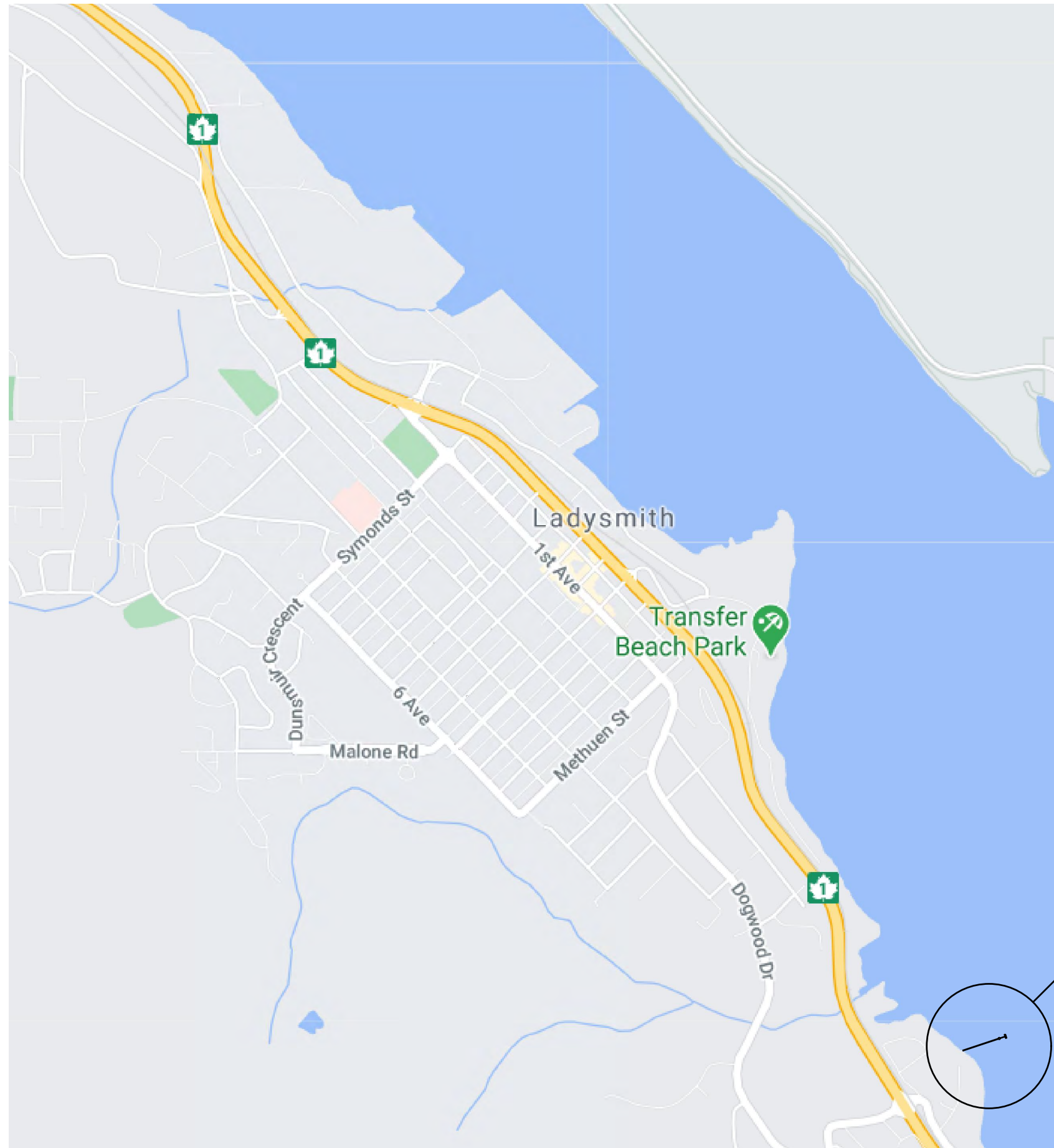
Provide a description any increased demand on fire protection and other health facilities and emergency services arising from your Project, including proposed management or mitigation measures.



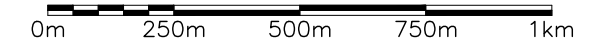
None. Water access only.

END O F FORM





KEY PLAN



ISSUES		
No.	DATE	ISSUED FOR
A	2021.02.12	REVIEW


HEROLD ENGINEERING
 3701 Shenton Rd, Nanaimo, BC V9T 2H1
 Tel: 250-751-8558 Fax: 250-751-8559
 Email: mail@heroldengineering.com

LAND FILE 0228949
 303 CHEMAINUS ROAD,
 LADYSMITH, BC

DRAFTED JJMC	SCALE AS SHOWN	PROJECT No. 5102-001	HEL DRAWING No. SK1	REVISION A
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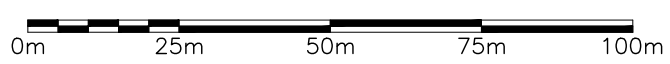
File: H:\Projects\5102-001_Pamela Anderson Dock & Renovation\045 Drawings\Marine\5102-001-SK2.dwg Plot Time: Feb. 12, 21 4:11 PM User: Jonathan Cheffins
 © Copyright reserved. This drawing remains the exclusive property of Herold Engineering Limited and may not be reused or reproduced without written consent of Herold Engineering Limited.

TABLOID 11" x 17"



Reviewed by: *[Signature]*
 Date March 3, 2021

GENERAL ARRANGMENT PLAN



ISSUES		
No.	DATE	ISSUED FOR
A	2021.02.12	REVIEW

HEROLD ENGINEERING
 3701 Shenton Rd, Nanaimo, BC V9T 2H1
 Tel: 250-751-8558 Fax: 250-751-8559
 Email: mail@heroldengineering.com

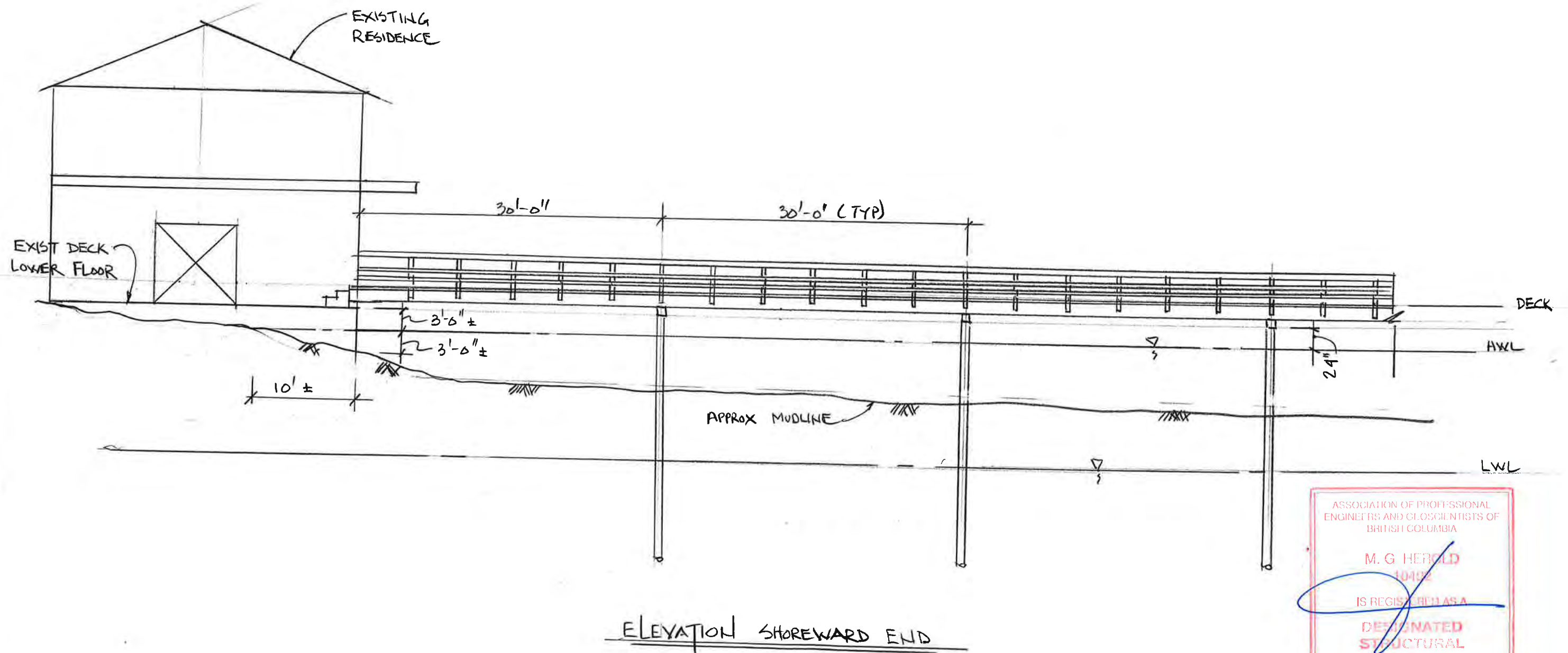
LAND FILE 0228949
 303 CHEMAINUS ROAD,
 LADYSMITH, BC

DRAFTED JJMC	SCALE AS SHOWN	PROJECT No. 5102-001	HEL DRAWING No. SK2	REVISION A
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DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

Project #: 5102-001	Client: VERTEX 8 VENTURES	Discipline: <input type="checkbox"/> Structural - Buildings <input type="checkbox"/> Structural - Bridges <input type="checkbox"/> Civil - Municipal <input type="checkbox"/> Industrial - Marine <input type="checkbox"/> Building - Envelope	Date: JAN 16 2020	SKETCH # SK #3 REV #1
Project Title: ANDERSON RESIDENCE DOCK UPGRADE			Drawn:	
Subject:			Design: MGH	SHEET _____ OF _____
			Check:	

Metric Grid



ELEVATION SHOREWARD END

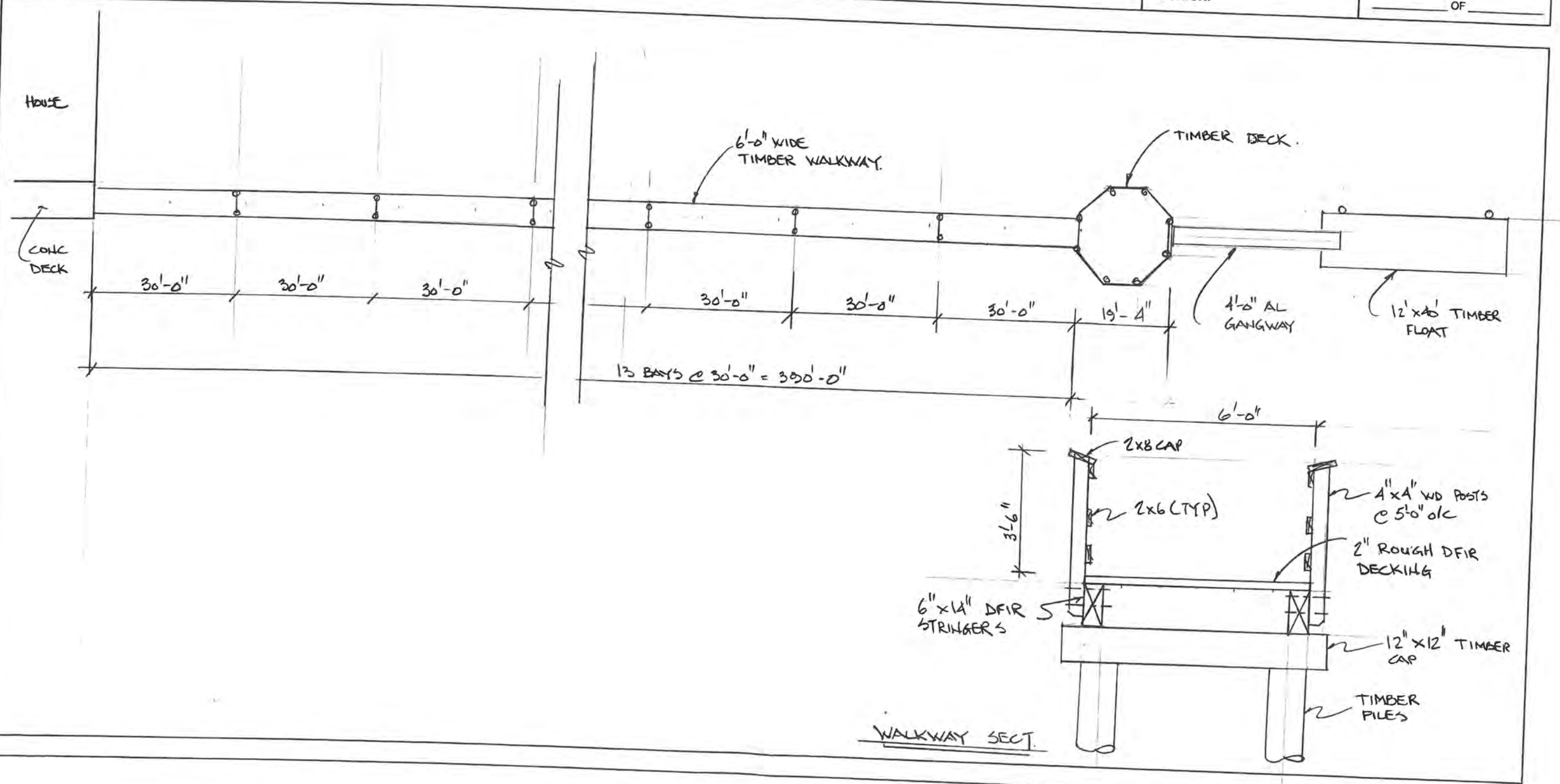
ASSOCIATION OF PROFESSIONAL
ENGINEERS AND GEOSCIENTISTS OF
BRITISH COLUMBIA

M. G. HEROLD
10482

IS REGISTERED AS A
DESIGNATED
STRUCTURAL
ENGINEER
(STRUCT. ENG.)

Jan 16 2020

Project #: 5102-001	Client: VERTEX 8 VENTURES	Discipline: <input type="checkbox"/> Structural - Buildings <input type="checkbox"/> Structural - Bridges <input type="checkbox"/> Civil - Municipal <input type="checkbox"/> Industrial - Marine <input type="checkbox"/> Building - Envelope	Date: AUG 30 / 19	SKETCH #
Project Title: ANDERSON RESIDENCE MARINE STRUCTURE			Drawn: MGH	
Subject:			Design: MGH	SHEET
Metric Grid			Check:	_____ OF _____



Habitat Assessment of Proposed Dock Replacement in Ladysmith Harbour, Ladysmith, B.C.

March 2020

Introduction

Castor Consultants Ltd. was retained, on behalf of the owner, by Vertex 8 Ventures Ltd. to undertake a habitat assessment of a proposed dock replacement in Ladysmith Harbour (Location Figures 1 & 2). The street address is 303 Chemainus Road, Ladysmith, B.C. The owner proposes to rebuild a trestle and associated dock. Due to the lapse of the existing provincial water lot lease the owner is in the process of applying for a renewal. Based on the provincial iMapBC service the district lot number of record is 462, Cowichan District and the survey parcel ID is 519980. As a part of the renewal process the province requires a biological assessment to examine the site for important habitat features. The assessment included the inspection of intertidal and subtidal habitats along the existing alignment where the works are proposed. No riparian inspection was conducted, as the proposed works would use an existing concrete trestle abutment so that the riparian zone will not be affected.

The intertidal zone at the site was assessed on March 14, 2020 between 14:00 and 16:00 hr with a low tide of 0.9 m at 15:53 and on March 16, 2020 between 16:30 and 18:00 with a low of 0.9 at 17:51 hr. The subtidal zone inspection by underwater drop camera was carried out at high water on March 16, 2020 between 10:00 and 12:30 when the tide was 3.4 m at 10:06. During the subtidal assessment, the day was sunny with a moderate breeze and the water visibility was moderately good.

The site falls within DFO Management Area 17-7 at $48^{\circ} 58' 47''$ N and $123^{\circ} 47' 55''$ W.



Figure 1. General Location

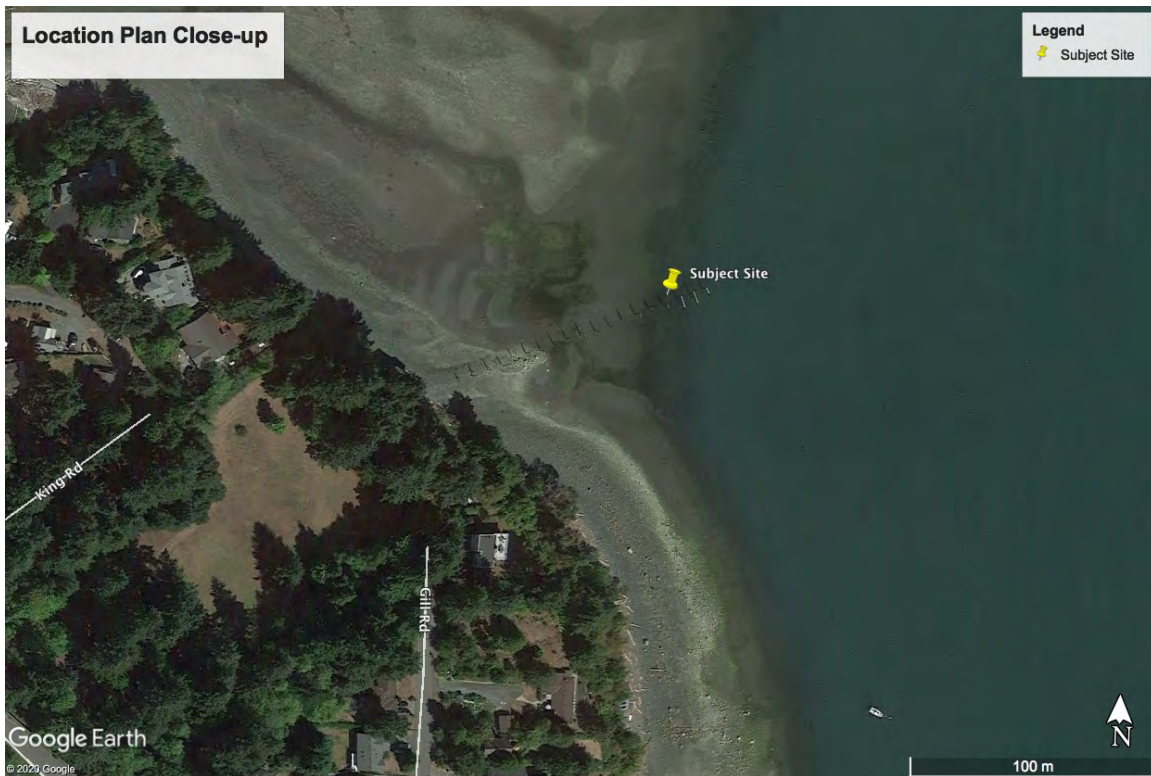


Figure 2. Location of Site depicting Existing Trestle Bents in Ladysmith Harbour, B.C.



View of site depicting remains of former trestle.

Methods

The habitat assessment concentrated on the intertidal and subtidal habitats. The locations of the intertidal beach transects and subtidal drop camera transects are shown in Figure 3.

As depicted on Figure 3 intertidal transects (IT-1, -2 and -3) were aligned parallel to the existing trestle. IT-1 was located about 10-12 m off the trestle on the south side of the trestle, IT-2 along the centre of the pile bents and IT-3 about 10-12 m off the north side. Observations of surface and 0.25 m² quadrat biophysical features were made at 10 m intervals along a cloth tape to the tide line. Each of the intertidal transects was extended seaward beyond the tide line by using chest waders and general observations of substrate and visible macro-biota recorded.




The subtidal underwater drop camera transects ST-1, -2 and -3 ran parallel to the existing trestle on a small craft provided by Vertex (Figure 3). As a result of finding eelgrass, one more cross transect, ST-4 was run. All distances were measured using a laser ranger (+/- 1 m accuracy) and recorded along with the camera recording digital numeric readout for later reference. Soundings were measured using a Lowrance sounder on the small craft.




Intertidal still photos of the site were taken using an iPhone digital camera. Underwater drop camera video records were reviewed in detail in the office, and representative still photos were taken off the video for inclusion in this report (Appendix 1). Details of the findings were mapped onto the Google Earth photo depicted in Figure 3.





Results



A detailed record of the intertidal observations made at the three transects at the site is in Table 1 below.

Table 1. Intertidal Assessment Transects at the Subject Site in Ladysmith Harbour, B.C. March 14 & 16, 2020


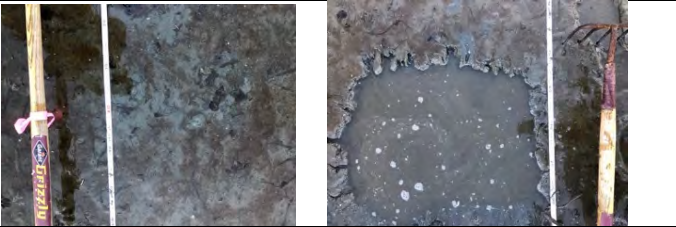

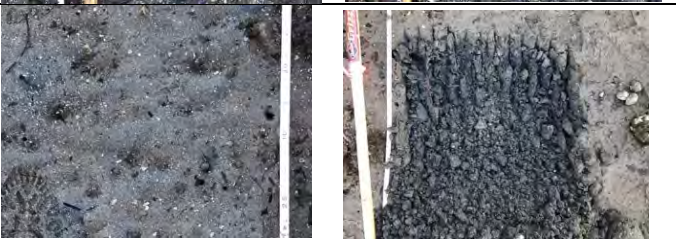

Transect	Metres from Conc. Abutment (m)	Observations	Representative Photo
IT-1 south side of trestle			
	10	Quadrat 1. Cobble over coarse sand, gravel, shell hash. Few Acorn barnacles (<i>Balanus glandula</i>) and Periwinkles (<i>Littorina</i> sp.), 2 Varnish clams (<i>Nuttallia obscurata</i>).	
	20	Quadrat 2. Cobble over coarse sand, gravel, fine shell hash. 4 Varnish clams, 1 Littleneck clam (<i>Protothaca staminea</i>).	
	30	Quadrat 3. Few cobbles on sand and shell hash, moist with seepage. 10 Pacific oysters (<i>Crassostrea gigas</i>), Acorn barnacles, few sea lettuce (<i>Ulva</i> sp.). No infauna.	
	32	Substrate transition to	

		predominantly sand.	
	40	Quadrat 4. Fine sand, few cobbles, coarse shell hash & fragments. Moist. A few small red ribbon worms, 1 Butter clam (<i>Saxidomus gigantea</i>).	
	46.5	Eelgrass starts (5% cover).	
	50	Quadrat 5. Very fine moist sand, few shell fragments. Eelgrass (<i>Zostera japonica</i>) (5% cover) with relatively numerous rhizomes beneath. 5 Bent-nose clam (<i>Macoma</i> sp.), Numerous red ribbon worms, one ribbon worm (<i>Cerebratulus</i> sp.).	
	53.5		Tide line at 1725
	75	Eleventh pile bent.	Very sparse eelgrass 12 to 24 m south of bent 10/11. 30 cm of water at 1730.
	80		Dense eelgrass
	90	1 Lewis' moon snail.	Dense eelgrass
IT-2 (centre line)	0	Gravel, coarse sand; transition to cobble at 3 m.	
Slope Upper zone to 50 m 2.5°	3	Cobble with few boulders. A few Acorn barnacles.	
Lower zone from 50 m 0.5°	5.5	Cobble with a few boulders. A few Acorn barnacles, Periwinkle snails present.	
	10	Quadrat 1. Boulders and cobble overlying sand, gravel, shell hash. No infauna.	
	11	Boulders and cobble. Abundant Acorn barnacles, few Rockweed (<i>Fucus</i> sp.).	
	16	First pile bent.	

	20	<p>Quadrat 2. Cobbles, few boulders. Abundant barnacles and Periwinkles, 2 Pacific oysters, 27 Varnish clams, 5 Littleneck clams, 1 limpet (<i>Tectura</i> sp.), filamentous algae, sea moss.</p>	
	22	<p>Second pile bent.</p>	
	28.7	<p>Third pile bent.</p>	
	30	<p>Quadrat 3. Terrestrial detritus (leaves) over sand with boulder and cobble. Abundant Acorn barnacles and Periwinkles; 4 Pacific oysters, 31 Varnish clams, 2 Littleneck clams.</p>	
	31	<p>Dense encrustations of Pacific oysters and abundant Acorn barnacles on boulders. Filamentous algae, sea moss (<i>Endocladia</i> sp.).</p>	
	35	<p>Fourth pile bent.</p>	
	40	<p>Fifth pile bent. Quadrat 4. Boulders predominate, compact. Subsurface sediment not accessible. 30 Pacific oysters, abundant Acorn barnacles, a few Periwinkles, mussels (<i>Mytilus</i> sp.) present, 15 limpets (<i>Tectura</i> sp.), 2 shore crabs (<i>Hemigrapsus</i> sp.), filamentous algae and sea moss prevalent. Photo view to south over rock groyne.</p>	
	46	<p>Sixth pile bent.</p>	

	50	<p>Quadrat 5. Few boulders, cobble adjacent, fine sand and shell hash with dense rock 5 cm beneath. 5 Pacific oysters, 2 Graceful crabs (<i>Cancer gracilis</i>), 2 Bent-nose clams (<i>Macoma</i> sp.), numerous red ribbon worms, few filamentous algae, sea moss and sea lettuce, dark sea lettuce (<i>Ulvaria</i> sp.)</p>	
	52	Seventh pile bent.	
	53.5	End of rock groyne.	
	58	Eighth pile bent. 10 cm water at 1552 hr March 14, 2020.	
	60	No Quadrat due to water level. See 62 m. Few decaying <i>Z. japonica</i> eelgrass fronds, few sea lettuce.	
	62	<p>Quadrat 6. Fine sand. <i>Z. japonica</i> eelgrass (10% cover), eelgrass rhizomes abundant. Some green algae.</p>	
	63.5	Ninth pile bent. Sand substrate.	
	~69	Tenth pile bent.	
	75.5	Eleventh pile bent. Sand substrate. A few filamentous algae, sea moss clumps.	
	IT - 3 north side		
	80	<p>Sparse <i>Z. japonica</i> eelgrass starts about 6 - 8 m off N side of trestle in 51 - 80 m zone. Sandy bottom with some filamentous algae apparent through area adjacent trestle.</p>	
	52	Tide line at 17:40.	
	51	Shoreward edge <i>Z. japonica</i> eelgrass.	

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50	Quadrat 1. Fine silty sand. 1 Neridae polychaete, 1 Butter clam.	
40	Quadrat 2. Very fine moist silty sand substrate. Small polychaetes, 2 Butter clams, 2 Cockles (Clinocardium nuttallii).	
30	Quadrat 3. Few cobble on coarse sand, shell hash. 6 Neridae Polychaetes, numerous red ribbon worms.	
20	Quadrat 4. Coarse sand and shell hash. Pacific oysters noted on groyne rocks adjacent. 5 Bent-nose clams, 3 Littleneck clams.	
10	Quadrat 5. Cobble over coarse sand, gravel, shell hash with cobble below. Few Acorn barnacles and Periwinkles, 2 Pacific oysters, 19 Varnish clams, 3 Littleneck clams.	

A detailed record of drop camera observations at the site is in Table 2 below. Representative photos of the subtidal fish habitat characteristics and substrate composition at the site are shown in Appendix 1.

Table 2. Subtidal Assessment Transects at the Subject Site in Ladysmith Harbour, B.C. March 16, 2020.

Transect	Distance to Shore to old Concrete Abutment	Tape time	Comments
ST-1	148	1:48	silty sand, diatomaceous film
south side	141	2:15	silty sand, diatomaceous film
	138	2:22	small patch eelgrass (<i>Zostera marina</i>)
	127	3:05	sand
	122	3:30	gravel sand, shell frags few eelgrass fronds at 3:35
	119	3:43	sparse eelgrass
	113	4:10	sand, dense eelgrass
	105	4:45	sand, shell frags, patchy eelgrass
	101	5:00	sand, dense eelgrass
	95	5:33	sand, dense eelgrass
	91	6:00	eelgrass transition to boulder cobble, both covered with filamentous algae; Redrock crab (<i>Cancer productus</i>)
	86	6:54	cobble, gravel, sand with patchy filamentous algae
		7:30	view of shore - end of run
ST-2			
south adj. centre	90	8:42	fine eelgrass , filamentous algae
	93	8:53	dense eelgrass
	98	9:14	dense eelgrass
	104	9:40	dense eelgrass
	111	10:30	dense eelgrass
	122	11:03	edge of eelgrass
	125	11:10	sand, diatomaceous film
	138	11:45	sand, diatomaceous film, detritus
	142	12:15	sand, diatomaceous film
	150	12:36	silty sand, shell fragments
ST-3			
north side		13:31	dense eelgrass
	70	13:45	dense eelgrass
	77	14:11	transition from dense eelgrass to sand

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A summary of the marine fauna and flora observed during the intertidal and under water drop camera inspections is presented in Table 3 below.

Table 3. Summary of Marine Fauna and Flora Observed

Species	Number/ Density	Comments
Fauna: Invertebrates		
Acorn Barnacles (<i>Balanus glandula</i>)	100 +	Common on intertidal rocks
Limpets (<i>Tectura sp.</i>)	16	Few on intertidal rocks
Lewis's moonsnail	2	Rare in low intertidal and subtidal
Littleneck clam (<i>Protothaca staminea</i>)	23	Occasional in intertidal sediments
Varnish clams (<i>Nuttallia obscurata</i>)	83	Common in high intertidal sediments
Bent-nose clam (<i>Macoma sp.</i>)	12	Occasional in intertidal sediments
Cockle (<i>Clinocardium nuttalli</i>)	2	Occasional in intertidal sediments
Butter clam (<i>Saxidomus sp.</i>)	4	Occasional in intertidal sediments
Shore crab (<i>Hemigrapsus sp.</i>)	2	Few among intertidal rocks
Periwinkle snails (<i>Littorina sp.</i>)	100+	Common on intertidal rocks
Pacific oyster (<i>Crassostrea gigas</i>)	100+	Common on intertidal rocks
Blue mussel (<i>Mytilus sp.</i>)	5	Few on intertidal rocks
Rock crab (<i>Cancer productus</i>)	1	Rare in subtidal
Graceful crab (<i>Cancer gracilis</i>)	2	Rare in low intertidal sediments
Ribbon worm (<i>Cerebratulus sp.</i>)	1	Rare in low intertidal sediments
Red ribbon worms (unidentified)	100+	Common in lower intertidal sediments
Neridae	7	Occasional in lower intertidal sediments
Flora: Algae		
Brown		
Rockweed (<i>Fucus sp.</i>)		Few on intertidal rocks
Red		
Filamentous algae (Antithamnion, Pterosiphonia & related species)		Common on substrate
Sea Moss (Endocladia sp.)		Common on substrate
Green		
Enteromorpha (sp.)		Common in the intertidal
Dark Sea lettuce (Ulvaria sp.)		Occasional in the intertidal
Ulva (Ulva sp)		Common in the intertidal
Eelgrass		
Eelgrass (<i>Zostera japonica</i>)		Common in low intertidal zone
Eelgrass (<i>Zostera marina</i>)		Common in subtidal zone

Results (cont'd)

Intertidal Zone

The gently sloping intertidal zone substrate consists mainly of a mix of cobble, gravel and sands on the upper shore and fine sands on the lower shore. The coarser materials occur mainly within 50 m of the HWM (high water mark); this area has a slope of about 2.5 degrees. The lower zone of fine sands extends to the subtidal zone. In addition to the above substrate features there is a rock groyne in the upper 50 m of the intertidal zone that lies within and adjacent to the first few trestle bents. The groyne contains boulders and some very large rocks (1 m diameter) that lie mainly along and parallel to the south side of these bents. These substrate characteristics are depicted in the photographs in Table 1.

As noted in Tables 1 and 3 the site supports a variety of common intertidal biota. These include numerous oysters encrusted on rocks and on a few of the piles, and several clam species. As noted there were a few shore crabs and Graceful crabs in the lower zone. The lower intertidal zone supports Japanese eelgrass (*Zostera japonica*) and native eelgrass (*Zostera marina*). The interpolated areas of these two species are shown on Figure 3. At the time of the inspection the *Z. japonica* growth was undeveloped and showed only last season's decaying leaves. The native eelgrass (*Z. marina*) was generally well developed forming dense bottom cover.

Subtidal Zone

As indicated in Table 2 the transects indicate the subtidal zone substrate consists mainly of sand until about 125 to 130 m off shore where the substrate appears to transition to a finer silty sand. In general, as shown in Table 2 and depicted in Figure 3 the subtidal zone is dominated by two species of eelgrass, *Zostera marina* and *Zostera japonica*, which form an extensive eelgrass meadow along and around the old trestle alignment. The current eelgrass distribution indicates that there appear to be some voids in the Japanese eelgrass meadow, particularly between bents 10 and 15. This may reflect areas where *Z. japonica* occurs and has not started new growth. For the most part, where the observed fronds of *Z. marina* occur, it appears to exhibit fairly dense and well developed growth. As the season progresses it is expected the *Z. japonica* will develop and in the areas now exhibiting last year's detrital fronds will become green and frond densities increased. Few algae were represented in the transects except for filamentous algae on eelgrass or where there was a suitable substrate for algal attachment.

Discussion

The intertidal habitat features relatively common biota, typical of those found in the harbour and the east coast of the island. The low intertidal and subtidal observations reveal that the main habitat of value at the site is the eelgrass meadow. As this eelgrass meadow was observed early in the growing season (March) some seasonal growth might be expected by summer. Specifically, the later growth is characteristic of *Z. japonica*, and it may well develop in the areas not showing last years fronds.

Conclusion

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Based on our habitat assessment the site exhibits a low profile foreshore characterized by shingle and coarse substrates in the upper intertidal, giving way to sandy substrates, which form the dominant shoreline substrate characteristic. The assessment demonstrated that the site supports characteristic marine biota and associated habitats.

The intertidal zone supports Acorn barnacles, Pacific oysters, Littorine snails and limpets on hard substrates, as well as several species of clams in the substrate. Although Bent-nose, Littleneck and Butter clams were represented, the numerically predominant species were Varnish clams. A few crabs including Shore crabs and Graceful crabs were observed.

Among the site attributes the intertidal and subtidal zones were found to support a well-developed native eelgrass meadow (*Zostera marina*) along with the more intertidally adapted exotic Japanese eelgrass (*Zostera japonica*).

Prepared by

A handwritten signature in black ink that reads "Rob Waters". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Rob Waters, R.P.Bio.

Appendix 1. Subtidal Photographs

Distances indicated are from the concrete abutment.

Transect ST-1



Views at 141 m and 113 m



Views at 105 and 101 m



View at 91 m

Transect ST-2



Views at 98 m and 122 m

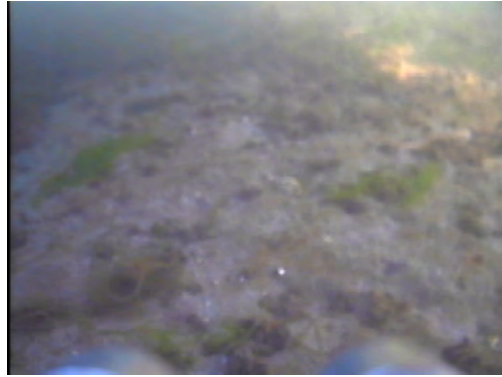


Views at 125 and 138 m



View at 150 m

Transect ST-3



Views at 70 m and 80 m



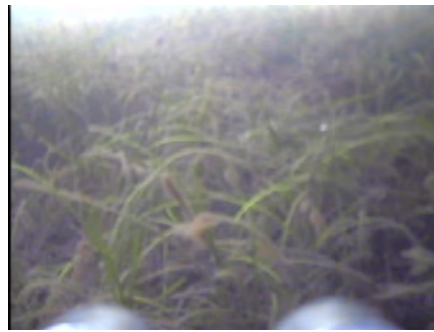
Views at 105 m and 126 m



View at 134 m

Transect ST-4

Transect perpendicular to existing trestle between bents 15 and 16.



Views at 24 m N of trestle and at 0 m on trestle alignment



View at 23 m on S side of trestle