



Talbot Mackenzie & Associates

Consulting Arborists

874 Fleming St, Esquimalt

Construction Impact Assessment &

Tree Preservation Plan

Prepared For: Greater Victoria Housing Society
2326 Government St
Victoria, BC
V8T 5G5

Prepared By: Talbot, Mackenzie & Associates
Noah Borges – Consulting Arborist
ISA Certified # PN-8409A
TRAQ – Qualified

Date of Issuance: June 26, 2019
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Jobsite Property: 874 Fleming St, Esquimalt

Date of Site Visits: February 13, 2019 and February 4, 2020

Site Conditions: Existing multi-story building with at-grade parking area. No ongoing construction activity.

Summary:

- We anticipate 26 trees will have to be removed, in addition to several trees within cluster NT15.
- Based on discussions with the applicants, it is our understanding that excavation will occur up to the west, north, and east property lines for construction of the underground parkade, except in the areas indicated that overlap with the CRZ of Arbutus #249.
- We recommend the retention status of Grand Fir trees NT10 and NT12 be determined at the time of excavation, based on the number and size of roots encountered.
- Trees NT2-4, NT16, and NT17 may have to be removed if excavation is required down to bearing soil within the footprint of the Fleming St road extension. We recommend their final retention status be determined on site by the project arborist at the time of road construction.
- The design of the underground parkade has been modified in an effort to reduce impacts to Arbutus #249. It is located approximately 8m to the west and 8.5m to the north. To retain this tree, shoring techniques will need to be used to minimize the extent of excavation outside the parkade footprint. In addition, we estimate approximately 15% of its crown will need to be pruned if 1m of clearance from the proposed building is desired.

Scope of Assignment:

- To inventory the existing bylaw protected trees and any trees on municipal or neighbouring properties that could potentially be impacted by construction or that are within three metres of the property line
- Review the proposal to demolish the existing building and construct a new multi-storey building with an underground parkade, a new driveway, at-grade parking, and turnaround area
- 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 plans from Low Hammond Rowe Architects (dated February 11, 2020).

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.
- Servicing plans were not available for comment. We recommend the project arborist review the servicing plans once they become available to assess potential impacts to any trees to be retained. We recommend directing all underground services outside the CRZs of trees to be retained where possible.
- Where trees were not surveyed on the plans provided, we have added their approximate locations. The accuracy of our estimated locations has not been verified by a professional surveyor.

Summary of Tree Resource: 37 trees were inventoried, 19 of which are by-law protected trees on the subject property. To the west of the existing building is a forested area where there are several large Douglas-firs within 5m of the property line. There are 7 trees located within the road dedication south of the property.

Trees to be Removed: We anticipate 26 trees will have to be removed, in addition to several trees within cluster NT15:

- **Trees #246-248, 250-262, 285, 286, NT5, NT7-9, NT11, NT13, and NT14:** Based on discussions with the applicants, it is our understanding that excavation will occur up to the west, north, and east property lines for construction of the underground parkade, except in the areas indicated that overlap with the CRZ of Arbutus #249 (see discussion below). The stumps of NT9 and NT11 should be left in place or routed to grade, rather than removed, to avoid damaging the root systems of trees to be retained (NT10 and NT12).
 - **Douglas-fir NT7** (~70cm DBH) has not been professionally surveyed. We estimate it is approximately 3m from the property line. If excavation is to occur up to the northwest property corner, we anticipate large roots from this tree will be encountered, resulting in significant health and structural impacts. If excavation can be restricted to outside of 5m from its base, it may be able to be retained.
 - **Big Leaf Maple NT11** (35cm DBH) is a small tree and will likely incur significant root loss. We anticipate its health will be significantly impacted if excavation occurs up to the west property line. Since it is a small tree, it will likely not pose a high risk of failure even if a large number of roots are severed. If the neighbour would prefer to

retain this tree, we recommend any roots encountered be pruned back to sound tissue at the edge of excavation.

- All trees with the prefix “NT” are located offsite, and the owners of the trees should be notified of the proposed impacts to their trees. It should be noted that NT14 has not been professionally surveyed, but we estimate it is growing less than 2m away and will be significantly impacted.
- **Trees NT1** and most of the trees in cluster **NT15** will have to be removed to extend Fleming Street.

Trees with Retention Status “To be Determined”

- **Grand Firs NT10** (55cm DBH) and **NT12** (43cm DBH): Between these trees and the west property line are other trees (NT9 and NT11) and the stump of a previously removed tree, which could restrict root growth. We recommend the project arborist supervise all excavation within the CRZs of these trees and their final retention status be determined at the time of excavation. It should be noted that Grand Firs typically exhibit very poor tolerance to root loss and changes in site hydrology, and are susceptible to insect pests (Balsam twig aphid and Balsam Woolly adelgid) and disease (needle cast), which often lead to crown dieback and large dead limbs. In our opinion, if these trees are disturbed during construction, it would be a reasonable option to remove them and plant replacement trees elsewhere on site. NT12 has not been professionally surveyed. The neighbour should be notified of the potential impacts to their trees.
- **Fleming Street Extension: Trees NT2-4, NT16, and NT17** are located along the south edge of the proposed road extension. The remaining trees in cluster NT15 (not within the road footprint) will also have overlapping CRZs. If excavation down to bearing soil is required within the footprint of the proposed road extension and roots from any of these trees are encountered, their health and/or structural stability could be significantly impacted. If an effort will be made to retain the trees, the depth of the curb sub-base will likely have to be reduced and the grade of the new street will have to be elevated above any large roots to avoid significant health and structural impacts (see attached specification for constructing paved surfaces over root systems). Several of these trees will require clearance pruning.

Potential Impacts on Trees to be Retained and Mitigation Measures

- **Underground Parkade:** Based on discussions with the applicant, it is our understanding that a significant amount of blasting is expected to be required for construction of the underground parkade. Blasting can unintentionally extend beyond the areas that are intended to be disturbed and into the CRZs of trees to be retained, which may result in unanticipated impacts and possibly require additional trees to be removed. We recommend the recommendations in the “Blasting” section below be followed when working around these trees.
 - **Arbutus #249** (101cm DBH) – the nearest point of the parkade is approximately 8m away
 - **Trees NT10, NT12, NT14, and NT18**, located on neighbouring properties

We recommend the project arborist supervise any excavation within the CRZs of these trees. Depending on the extent of excavation and blasting, and the number and size of roots encountered, their retention viability may have to be re-evaluated. Outside the areas of excavation, the existing grades within the CRZs of these trees should be maintained where possible.

As trees NT10, NT12, NT14, and NT18 are located on adjacent properties, the property owners should be notified of the potential impacts to their trees. Any roots encountered should be pruned back to sound tissue at the edge of excavation.

- **Arbutus #249** (101cm DBH): The underground parkade is located approximately 8m to the west and 8.5m to the north. The plans have been amended in an effort to minimize impacts to the health of the tree. Root growth will likely be partially restricted to the north by the presence of the existing stairway, retaining wall, and parking area. For this tree to be retained, shoring techniques will be required to limit the extent of excavation. Based on discussions with the applicant, it is our understanding that a significant amount of blasting is expected to be required for construction of the underground parkade and that excavation is expected to occur approximately 2m outside the parkade footprint. Arbutus trees typically exhibit poor tolerance to root loss and changes in hydrology. Depending on the extent of blasting and excavation, and on the number and size of roots encountered, particularly in the area west of the tree, the health of this tree may be significantly impacted.

The potential health impacts will likely be exacerbated by clearance pruning from the new building. This tree's crown extends approximately 9m to the north and west. The building is approximately 7m west of the tree and 8m to the north. If 1m of clearance from the building is desired, several large limbs (up to 15cm in diameter) growing westward will have to be pruned, in addition to one ~10cm limb extending 9-10m to the north. In total, this could amount to up to 15% of its crown being removed. All pruning must be completed by an ISA Certified Arborist to ANSI A300 pruning standards. Limbs should be pruned back to suitable laterals where appropriate. If additional clearance is required for building construction (e.g. to install scaffolding), this could result in additional health impacts. To limit the amount of pruning required, alternatives to full scaffolding should be considered, such as hydraulic lifts, ladders, or platforms.

We recommend the project arborist supervise all excavation within this tree's CRZ, including removal of the stairway, retaining walls, and paved parking areas and walkways. Any roots severed during excavation should be pruned back to sound tissue to encourage rapid wound compartmentalization and new root growth.

- **Arborist Supervision:** All excavation occurring within the critical root zones of protected trees should be completed under supervision by the project arborist. Any severed roots 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:

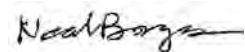
- Any excavation for construction of the underground parkade within the CRZs of trees #249, and NT6, NT10, and NT12
- Removal of the existing paved areas within the CRZ of Arbutus #249
- Excavation for the construction of the Fleming St Road extension within the CRZs of trees NT2-4, NT16, NT17, and any trees remaining in cluster NT15
- **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.
- **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.
- **Demolition of the Existing Building:** The demolition of the existing house and any services that must be removed or abandoned, must take the critical root zone of the trees to be retained into account. If any excavation or machine access is required within the critical root zones of trees to be retained, it must be completed under the supervision and direction of the project arborist. If temporarily removed for demolition, barrier fencing must be erected immediately after the supervised demolition.
- **Mulching:** Mulching can be an important proactive step in maintaining the health of trees 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. 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:** 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.

- **Scaffolding:** This assessment has not included impacts from potential scaffolding including canopy clearance pruning requirements. If scaffolding is necessary and this will require clearance pruning of retained trees, the project arborist should be consulted. Depending on the extent of pruning required, the project arborist may recommend that alternatives to full scaffolding be considered such as hydraulic lifts, ladders or platforms. Methods to avoid soil compaction may also be recommended (see “Minimizing Soil Compaction” section).
- **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.
- **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.

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

Thank you,



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

Talbot Mackenzie & Associates
ISA Certified Consulting Arborists

Encl. 3-page tree resource spreadsheet, 8-page site and building plans, 1-page specification for constructed paved areas over tree roots, 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.

874 Fleming St
Tree Resource Spreadsheet

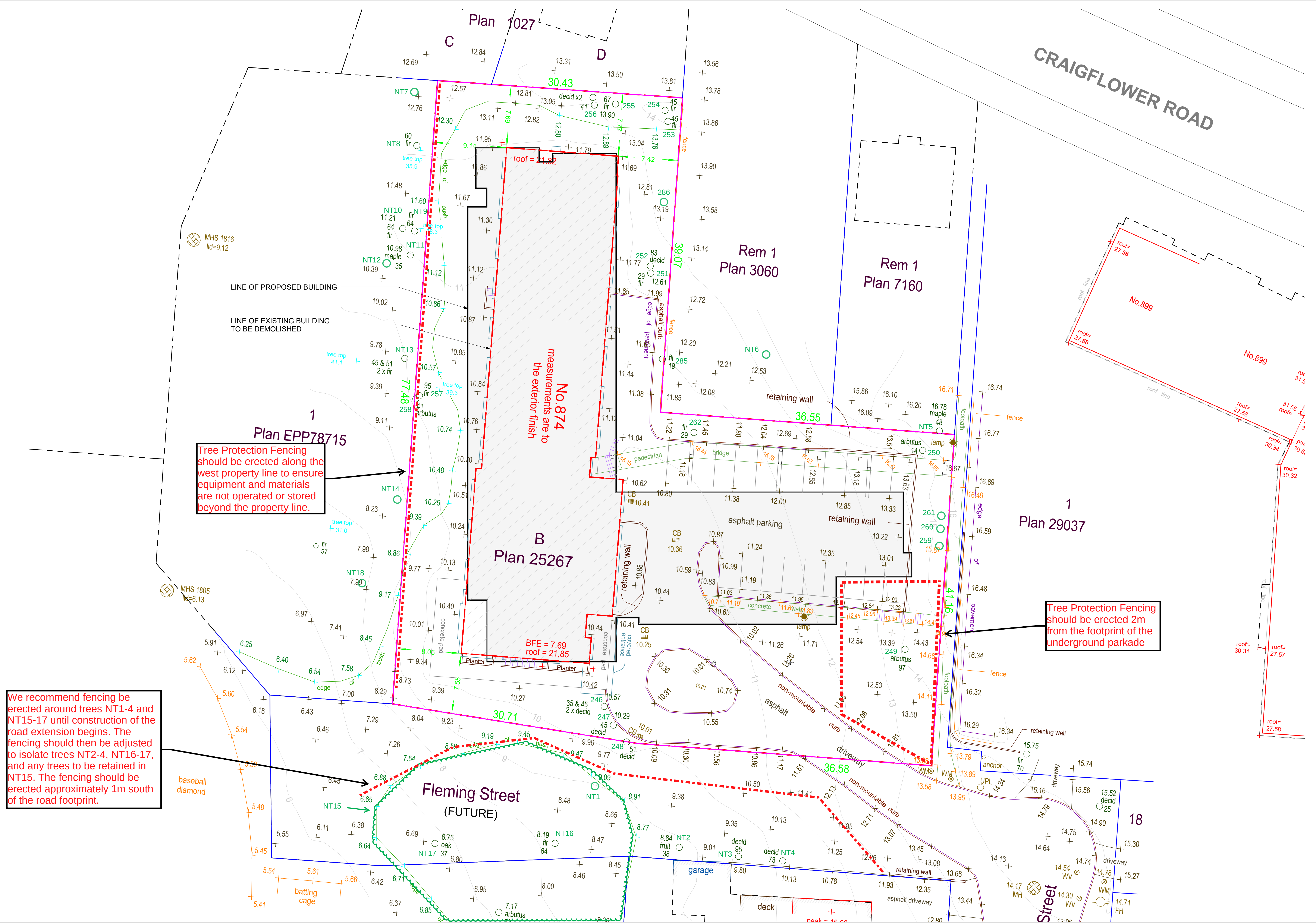
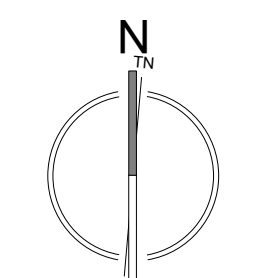
Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Retention Status
246	European Walnut	<i>Juglans regia</i>	46, 34	10	10.0	Poor	Good	Fair		X
247	European Walnut	<i>Juglans regia</i>	40	8	6.0	Poor	Good	Fair		X
248	European Walnut	<i>Juglans regia</i>	46	8	7.0	Poor	Good	Fair	Under shared ownership with municipality, asymmetric crown due to competition	X
249	Arbutus	<i>Arbutus menziesii</i>	101	14	15.0	Poor	Good	Good	Minor dieback	Retain
250	Arbutus	<i>Arbutus menziesii</i>	12	2	2.0	Poor	Good	Fair		X
251	Grand Fir	<i>Abies grandis</i>	24	4	3.5	Poor	Fair	Fair		X
252	Scouler's Willow	<i>Salix scouleriana</i>	85	14	10.0	Moderate	Good	Fair	Limb conflicts with fir 251	X
253	Douglas-fir	<i>Pseudotsuga menziesii</i>	44	5	6.5	Poor	Fair	Fair/poor	Previously topped, 2 new leaders	X
254	Douglas-fir	<i>Pseudotsuga menziesii</i>	41	3	6.0	Poor	Fair/poor	Fair/poor	Topped	X
255	Douglas-fir	<i>Pseudotsuga menziesii</i>	70	8	10.5	Poor	Good	Fair		X
256	Scouler's Willow	<i>Salix scouleriana</i>	41, 35	6	7.5	Moderate	Fair	Poor	Decay in trunk of 35cm stem - consider removal	X
257	Douglas-fir	<i>Pseudotsuga menziesii</i>	88*	8	13.0	Poor	Good	Fair		X
258	Arbutus	<i>Arbutus menziesii</i>	43, 14	8	7.5	Poor	Good	Fair	Leans towards building, foliage up to building	X
259	Grand Fir	<i>Abies grandis</i>	16	3	2.5	Poor	Good	Good	Growing against chain-link fence	X
260	Western Red Cedar	<i>Thuja plicata</i>	~25, 25	6	6.0	Poor	Fair/poor	Fair/poor	Declining tops, growing against chain link fence	X
261	Grand Fir	<i>Abies grandis</i>	15	3	2.5	Poor	Good	Good	Growing against chain-link fence	X
262	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	5	4.0	Poor	Fair	Good		X

874 Fleming St
Tree Resource Spreadsheet

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Retention Status
285	Grand Fir	<i>Abies grandis</i>	18	4	2.5	Poor	Good	Good		X
286	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	3	2.5	Poor	Good	Good		X
NT1	Hawthorn	<i>Crataegus spp.</i>	22, 17	5	3.0	Good	Fair	Fair	Municipal	X
NT2	Apple	<i>Malus spp.</i>	35 below unions	8	4.0	Moderate	Good	Fair	Municipal	TBD
NT3	Black Cottonwood	<i>Populus trichocarpa</i>	60, 59	12	14.5	Poor	Good	Fair	Municipal	TBD
NT4	Black Cottonwood	<i>Populus trichocarpa</i>	63	10	9.5	Poor	Good	Good	Municipal	TBD
NT5	Big Leaf Maple	<i>Acer macrophyllum</i>	~50	10	6.0	Moderate	Fair	Fair	Neighbour's, ivy on trunk	X
NT6	Garry Oak	<i>Quercus garryana</i>	~70	16	7.0	Good	Good	Fair	Neighbour's, ~5m from property line, crown overhangs bridge, large deadwood	Retain
NT7	Douglas-fir	<i>Pseudotsuga menziesii</i>	~70	8	10.5	Poor	Good	Fair	Neighbour's, ~1.5m from property line, ivy on trunk, appears topped	X
NT8	Douglas-fir	<i>Pseudotsuga menziesii</i>	~60	10	9.0	Poor	Good	Fair/poor	Neighbour's, ~1m from property line, topping wound 2/3 height	X
NT9	Grand Fir	<i>Abies grandis</i>	60	6	9.0	Poor	Good	Fair	Neighbour's, multiple leaders	X
NT10	Grand Fir	<i>Abies grandis</i>	55	5	8.5	Poor	Good	Fair	Neighbour's, multiple leaders	TBD
NT11	Big Leaf Maple	<i>Acer macrophyllum</i>	35	5	4.0	Moderate	Fair	Fair	Neighbour's, swelling at base	X
NT12	Grand Fir	<i>Abies grandis</i>	43	3	6.5	Poor	Good	Fair	Neighbour's	TBD
NT13	Grand Fir	<i>Abies grandis</i>	60, 42	8	13.0	Poor	Good	Fair	Neighbour's, codominant union at base	X
NT14	Scouler's Willow	<i>Salix scouleriana</i>	~40	6	5.0	Moderate	Fair	Fair/poor	Near property line, prostrate growth	X
NT15	Cluster of willows, plums, hawthorns	-	-	-	-	Moderate to Good	-	-	Located on municipal and adjacent property (867 Lampson St). Several willow trees in this cluster are by-law protected	X (some trees)

874 Fleming St
Tree Resource Spreadsheet

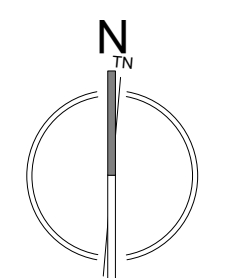
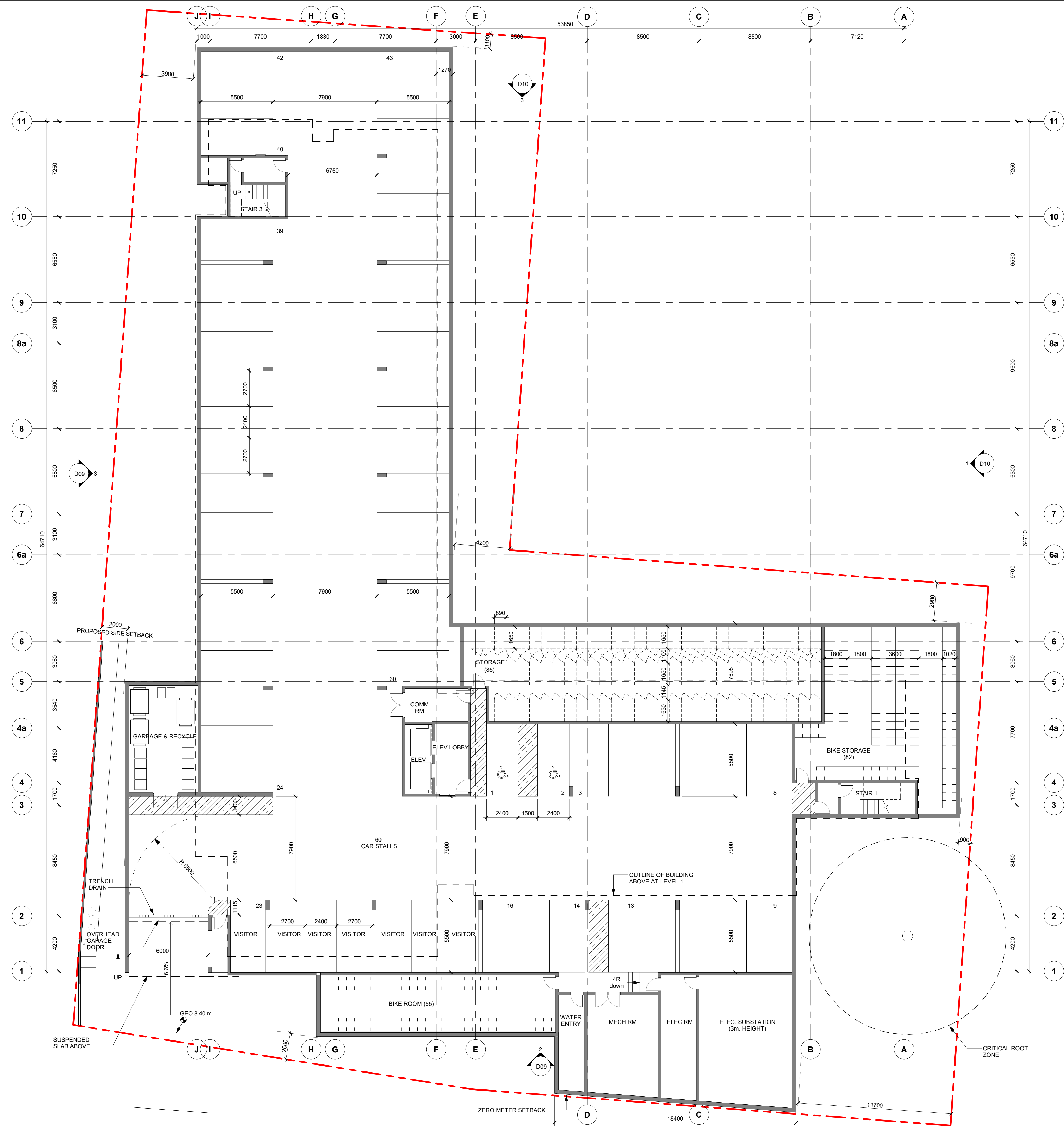
Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Retention Status
NT16	Douglas-fir	<i>Pseudotsuga menziesii</i>	~50	8	7.5	Poor	Good	Fair	Municipal tree. Located in centre of cluster NT15	TBD
NT17	Garry Oak	<i>Quercus garryana</i>	~30	6	3.0	Good	Good	Fair	Municipal tree, located in southwest corner of cluster NT15	TBD
NT18	Douglas-fir	<i>Pseudotsuga menziesii</i>	~50	6	7.5	Poor	Good	Fair	Neighbour's tree, deflected leader	Retain



OVERALL SITE PLAN
scale 1 : 200 date 2020.02.11

*Is measured from the centre line of party walls, the face of the exterior sheathing, and the centre line of the corridor walls

PROJECT DATA - 874 Fleming St									
Esqimalt, BC									
ZONING:		RM-4							
LEGAL:		Lot B Plan VIP25267 Section 10 Land District 21Lot B Plan VIP25267 Section 10 Land District 21 PID: 002-900-246							
Existing RM-4		OCP		Proposed				Notes	
SITE AREA:		na		3909 m ²		42076 sf			
LOT COVERAGE:		30.0 %		50 %					
DENSITY (FAR)*:		1.0		2.0		2.10			
SETBACKS:									
(Building Front) South		7.5 m		5.5 m					
(Parkade) South				0.0 m					
East		6.0 m		4.0 m					
(Inner) East				5.1 m					
(Building) West		6.0 m		4.8 m					
(Parkade) West				2.0 m					
(Rear) North		7.5 m		7.5 m					
HEIGHT:		11 m		20.6 m		Average Grade:		11.75	
		4 storeys		6 storeys		T. O. Roof Surface:		32.35	
USABLE OPEN SPACE:		7.5 %		7.5 %					
GROSS* FLOOR AREA:									
		*Area calculated to exterior face of exterior sheathing - for construction budget purposes							
LEVEL 1		1,643 m ²		17,685 sf					
LEVEL 2		1,691 m ²		18,199 sf					
LEVEL 3		1,691 m ²		18,199 sf					
LEVEL 4		1,691 m ²		18,199 sf					
LEVEL 5		1,691 m ²		18,199 sf					
LEVEL 6		1,599 m ²		17,212 sf					
Total		10,005 m ²		107,692 sf					
PARKADE		2,488 m ²		26,780 sf					
GLA* + Parkade		12,493 m ²		134,471 sf		*Gross Livable Area			
AUXILIARY SPACES									
		Area (m2)		Area (sq ft)					
Care Taker Office		11.60 m ²		125 sf					
Mop Closet		3.44 m ²		37 sf					
Tele/Security*		5.00 m ²		54 sf		*1.68 m x 6 floors			
Staff WC		4.90 m ²		53 sf					
Laundry Rm		55.80 m ²		601 sf					
Common Room		222.00 m ²		2,390 sf					
Storage Room*		201.61 m ²		2,170 sf					
Total		504 m ²		5,429 sf					
LOT COVERAGE AREA:									
		Area (m2)		Area (sq ft)					
Typical Floor Plate Area +		1,960 m ²		21,097 sf					
Canopy + Parkade Protrusion + Roof									
NET* TOTAL FLOOR AREA:									
		*Area calculated to interior face of exterior walls - per zoning definition (FAR calculation) and excludes stairs, elev, corridors, and laundry, amenity rooms, wc's							
LEVEL 1		1,150 m ²		12,379 sf					
LEVEL 2		1,430 m ²		15,393 sf					
LEVEL 3		1,430 m ²		15,393 sf					
LEVEL 4		1,430 m ²		15,393 sf					
LEVEL 5		1,430 m ²		15,393 sf					
LEVEL 6		1,350 m ²		14,531 sf					
Total		8,220 m ²		88,480 sf					
SUITE BREAKDOWN:									
		unit areas calculated to centre line of party wall and outside face of exterior sheathing							
Unit Type	Unit Area	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Total Units	%
Studio Type A1	36 m ²	382 sf		6	6	6	6	24	18
Studio Type A2	36 m ²	388 sf			1	1	1	4	3
Studio Type A3	36 m ²	388 sf	1	2	1	1	1	7	5
1 BD Type B1a	50 m ²	533 sf	6	2	5	5	5	34	25
1 BD Type B1b	53 m ²	568 sf		5	5	5	5	20	15
1 BD Type B1c	57 m ²	608 sf		1	1	1	1	4	3
1 BD Type B2a	50 m ²	535 sf	1					2	1
1 BD Type B2b	53 m ²	571 sf		1	1	1	1	4	3
1 BD Type B3	50 m ²	536 sf						3	2
2 BD Type C1a	73 m ²	786 sf	2	1	4	4	4	20	15
2 BD Type C1b	78 m ²	838 sf		1	1	1	1	4	3
3 BD Type D	91 m ²	978 sf		1	1	1	1	5	4
4 BD Type E1	129 m ²	1387 sf	3					3	2
4 BD Type E2	129 m ²	1387 sf	3					3	2
Sub Total		16	20	26	26	26	23	137	100
PARKING BREAKDOWN:									
	Required	Proposed	Stalls /unit						
RM-4 & RM-5	1.3	178 stalls							
Senior's Housing	0.5	69 stalls	67 stalls						
			0.49 /unit						
BICYCLE PARKING:									
		137 stalls	137 stalls						
			1.00 /unit						
SCOOTER PARKING:									
			14 stalls						

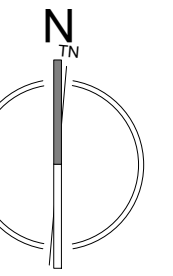




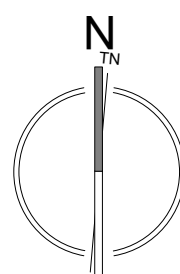
LEVEL 1 FLOOR PLAN
scale 1 : 150 date 2020.02.11

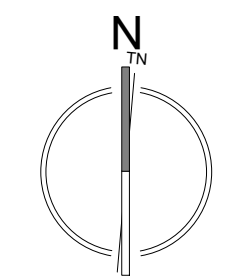
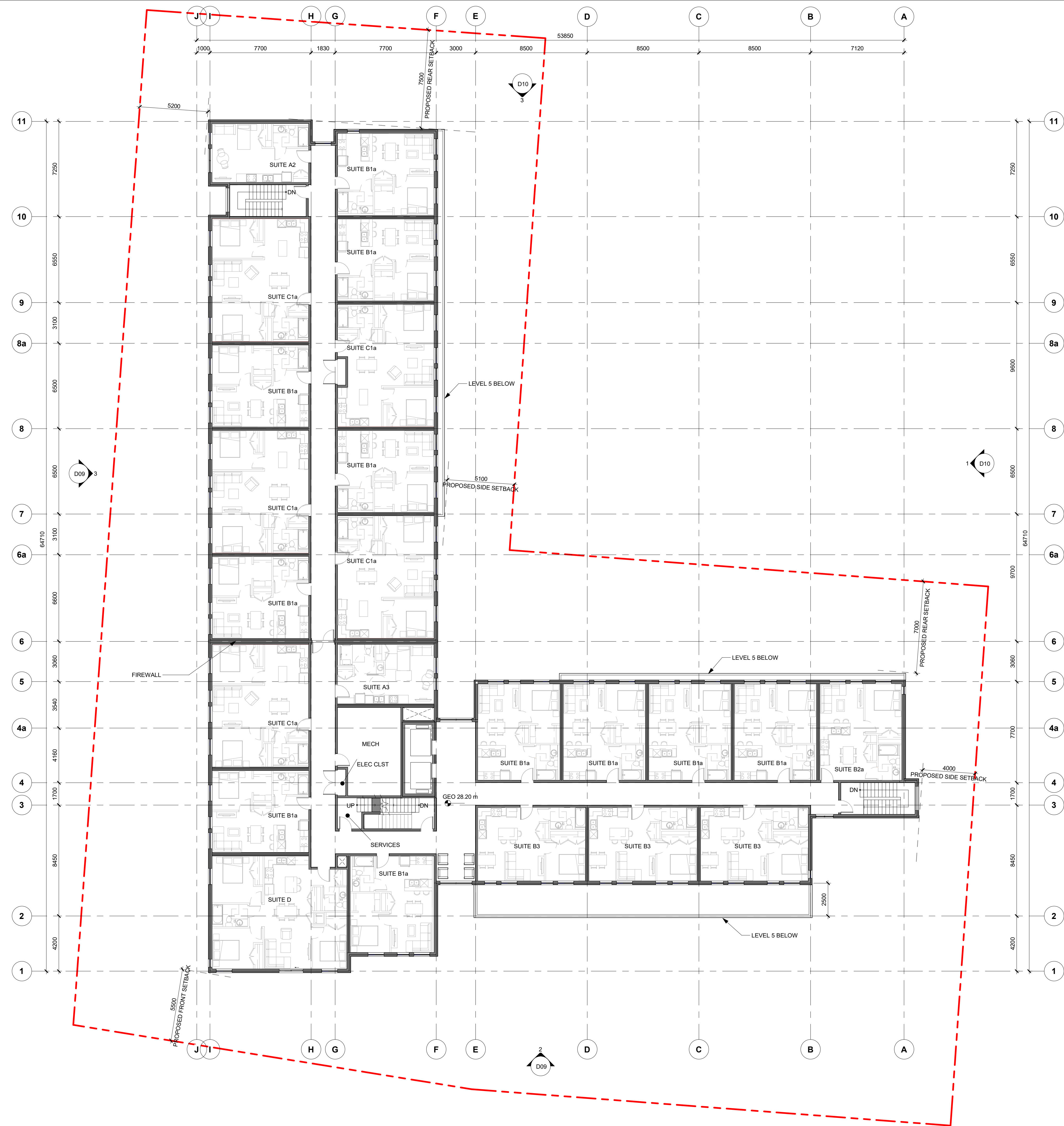
D05

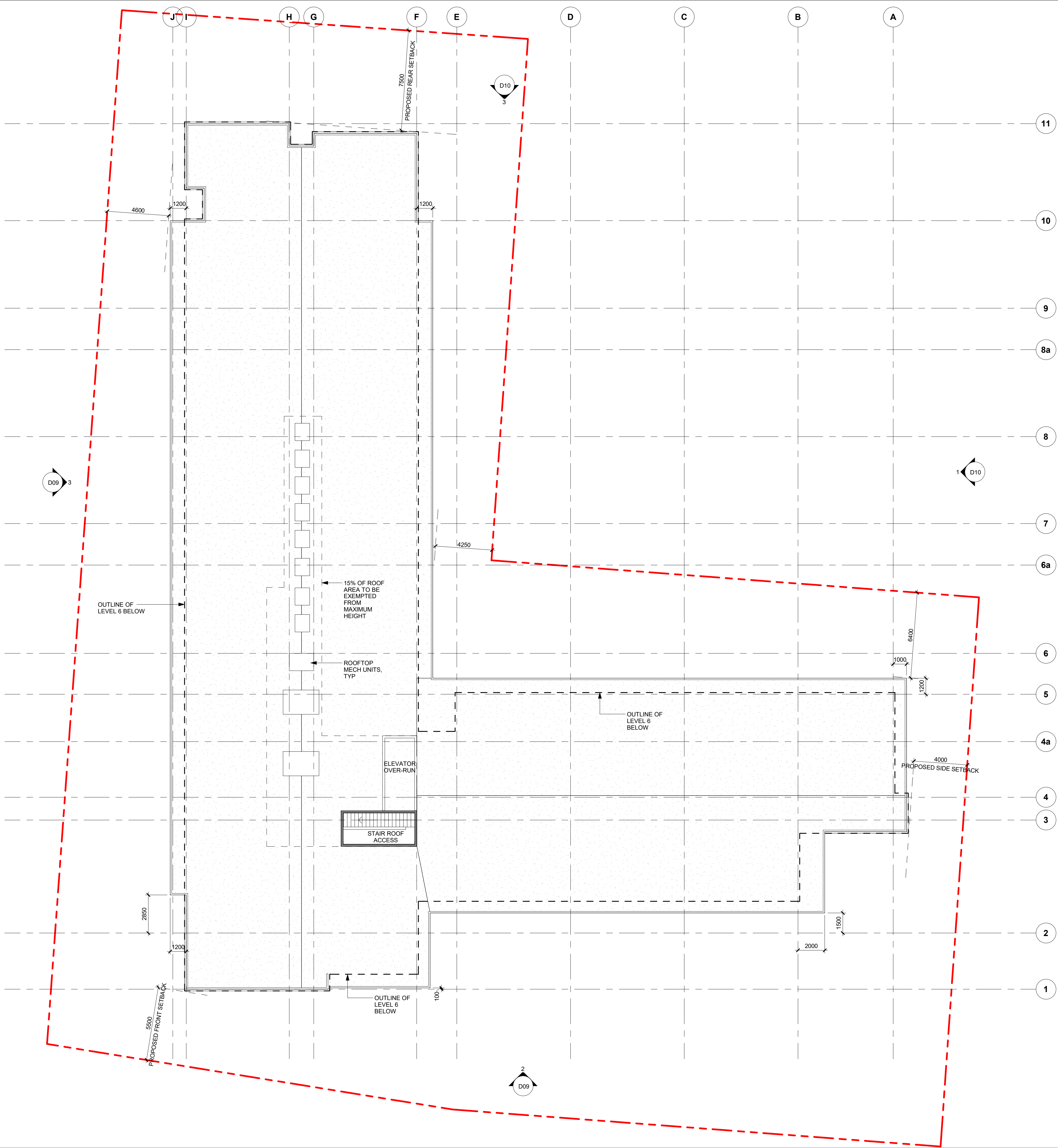
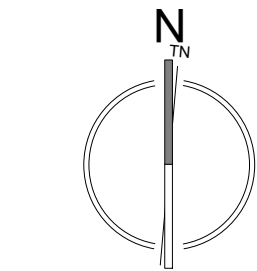
LEVEL 2 FLOOR PLAN
scale 1 : 150 date 2020.02.11



LEVEL 3 to 5 FLOOR PLAN
scale 1 : 150 date 2020.02.11



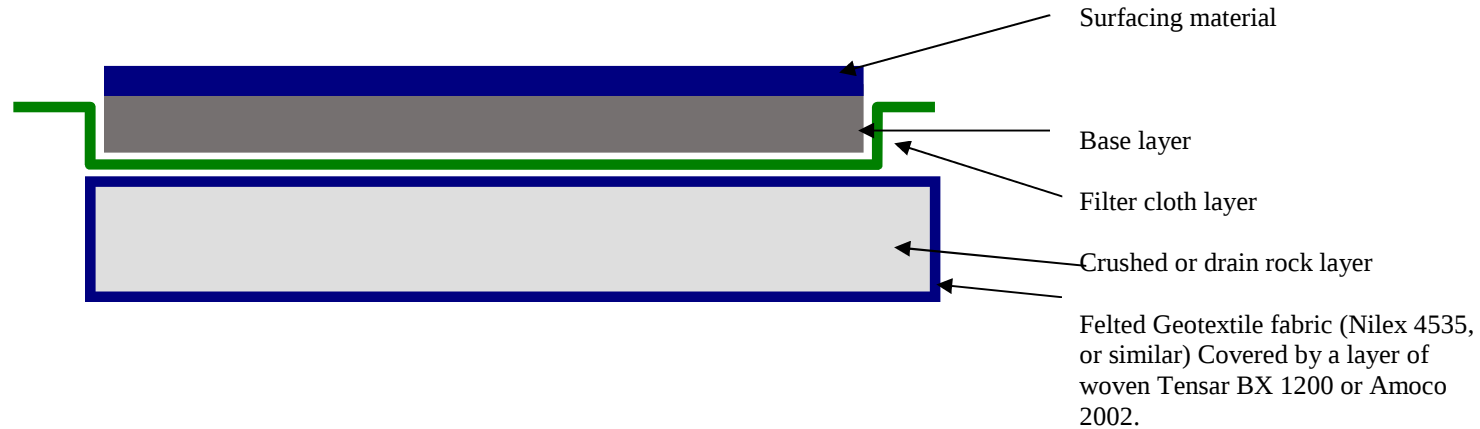




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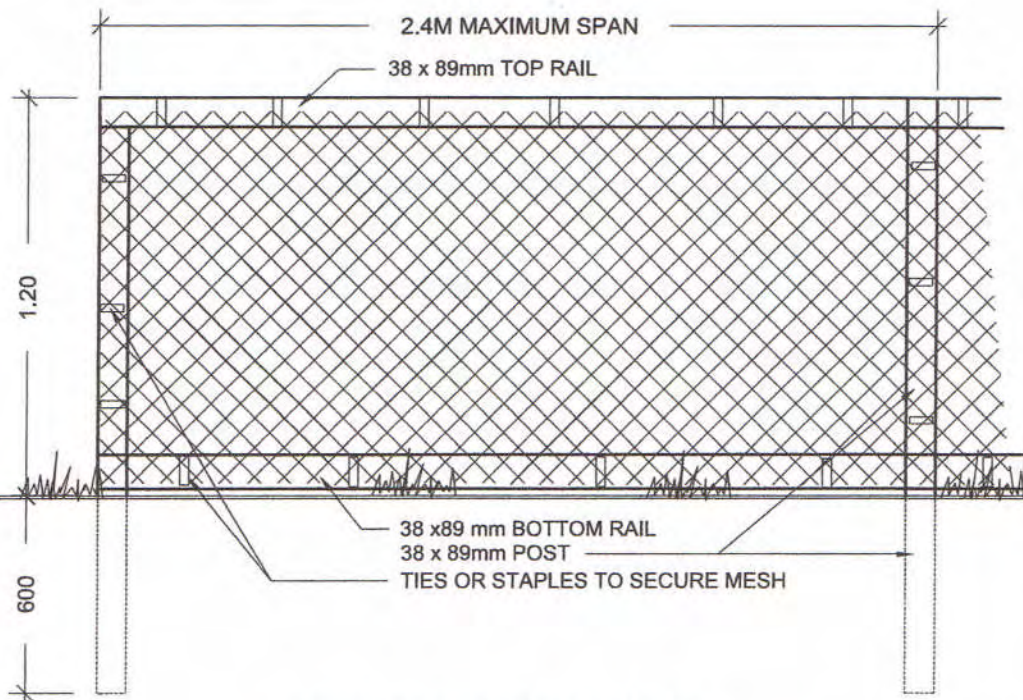
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Diagram – Site Specific Driveway, Parking and Walkway



Specifications for Paved Surfaces Above Tree Roots (Driveway, Parking and Walkway Areas)

1. Excavation for construction of the driveway/parking/walkway areas must remove only the top layer of sod and not result in root loss
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 paved surface. 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 (depth dependent on desired finished grade).
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.
6. Two-dimensional (such as CombiGrid 30/30 or similar) or three-dimensional geo-grid reinforcements can be installed in combination with, or instead of, the geotextile fabric specified in the attached diagram.
7. Ultimately, a geotechnical engineer should be consulted and in consultation with the project arborist may specify their own materials and methods that are specific to the site's soil conditions and requirements, while also avoiding root loss and reducing compaction to the sub-grade.



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



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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 (P), Moderate (M) or Good (G).

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 restricted root growth, limited soil volumes, 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