



Talbot Mackenzie & Associates

Consulting Arborists

1913-1915 Fernwood Road, Victoria

Construction Impact Assessment & Tree Preservation Plan

PREPARED FOR: Karl J. Veldkamp Professional Corporation
175 Commerce Valley Drive West, Suite 330
Markham, ON
L3T 7P6

PREPARED BY: Talbot, Mackenzie & Associates

Noah Borges – Consulting Arborist
ISA Certified # PN-8409A
TRAQ – Qualified

DATE OF ISSUANCE: August 13, 2019

Box 48153 RPO - Uptown Victoria, BC V8Z 7H6
Ph: (250) 479-8733
Fax: (250) 479-7050
Email: tmtreehelp@gmail.com



Talbot Mackenzie & Associates

Consulting Arborists

Jobsite Property: 1913-1915 Fernwood Road, Victoria

Date of Site Visit: June 18, 2018

Site Conditions: Residential lot. No construction activity present.

Summary: **Norway Maple #906** will have to be removed prior to construction. The existing house is proposed to be relocated approximately 2m east of the tree and a patio constructed less than 1m away, 1.5m below the existing grade. We anticipate large, critical roots will be severed during excavation leading to significant impacts to the health and stability of the tree. This tree is also within the footprint of the re-aligned sidewalk. We recommend a raised, permeable surface be constructed in the areas where the driveway and parking stalls overlap with the critical root zones of **Cherry NT2**, **Apple NT3**, and **Norway Maple NT1**, if large roots are encountered.

Scope of Assignment:

- To inventory the existing bylaw protected trees and any trees on neighbouring properties that could potentially be impacted by construction or that are within three metres of the property line
- Review the proposal to re-locate the existing building, renovate the interior of the building to convert it to a four-unit structure, and construct a parking area at the rear of the property
- Comment on how construction activity may impact existing trees
- Prepare a tree retention and construction damage mitigation plan for those trees deemed suitable to retain given the proposed impacts

Methodology: We visually examined the trees on the property and prepared an inventory in the attached Tree Resource Spreadsheet. Each by-law protected tree was identified using a numeric metal tag attached to its lower trunk. Municipal trees and neighbours' trees were not tagged. Information such as tree species, DBH (1.4m), crown spread, critical root zone (CRZ), health, structure, and relative tolerance to construction impacts were included in the inventory. The by-law protected trees with their identification numbers were labelled on the attached Site Plan. The conclusions reached were based on the information provided within the attached site plans from Victoria Design Group (dated July 16, 2019) and landscape plans from Nathan Bomford Design + Consulting (dated September 11, 2018).

Limitations: No exploratory excavations have been requested and thus the conclusions reached are based solely on critical root zone calculations and our best judgement using our experience and expertise. The location, size and density of roots are often difficult to predict without exploratory excavations and therefore the impacts to the trees may be more or less severe than we anticipate.

Summary of Tree Resource: Four trees were inventoried, including three on neighbouring properties. None are by-law protected.

Trees to be Removed: One tree will require removal due to construction-related impacts:

- **Norway Maple #906** (72cm DBH): The existing house will be relocated approximately 3m east of the base of this tree. Given 1m of working room, excavation for the house foundation will occur approximately 2m away. A patio is also proposed to be constructed less than 1m to the east, 1.5m below the existing grade. We anticipate large, critical roots will be severed during excavation and recommend the tree be removed prior to construction. The attached landscape plan also shows the re-aligned sidewalk will cross through this tree.

Potential Impacts on Trees to be Retained and Mitigation Measures

- **Driveway:** The attached plans indicate that a ribbon driveway with a Grasscrete centre will be constructed approximately 0.5m north of the south property boundary. A concrete parking area with four parking stalls will be constructed at the rear of the property.
 - **Cherry NT2** (~40cm DBH) is approximately 0.5m south of the property boundary and approximately 1.5m from the new driveway. If the driveway requires excavation down to bearing soil within its footprint and roots are encountered in this area, this could significantly impact the health of the tree. We recommend a raised permeable driveway be constructed in the area where the driveway crosses over the critical root zone of the tree. The “floating driveway” specifications are attached.

The objective is to avoid root loss and to instead raise the driveway and its base layer above the roots. This may result in the grade of the “floating driveway” being up to 30cm above the existing grade (depending on how close roots are to the surface and the depth of the driveway base layers). Final grading plans should take this potential change into account. This may also mean that some of the A horizon soil layer (rich in organic material and roots) will be left intact below the driveway.

This tree is also located approximately 3.5m from a bike locker and 2m from bike racks at the southeast corner of the property. If excavation down to bearing soil is required in these areas, large roots may be encountered. We recommend the project arborist be on site to supervise any excavation within this tree’s CRZ.

This tree’s canopy extends approximately 5m north over the subject property. Clearance pruning may be required for clearance from the driveway and the bike rack and locker. We do not anticipate the health of the tree will be significantly impacted. The neighbour should be notified of the proposed impacts to their tree.

- **Norway Maple NT1** (~50cm DBH) is located approximately 3m south of the property boundary. If large roots from this tree are encountered during excavation for driveway

construction, we recommend the driveway be constructed overtop the root system to avoid significant health impacts (see attached “floating driveway” specifications).

- **Apple NT3** (~15cm DBH) is located approximately 0.5m from the proposed parking stalls at the northeast corner of the property. If excavation to bearing soil is required within the footprint of the parking stalls, the health and stability of this tree may be significantly impacted. We recommend the project arborist be on site to supervise any excavation within the tree’s critical root zone. If large roots are encountered, we recommend a raised, permeable surface be constructed above them (see attached “floating driveway” specifications). In addition, the tree’s crown overhangs the subject property 2m and will require pruning. The neighbour should be notified of proposed impacts to their tree.
- **Service Connections:** Upgrades to underground water, storm, and sewer connections will not impact any trees to be retained.
- **Arborist Supervision:** All excavation occurring within the critical root zones of protected trees should be completed under supervision by the project arborist. Any roots encountered must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound. In particular, the following activities should be completed under the direction of the project arborist:
 - Excavation within the critical root zones of **Norway Maple NT1**, **Cherry NT2**, and **Apple NT3** for construction of the driveway and parking area.
- **Barrier fencing:** The areas surrounding the trees to be retained should be isolated from the construction activity by erecting protective barrier fencing. Where possible, the fencing should be erected at the perimeter of the critical root zones. The barrier fencing must be a minimum of 4 feet in height, of solid frame construction that is attached to wooden or metal posts. A solid board or rail must run between the posts at the top and the bottom of the fencing. This solid frame can then be covered with plywood, or flexible snow fencing. The fencing must be erected prior to the start of any construction activity on site (i.e. demolition, excavation, construction), and remain in place through completion of the project. Signs should be posted around the protection zone to declare it off limits to all construction related activity. The project arborist must be consulted before this fencing is removed or moved for any purpose.
 - Barrier fencing should be erected at the perimeter of the critical root zones of **Cherry NT2** and **Apple NT3** on the subject property. The fencing will have to be adjusted for construction of the driveway and parking areas. The fencing around NT2 may require adjustment or temporary removal for equipment and machinery access to the rear of the property during house relocation.
- **Minimizing Soil Compaction:** In areas where construction traffic must encroach into the critical root zones of trees to be retained, efforts must be made to reduce soil compaction where possible by displacing the weight of machinery and foot traffic. This can be achieved by one of the following methods:

- Installing a layer of hog fuel or coarse wood chips at least 20 cm in depth and maintaining it in good condition until construction is complete.
 - Placing medium weight geotextile cloth over the area to be used and installing a layer of crushed rock to a depth of 15 cm over top.
 - Placing two layers of 19mm plywood.
 - Placing steel plates.
-
- **Mulching:** Mulching is an important proactive step to maintaining the health of the trees to be retained and mitigating construction related impacts and overall stress. Mulch should be made from a natural material such as wood chips or bark pieces and be 5-8cm deep. As much of the area within two times the dripline of the tree should be mulched, both inside and outside of the critical root zone. No mulch should be touching the trunk of the tree. See “methods to avoid soil compaction” if the area is to have heavy traffic.
-
- **Blasting:** If blasting is required, care must be taken to ensure that the area of blasting does not extend beyond the necessary footprints and into the critical root zones of surrounding trees. The use of small low-concussion charges and multiple small charges designed to pre-shear the rock face will reduce fracturing, ground vibration, and overall impact on the surrounding environment. Only explosives of low phytotoxicity and techniques that minimize tree damage should be used. Provisions must be made to ensure that blasted rock and debris are stored away from the critical root zones of trees.
-
- **Landscaping and Irrigation Systems:** The planting of new trees and shrubs should not damage the roots of retained trees. The installation of any in-ground irrigation system must take into account the critical root zones of the trees to be retained. Prior to installation, we recommend the irrigation technician consult with the project arborist about the most suitable locations for the irrigation lines and how best to mitigate the impacts on the trees to be retained. This may require the project arborist supervise the excavations associated with installing the irrigation system. Excessive frequent irrigation and irrigation which wets the trunks of trees can have a detrimental impact on tree health and can lead to root and trunk decay.
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- **Arborist Role:** It is the responsibility of the client or his/her representative to contact the project arborist for the purpose of:
 - Locating the barrier fencing
 - Reviewing the report with the project foreman or site supervisor
 - Locating work zones, where required
 - Supervising any excavation within the critical root zones of trees to be retained
 - Reviewing and advising of any pruning requirements for machine clearances
-
- **Review and site meeting:** Once the project receives approval, it is important that the project arborist meet with the principals involved in the project to review the information contained herein. It is also important that the arborist meet with the site foreman or supervisor before any site clearing, tree removal, demolition, or other construction activity occurs and to confirm the locations of the tree protection barrier fencing.

Talbot Mackenzie & Associates

Please do not hesitate to call us at (250) 479-8733 should you have any further questions. Thank you.

Yours truly,



Noah Borges

ISA Certified: #PN-8409A

TRAQ – Qualified

Talbot Mackenzie & Associates

ISA Certified Consulting Arborists

Encl. 1-page tree resource spreadsheet, 1-page site plans, 1-page landscape plans, 1-page planting plan, 1-page floating driveway specifications, 1-page barrier fencing specifications, 2-page tree resource spreadsheet methodology and definitions

Disclosure Statement

Arborists are professionals who examine trees and use their training, knowledge and experience to recommend techniques and procedures that will improve their health and structure or to mitigate associated risks.

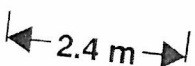
Trees are living organisms, whose health and structure change, and are influenced by age, continued growth, climate, weather conditions, and insect and disease pathogens. Indicators of structural weakness and disease are often hidden within the tree structure or beneath the ground. It is not possible for an Arborist to identify every flaw or condition that could result in failure or can he/she guarantee that the tree will remain healthy and free of risk.

Remedial care and mitigation measures recommended are based on the visible and detectable indicators present at the time of the examination and cannot be guaranteed to alleviate all symptoms or to mitigate all risk posed.

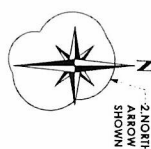
Tree Resource Spreadsheet

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	By-Law Protected	Retention Status
906	Norway Maple	<i>Acer platanoides</i>	72	15	8.5	Moderate	Fair	Fair/poor	4.5m from existing house. Pruned for utility line clearance.	N	X
NT1	Norway Maple	<i>Acer platanoides</i>	~50	10	7.0	Moderate	Good	Poor	Neighbour's, 3m from property line. Topped. Small branches overhanging driveway.	N	Retain
NT2	Cherry	<i>Prunus spp.</i>	~40	10	5.0	Moderate	Fair/poor	Fair/poor	Neighbour's, 0.5m from property line. Overhangs subject property 5m. Dieback.	N	Retain
NT3	Apple	<i>Malus spp.</i>	~15	5	2.0	Moderate	Fair	Fair	Neighbour's. Adjacent to fence. Overhangs 2m.	N	Retain

Prepared by:
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 ISA Certified and Consulting Arborists
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- Barrier Fencing
- may be removed for construction
 - may require adjustment around NT2 for access to rear of property



Lot 26, Section 75, Victoria
District, Plan 951

Parcel Identifier number 006-005-268
Civic address: 1913/1915 Fernwood Road
Victoria, B.C.

Approximate site area
447.2 square metres

PROJECT INFORMATION TABLE

SITE DATA	CD
ITEMS	PROPOSED
LOT AREA	447.2 SQ.M.
LOT COVERAGE	27.4%
OPEN SITE SPACE	31.17%
FRONT YARD OPEN SITE	74.50%
LOT WIDTH	14.97 M
LOT G. HEIGHT	9.38 M
NO. TOWERS	2.5
REAR (WEST) STEPS	4.29 M x 2.00 M
REAR (EAST)	10.17 M
REAR (SOUTH)	3.05 M
SIDE OF ROOF	4.70 M
UPPER AREA	8.32 SQ.M.
LOWER	10.07 SQ.M.
REAR YARD SIDE COVERAGE	305.27 SQ.M.
TOTAL F.A.	324.92 SQ.M.

.. EXIST. NON-CONFORMING
.. REQUIRES VARIANCE

PROP. GRADE CALCULATION (See Elevations)

Pis A+B ((30.29+30.29)/2) x 6.71 = 203.24
Pis C+D ((31.28+31.28)/2) x 1.62 = 50.85
Pis D+H ((31.28+31.28)/2) x 1.44 = 45.04
Pis D1+D2 ((31.28+31.28)/2) x 1.44 = 45.04
Pis D3+D4 ((31.28+31.28)/2) x 1.22 = 37.94
Pis D4+E ((31.28+31.28)/2) x 0.92 = 28.60
Pis E+F ((31.07+30.29)/2) x 0.76 = 23.32
Pis F+G ((30.29+30.29)/2) x 3.02 = 93.30
Pis H+I ((30.79+30.66)/2) x 8.53 = 262.08
Pis K+L ((30.29+30.29)/2) x 3.38 = 102.36
Pis M+N ((30.74+30.90)/2) x 5.76 = 177.52
Pis O+A ((30.29+30.29)/2) x 4.27 = 129.25

1503.23 / 49.01 (Perimeter) = 30.67 (Average Grade)

Total: 1503.23

drawn by

CB

VICTORIA B.C.

1913/1915

fernwood

road

Victoria

Design

CR

A1 - SITE PLAN

2/14/18

LIST OF CHANGES:

1. INFORMATION ADDED
2. NORTH ARROW SHOWN (A1)
3. EXIST. DRIVEWAY CHANGED (A1)
4. EXISTING HOUSE & 0.41 M RAISE SHOWN, ELEVATIONS LABELED NORTH, SOUTH, ETC. (A2)
5. BIKE STOR. & ELEC. RM. ADDED (A4)
6. UPPER FLOOR RENOVATED TO BE 70% OF FLOOR (A4)
7. DRIVEWAY CROSSING WIDTH 3.50M & 3.5M 1.4M SHOWN (A4)
8. EXIST. FENCE TO BE REMOVED SHIT. A1
9. DRIVEWAY CROSSING WIDTH 3.50M & 3.5M 1.4M SHOWN (A4)
10. WINDOW OVERLAY SHOWN @ THE NORTH & SOUTH ELEVATIONS - SEE NEW SHIT. A9
11. MATERIALS BOARD PROVIDED/ ALL MATERIALS IDENTICAL @ NEW SHIT. A9
12. AREA LOCATED BELOW STEPS LESS THAN 1.5M SHOWN & EMPTIED FROM FLOOR AREA SHIT. A4
13. REAR YARD COVERED @ FRONT & REAR YARD (VERSION @ 8/15/18)
14. BIKE BACK SHOWN @ FRONT & REAR YARD (VERSION @ 8/15/18)
15. BIKE BACK SHOWN @ FRONT & REAR YARD (VERSION @ 8/15/18)
16. DIRECT ACCESS TO A BALCONY 17. UNDER DECK - GARAGE & RECYCLE ENCLOSURE SHIT. A1/2
17. UNDER DECK - GARAGE & RECYCLE ENCLOSURE SHIT. A1/2
18. UPDATED LANDSCAPE @ SHIT. A1
19. REAR YARD COVERED @ SHIT. A1
20. BIKE BACK @ SHIT. A1 (SEE BIKE LOCKER)
21. BIKE LOCKER TO COMPLY WITH BUILDING CODE
22. NEW SOLID CORE DOORS TO BIKE LOCKER SHOWN

1 Proposed Site Plan

Scale: 1:100

1 INFORMATION ADDED

Plan 951

24

adjacent dwelling

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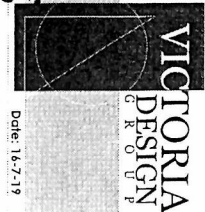
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1913/1915 fernwood road
Victoria B.C.



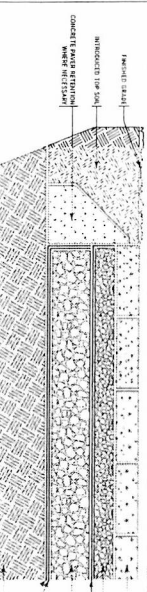
Date: 16-7-19

2103 821
KARL J. VEIDKAMP
KJ@kjdcompveidkamp.ca
PH: 250.822.374
FAX: 250.822.344
PH: 905.62.3500
EXT. 223



NOTES:
1. All building information including area, volume, and other data is provided for information only and is not to be used for any other purpose.
2. All building information is provided for information only and is not to be used for any other purpose.
3. All building information is provided for information only and is not to be used for any other purpose.

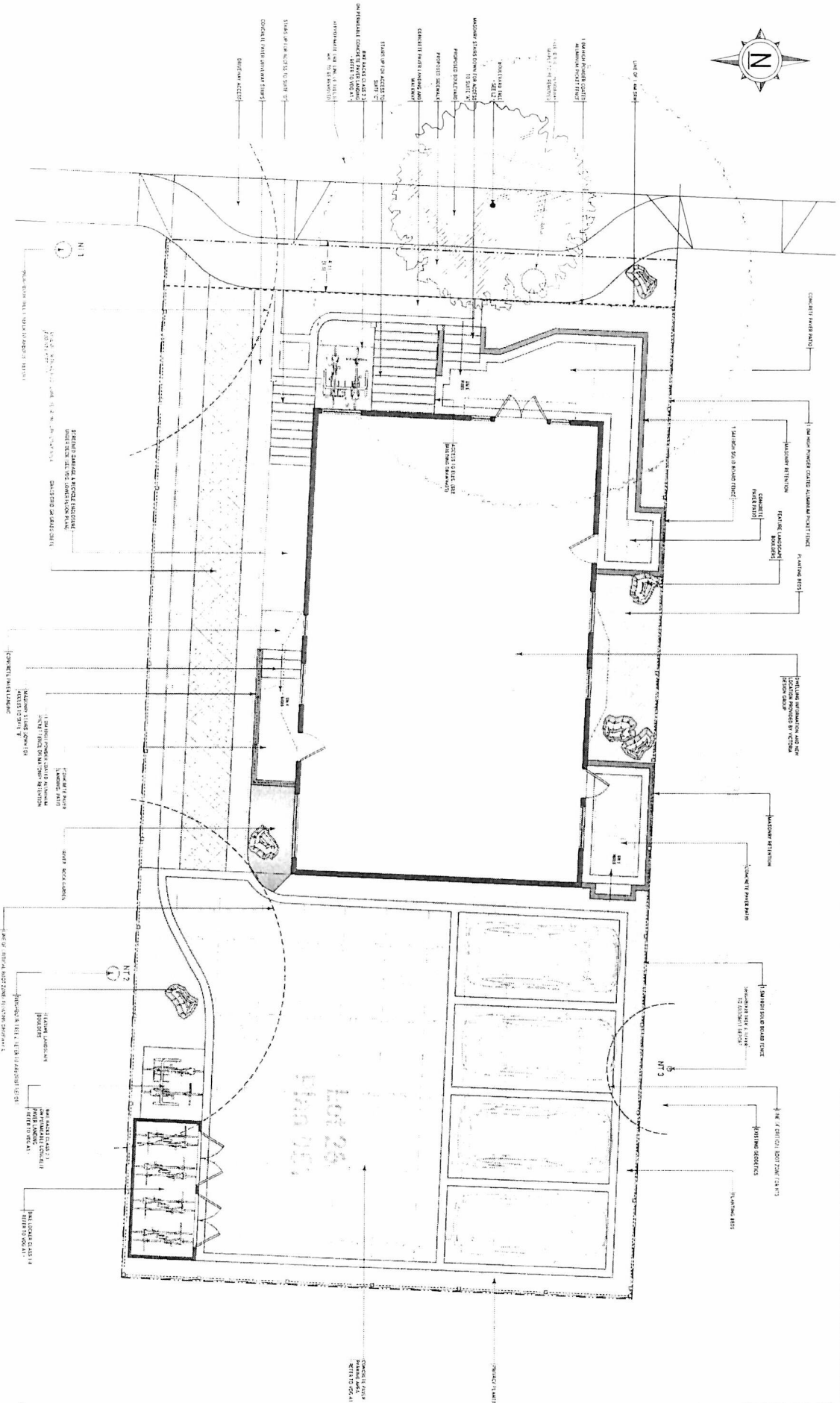
01 Floating Driveway and Parking Area Detail
Scale 7'-10"



PROPOSED CONCRETE DRIVEWAY
1. The driveway is proposed to be constructed of concrete and is shown in the plan view.
2. The driveway is proposed to be constructed of concrete and is shown in the plan view.
3. The driveway is proposed to be constructed of concrete and is shown in the plan view.

RECOMMENDATIONS
1. The driveway is proposed to be constructed of concrete and is shown in the plan view.
2. The driveway is proposed to be constructed of concrete and is shown in the plan view.
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1913/1915 Fernwood Rd. Rezoning

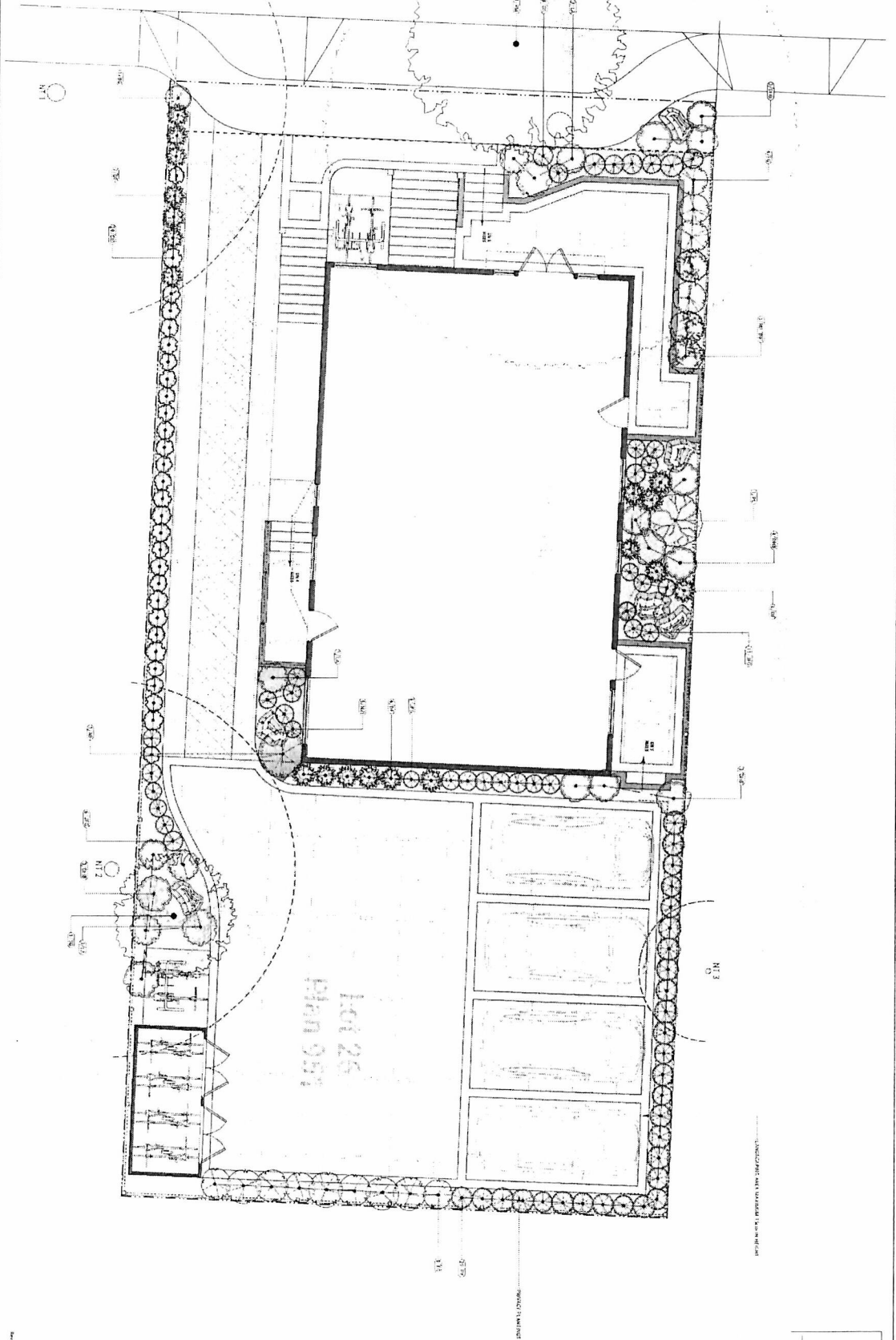
Landscape Plan

(d+c)nb
NATHAN BOURFORD
Design + Consulting

Project Name: 1913/1915 Fernwood Rd., Virginia
Client: NATHAN BOURFORD
Date: 11/15/2018
Scale: 1/8" = 1'-0"
Sheet: 1 of 1



PLANT LIST			
ID Code	Quantity	Common Name	Size
Trees			
T1	1	Red Maple	18"
T2	1	White Birch	18"
Shrubs & Groundcovers			
S1	1	Boxwood	18"
S2	1	Yucca	18"
S3	1	Spirea	18"
S4	1	Hydrangea	18"
S5	1	Juniper	18"
S6	1	Boxwood	18"
S7	1	Yucca	18"
S8	1	Spirea	18"
S9	1	Hydrangea	18"
S10	1	Juniper	18"
S11	1	Boxwood	18"
S12	1	Yucca	18"
S13	1	Spirea	18"
S14	1	Hydrangea	18"
S15	1	Juniper	18"
S16	1	Boxwood	18"
S17	1	Yucca	18"
S18	1	Spirea	18"
S19	1	Hydrangea	18"
S20	1	Juniper	18"
S21	1	Boxwood	18"
S22	1	Yucca	18"
S23	1	Spirea	18"
S24	1	Hydrangea	18"
S25	1	Juniper	18"
S26	1	Boxwood	18"
S27	1	Yucca	18"
S28	1	Spirea	18"
S29	1	Hydrangea	18"
S30	1	Juniper	18"
S31	1	Boxwood	18"
S32	1	Yucca	18"
S33	1	Spirea	18"
S34	1	Hydrangea	18"
S35	1	Juniper	18"
S36	1	Boxwood	18"
S37	1	Yucca	18"
S38	1	Spirea	18"
S39	1	Hydrangea	18"
S40	1	Juniper	18"
S41	1	Boxwood	18"
S42	1	Yucca	18"
S43	1	Spirea	18"
S44	1	Hydrangea	18"
S45	1	Juniper	18"
S46	1	Boxwood	18"
S47	1	Yucca	18"
S48	1	Spirea	18"
S49	1	Hydrangea	18"
S50	1	Juniper	18"
S51	1	Boxwood	18"
S52	1	Yucca	18"
S53	1	Spirea	18"
S54	1	Hydrangea	18"
S55	1	Juniper	18"
S56	1	Boxwood	18"
S57	1	Yucca	18"
S58	1	Spirea	18"
S59	1	Hydrangea	18"
S60	1	Juniper	18"
S61	1	Boxwood	18"
S62	1	Yucca	18"
S63	1	Spirea	18"
S64	1	Hydrangea	18"
S65	1	Juniper	18"
S66	1	Boxwood	18"
S67	1	Yucca	18"
S68	1	Spirea	18"
S69	1	Hydrangea	18"
S70	1	Juniper	18"
S71	1	Boxwood	18"
S72	1	Yucca	18"
S73	1	Spirea	18"
S74	1	Hydrangea	18"
S75	1	Juniper	18"
S76	1	Boxwood	18"
S77	1	Yucca	18"
S78	1	Spirea	18"
S79	1	Hydrangea	18"
S80	1	Juniper	18"
S81	1	Boxwood	18"
S82	1	Yucca	18"
S83	1	Spirea	18"
S84	1	Hydrangea	18"
S85	1	Juniper	18"
S86	1	Boxwood	18"
S87	1	Yucca	18"
S88	1	Spirea	18"
S89	1	Hydrangea	18"
S90	1	Juniper	18"
S91	1	Boxwood	18"
S92	1	Yucca	18"
S93	1	Spirea	18"
S94	1	Hydrangea	18"
S95	1	Juniper	18"
S96	1	Boxwood	18"
S97	1	Yucca	18"
S98	1	Spirea	18"
S99	1	Hydrangea	18"
S100	1	Juniper	18"



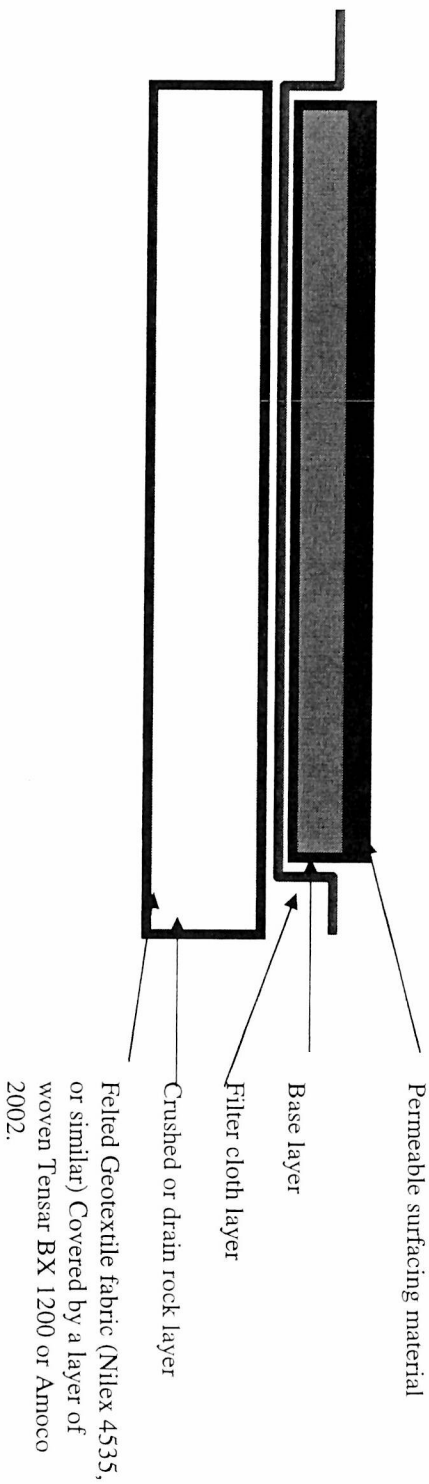
1913/1915 Fernwood Rd. Rezoning

Landscape Plan

(d+c)nb
NATHAN BOWFORD
d+c nb + cns + ll + g

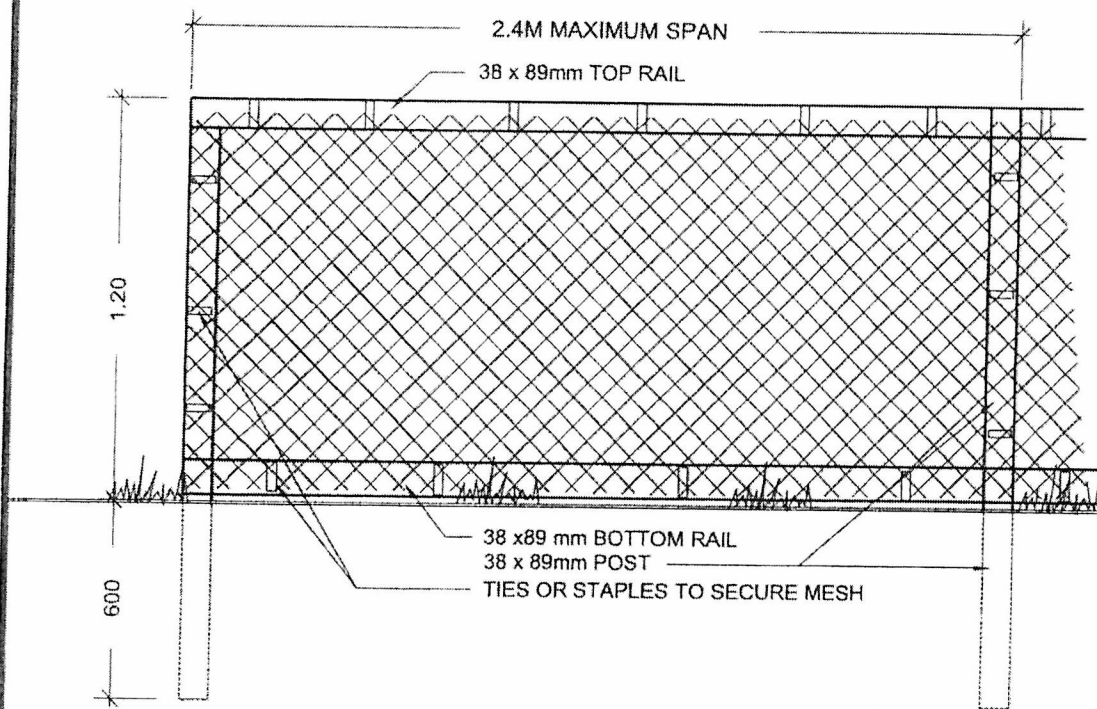
Project Name	1913/1915 Fernwood Rd. Rezoning
Client	Karl Volkman
Project Address	1913/1915 Fernwood Rd. Victoria
Project Type	Planting Plan
Date	11/28/2018
Scale	1/8" = 1'-0"
Drawn By	N. Bowford
Checked By	N. Bowford
Project Number	1913/1915 Fernwood Rd. Rezoning
Project Name	1913/1915 Fernwood Rd. Rezoning
Client	Karl Volkman
Project Address	1913/1915 Fernwood Rd. Victoria
Project Type	Planting Plan
Date	11/28/2018
Scale	1/8" = 1'-0"
Drawn By	N. Bowford
Checked By	N. Bowford
Project Number	1913/1915 Fernwood Rd. Rezoning

Diagram – Site Specific Floating Driveway, Parking and Sidewalk Areas



Specifications for Floating Driveway and Parking Areas

1. Excavation for driveway or parking area construction must remove the sod layer only, where they encroach on the root zones of the protected trees
2. A layer of medium weight felted Geotextile fabric (Nilex 4535, or similar) is to be installed over the entire area of the critical root zone that is to be covered by the paving. Cover this Geotextile fabric with a layer of woven Amoco 2002 or Tensar BX 1200. Each piece of fabric must overlap the adjoining piece by approximately 30-cm.
3. A 10cm layer of torpedo rock, or 20-mm clean crushed drain rock, is to be used to cover the Geotextile fabric.
4. A layer of felted filter fabric is to be installed over the crushed rock layer to prevent fine particles of sand and soil from infiltrating this layer.
5. The bedding or base layer and permeable surfacing can be installed directly on top of the Geotextile fabric.



TREE PROTECTION FENCING
 FENCE WILL BE CONSTRUCTED USING
 38 X 89 mm (2"X4") WOOD FRAME:
 TOP, BOTTOM AND POSTS. *
 USE ORANGE SNOW-FENCING MESH AND
 SECURE TO THE WOOD FRAME WITH
 "ZIP" TIES OR GALVANIZED STAPLES

* IN ROCKY AREAS, METAL POSTS (T-BAR
 OR REBAR) DRILLED INTO ROCK WILL BE
 ACCEPTED

DETAIL NAME:

TREE PROTECTION FENCING

DATE: Oct 30/07
 DRAWN: DM
 APP'D. RR
 SCALE: N.T.S.

E105
 DRAWING



Talbot Mackenzie & Associates

Consulting Arborists

Box 48153 RPO - Uptown Victoria, BC V8Z 7H6

Ph: (250) 479-8733

Fax: (250) 479-7050

Email: tmtreehelp@gmail.com

Tree Resource Spreadsheet Methodology and Definitions

Tag: Tree identification number on a metal tag attached to tree with nail or wire, generally at eye level. Trees on municipal or neighboring properties are not tagged.

NT: No tag due to inaccessibility or ownership by municipality or neighbour.

DBH: Diameter at breast height – diameter of trunk, measured in centimetres at 1.4m above ground level. For trees on a slope, it is taken at the average point between the high and low side of the slope.

* Measured over ivy

~ Approximate due to inaccessibility or on neighbouring property

Crown Spread: Indicates the diameter of the crown spread measured in metres to the dripline of the longest limbs.

Relative Tolerance Rating: Relative tolerance of the tree species to construction related impacts such as root pruning, crown pruning, soil compaction, hydrology changes, grade changes, and other soil disturbance. This rating does not take into account individual tree characteristics, such as health and vigour. Three ratings are assigned based on our knowledge and experience with the tree species: Poor, Moderate or Good.

Critical Root Zone: A calculated radial measurement in metres from the trunk of the tree. It is the optimal size of tree protection zone and is calculated by multiplying the DBH of the tree by 10, 12 or 15 depending on the tree's Relative Tolerance Rating. This methodology is based on the methodology used by Nelda Matheny and James R. Clark in their book "Trees and Development: A Technical Guide to Preservation of Trees During Land Development."

- 15 x DBH = Poor Tolerance of Construction
- 12 x DBH = Moderate
- 10 x DBH = Good

To calculate the critical root zone, the DBH of multiple stems is considered the sum of 100% of the diameter of the largest stem and 60% of the diameter of the next two largest stems. It should be noted that these measures are solely mathematical calculations that do not consider factors such as soil volume restrictions, age, crown spread, health, or structure (such as a lean).

Health Condition:

- Poor - significant signs of visible stress and/or decline that threaten the long-term survival of the specimen
- Fair - signs of stress
- Good - no visible signs of significant stress and/or only minor aesthetic issues

Structural Condition:

- Poor - Structural defects that have been in place for a long period of time to the point that mitigation measures are limited
- Fair - Structural concerns that are possible to mitigate through pruning
- Good - No visible or only minor structural flaws that require no to very little pruning

Retention Status:

- X - Not possible to retain given proposed construction plans
- Retain - It is possible to retain this tree in the long-term given the proposed plans and information available. This is assuming our **recommended mitigation measures are followed**
- Retain * - See report for more information regarding potential impacts
- TBD (To Be Determined) - The impacts on the tree could be significant. However, in the absence of exploratory excavations and in an effort to retain as many trees as possible, we recommend that the final determination be made by the supervising project arborist at the time of excavation. The tree might be possible to retain depending on the location of roots and the resulting impacts, but concerned parties should be aware that the tree may require removal.
- NS - Not suitable to retain due to health or structural concerns