



Talbot Mackenzie & Associates

Consulting Arborists

January 26, 2017

Parry Street Developments
c/o Homewood Constructors
160 - 4396 West Saanich Road
Victoria, BC V8Z 3E9

Attention: Conrad Nyren

Re: Arborist Report for 1745 Rockland Avenue

Assignment: Prepare a tree retention report to be used during the construction of the proposed townhouse development located at 1745 Rockland Avenue. The subject property is composed of a parcel that fronts Rockland Avenue with the proposed townhouse site located on the eastern portion of the property and having a driveway access to Richmond Avenue.

Methodology: For the purpose of this report, we reviewed the site plan outlining the building footprints, driveway and parking areas and the location of the service corridor. During our January 18, 2017 site visit, we examined and updated the tree information that was originally documented by us on September 03, 2013. The resource of trees that was compiled is located within the boundaries of the subject property, and on the boundaries of the neighbouring properties where they could potentially be impacted. The trees are identified by number on the site plan and in the field with a numbered metal tag. The information that was compiled including the tree number, the tree species, size (d.b.h.), protected root zone (PRZ), critical root zone (CRZ), crown spread, health and structural condition, relative tolerance to construction impacts and general remarks and recommendations was recorded in the attached tree resource spreadsheet.

Tree Resource: The tree resource on the property is composed of a mixture of native and exotic tree species. There are only three (3) bylaw-protected trees located within the boundaries of the subject property.

Garry oaks #42 and #70, and Big Leaf maple #76

There are also three (3) bylaw-protected trees located on the neighbouring properties or on the property boundaries where they could potentially be impacted.

Dogwood #51, Garry oak #55, and Douglas-fir #60

Most of the trees are reasonably healthy and have structural characteristics that indicate that they are worthy of retention. The remainder of the trees are exotic species not protected by size or by species under the Municipal Tree Protection bylaw.

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As noted in our Tree Resource Spreadsheet, there is one elm tree located on the neighbouring property at 1737 Rockland Avenue that will not be impacted by the proposed development, but has a large broken scaffold limb hung up in its canopy that could strike the subject property when it fails. The property owner should be informed of the potential risk posed.

Potential impacts: Following our inspection of the tree resource and review of the plans that were supplied, we anticipate that the highest onsite impacts may occur during:

- Excavation for the proposed driveway footprint and parking areas.
- Excavation for the proposed building footprint.
- Excavation for the service corridors.

To facilitate the construction required for this project, it will not be necessary to remove any of the bylaw-protected trees; however, Big Leaf maple #76 is located where it could be impacted by the proposed driveway, and where its isolation from the construction impacts could be difficult. It will also be necessary to remove all of the non bylaw-protected trees located within the footprints of these features, as shown on the site plan.

The exotic tree species along the property boundaries are located where isolation from most of the construction impacts should be possible and accordingly they can be retained, if desired. It may be necessary to remove the pyramidal cedar hedge along the southern property boundary, but its function in the landscape can be easily duplicated by the installation of large nursery stock.

Mitigation of impacts

We recommend the following procedures be implemented, to reduce the impacts on the trees to be retained.

Barrier fencing: 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 as defined in our Tree Resource Spreadsheet. Where the building or driveway footprint and other features encroach within the critical root zone area, the fencing should be erected 1 metre off the edge of building footprint and 0.5 metre off the edge of the driveway footprint, or where determined by the project arborist.

The barrier fencing to be erected must be a minimum of 4 feet in height and constructed of solid material or flexible safety fencing that is attached to wooden or metal posts. If a flexible fencing material is used, the top and bottom of the fencing must be secured to the posts by a wire or board that runs between these posts. 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. Solid hording material may also be required along the driveway access to protect the trunks of trees from mechanical injury if vehicles or machinery are permitted close to tree trunks and where blasting is required.

Building footprint: It is our opinion that the building footprints are located where the excavation required will not have a detrimental impact on the large Douglas-fir #60 and Garry oaks #42 and #70.

The plans show decks and other features that encroach within the critical root zone areas of these three bylaw-protected trees. It is our understanding that these are wooden decks that will be constructed at an elevation that is above the existing site grade. It may not be possible to excavate to a depth of load bearing soils in this location without disturbing the critical root structures. The project arborist must review the details for these features to determine that they can be constructed and installed without impacting the root zones of these bylaw-protected trees. Any excavation within the defined critical root zone areas must be supervised by the project arborist.

Driveway: The driveway is located where there is a potential to impact the bylaw-protected trees on the neighbouring properties, including dogwood #51, Garry oak #55 and Big Leaf maple #76 on the subject property.

The canopies of the oak, cypress and dogwood trees extend over the footprint for the access driveway, and where pruning will be required to attain adequate clearance above the driveway. The location of the driveway outlined in the preliminary plans would have resulted in the removal of one of the large stems. During a subsequent review of the driveway with the architect and landscape architect, it was determined that the driveway footprint can be adjusted so that this large stem can be retained and protected. The project arborist must direct all the pruning work required for clearance above and along the driveway footprint.

The footprint for the driveway also encroaches within the root zones of the trees that are located on either side of this footprint. A rock outcrop is located at the base of oak #55 that has diverted and limited the spread of roots from this tree into the footprint. Careful removal of this rock outcrop, if required, will be necessary to avoid damaging the roots that will be growing along the soil rock interface. Retaining a strip of rock between the driveway edge and the tree is recommended to protect these critical root structures.

The plans call for permeable paving to be installed in the locations where the driveway encroaches into the root zones of the adjacent trees. It appears that the driveway corridor has been disturbed historically during the installation of a storm water main along this corridor. It is likely that there was root disturbance and root loss resulting from this installation. There is also likely to be additional disturbance along this corridor to install an underground hydro service.

The project arborist must supervise the excavation for the driveway footprint and determine where permeable surfacing is required, and what grades must be maintained to bridge any critical root structures that are located beneath the driveway footprint (we have attached typical floating driveway specification that could be adapted for your use). The end of the driveway and parking stall may encroach within the root zone of Douglas-fir #60. The project arborist must supervise the excavation within the critical root zone of this tree. If root structures are encountered the driveway must be floated over these structures and permeable surfacing material must be used.

The grades surrounding Big Leaf maple #76 may make it difficult to locate and construct the entrance driveway without significantly impacting this tree. Retention of the bank at the driveway edge may be required to compensate for the grade change in this location. If it is determined that this tree can be retained, the project arborist should review the location of and requirements for the bank retention, and determine how best to construct this feature while protecting and retaining any critical root structures in this location.

Blasting/rock removal: Bedrock will be encountered within the driveway footprint and the service corridor, and may also be located within the building footprint. Where blasting is required to level rock areas, it must be sensitive to the root zones located at the edge of the rock. Care must be taken to assure that the area of blasting does not extend into the critical root zones beyond the building and driveway footprints and the service corridors. The use of small low-concussion charges and multiple small charges will reduce fracturing, ground vibration, and reduce the impact on the surrounding environment. Only explosives of low phytotoxicity (stick dynamite), and techniques that minimize tree damage, are to be used within the critical root zones of the trees that are to be retained. Provisions must be made to store blast rock, and other construction materials and debris away from critical tree root zones.

Servicing: An existing service corridor runs the length of the driveway access. An increase in the width of this corridor will be required to accommodate additional underground services. We anticipate that locating these services on the north side of the existing storm water service may result in the least impact on the adjacent trees. The project arborist must supervise the excavation required to install these services. If any flexibility as to the location of these services is possible, the most suitable locations can be determined at the time of excavation. The arborist may determine that the use of hand digging and/or airspade excavation or the use of hydro excavation may be required where these services encroach within the root zones of the bylaw-protected trees.

Offsite work: The plans did not show, and we are not aware of any upgrades or replacements of offsite municipal infrastructures. This offsite work will not impact any of the bylaw-protected trees but could impact trees on the municipal frontages of the adjacent properties.

Pruning: The canopies of the trees on the adjacent properties extend over the property line and into the proposed driveway access of the subject property. It is likely that some pruning of the canopies of the retained trees will be required to attain adequate clearance from and above the area of excavation and construction. The project arborist must direct all of the pruning work required for clearance above and along the driveway footprint, and all pruning required must be completed by an ISA Certified arborist.

All the bylaw protected trees are located where there is unlikely to be any further pruning required to attain clearances from the buildings that are constructed on this site. Cyclical pruning will be required in future years to maintain adequate clearance above the driveway.

Work Area and Material Storage: It is important that the issue of storage of excavated soil, material storage, and site parking be reviewed prior to the start of construction; where possible, these activities should be kept outside of the critical root zones. If there is insufficient room for onsite storage and working room, the arborist must determine a suitable working area within the critical root zone, and outline methods of mitigating the associated impacts (i.e. mulch layer, bridging etc).

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 and hording
- Reviewing the report with the project foreman or site supervisor
- Locating work zones, where required
- Supervising excavation for the building footprint, driveway footprint, and service corridor where they encroach within the critical root zones of trees that are to be retained.
- Provide direction for the blasting contractor

Review and site meeting: Once the development 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 demolition, site clearing or other construction activity occurs.

Summary: It is our opinion that there is a high probability that the bylaw-protected trees that are designated for retention can be successfully protected and retained if the precautions and procedures that are outlined in this report are followed and implemented during the construction phase.

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

Thank you,

Talbot Mackenzie & Associates



Tom Talbot & Graham Mackenzie
ISA Certified, & Consulting Arborists

Enclosure: Tree Resource Spreadsheet, Floating driveway specifications and diagram, Barrier fencing diagram, reviewed plans.

cc: Bev Windjack, LADR Landscape Architects Ltd:

Disclosure Statement

Arborists are professionals who examine trees and use their training, knowledge and experience to recommend techniques and procedures that will improve the health and structure of individual trees or group of trees, 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 nor 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.

Key to Headings in Resource Table

d.b.h. – **diameter at breast height** - diameter of trunk, measured in centimetres at 1.4 metres above ground level

PRZ – **protected root zone** - the area of land surrounding a bylaw-protected tree that contains the bulk of the critical roots of the tree. Indicates the radius of a circle of protected land, measured in metres, calculated by multiplying the diameter of the tree by 18.

CRZ – **critical root zone** - estimated optimal size of tree protection zone based on tree species, condition and age of specimen and the species tolerance to root disturbance. Indicates the radial distance from the trunk, measured in metres.

Condition health/structure –

- Good – no visible or minor health or structural flaw
- Fair – health or structural flaw present that can be corrected through normal arboricultural or horticultural care.
- Poor – significant health or structural defects that compromise the long-term survival or retention of the specimen.

Relative Tolerance – relative tolerance of the selected species to development impacts.

**TREE RESOURCE
for
1745 Rockland Avenue**

<i>Tree #</i>	<i>d.b.h. (cm)</i>	<i>PRZ</i>	<i>CRZ</i>	<i>Species</i>	<i>Crown Spread(m)</i>	<i>Condition Health</i>	<i>Condition Structure</i>	<i>Relative Tolerance</i>	<i>Remarks / Recommendations</i>
51	67	12.0	6.0	Dogwood	18.0	fair	fair	good	Located on the adjacent property at 924 Richmond Avenue. Anthracnose infection on foliage. Some weakness and included bark present at the stem unions. We anticipate that the removal of two 15 cm diameter lateral limbs from a 50 cm scaffold limb that extends over the property boundary will be required for clearance above the driveway. Bylaw-protected.
52	21	n/a	2.0	Leyland cypress	6.0	good	good	moderate	Young tree. May be located on the neighbouring property at 926 Richmond Avenue. Pruning of side limbs for clearance will be required if retained. Not bylaw-protected
53	38	n/a	4.0	Flowering cherry	8.0	fair/poor	fair	moderate	May be located on the neighbouring property at 926 Richmond Avenue. Indicators of Bacterial canker infection and Cherry Bark Tortrix infestation. Some side pruning of limbs for clearance will be required. Not bylaw-protected
55	42/46/ 63	21.0	8.0	Garry oak	17.0	fair	fair	good	May be located on the neighbouring property at 926 Richmond Avenue. 42 cm stem is weakly attached to the main trunk. Pruning to raise canopy over the proposed driveway or removal of one of the large stems may be required for driveway clearance. Bylaw-protected.
56	multiple	n/a	1.0	Pyramid cedar (Thuja)	2.0	fair/good	fair/good	good	19 trees growing in a hedgerow. One tree dead and uprooted. One tree suppressed by adjacent variegated cedar. Not bylaw-protected
57	3 x 33	n/a	5.0	Variegated cedar (Thuja)	10.0	good	fair	moderate	Some weakness at union of main stems. Not bylaw-protected
58	28	n/a	3.0	Yellow cedar (Chamaecyparis)	6.0	good	fair/poor	good	Split between main growth leader at midpoint in canopy height. Not bylaw-protected
59	22	n/a	3.0	Prune plum	6.0	fair	fair	moderate	Fruit tree. Some dead limbs in canopy. Not bylaw-protected

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Tree #	d.b.h. (cm)	PRZ	CRZ	Species	Crown Spread(m)	Condition Health	Condition Structure	Relative Tolerance	Remarks / Recommendations
60	74	13.3	10.0	Douglas-fir	11.0	fair	fair	poor	Located on property boundary with 1737 Rockland Avenue. Some indicators of health stress, dead limbs, short annual shoot elongation. Surface roots lifting pavement. Ivy covering trunk. Bylaw-protected.
61	32	n/a	3.5	English Holly	6.0	good	fair	good	Topped historically. Ivy covering canopy. Not bylaw-protected
no tag	n/a	n/a	n/a	Elm	11.0	good	fair	moderate	Located on property boundary with 1737 Rockland Avenue. Grouping of large elm trees. Large scaffold limb failed and hung up in canopy. Poses risk to use of subject property.
70	70	12.6	7.0	Garry oak	12.0	fair	fair	good	Co-dominant stems removed historically. Decay visible in pruning wounds. Some health stress, seasonal infestation by Jumping oak Gall Wasp. Closer examination of structure recommended. Bylaw-protected.
42	72	13.0	7.0	Garry oak	15.0	good	fair/poor	good	Co-dominant stems and limbs removed historically. Decay visible in pruning wounds. Closer examination of structure recommended. Bylaw-protected.
62	37	n/a	4.5	Elm	10.0	good	fair	moderate	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. No visible defects. Not bylaw-protected
63	42	n/a	4.5	Elm	10.0	good	fair	moderate	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. May have been topped historically. Not bylaw-protected
64	11/14/ 17/27	n/a	4.5	Elm	8.0	good	fair/poor	moderate	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Possible weakness at stem unions. Not bylaw-protected

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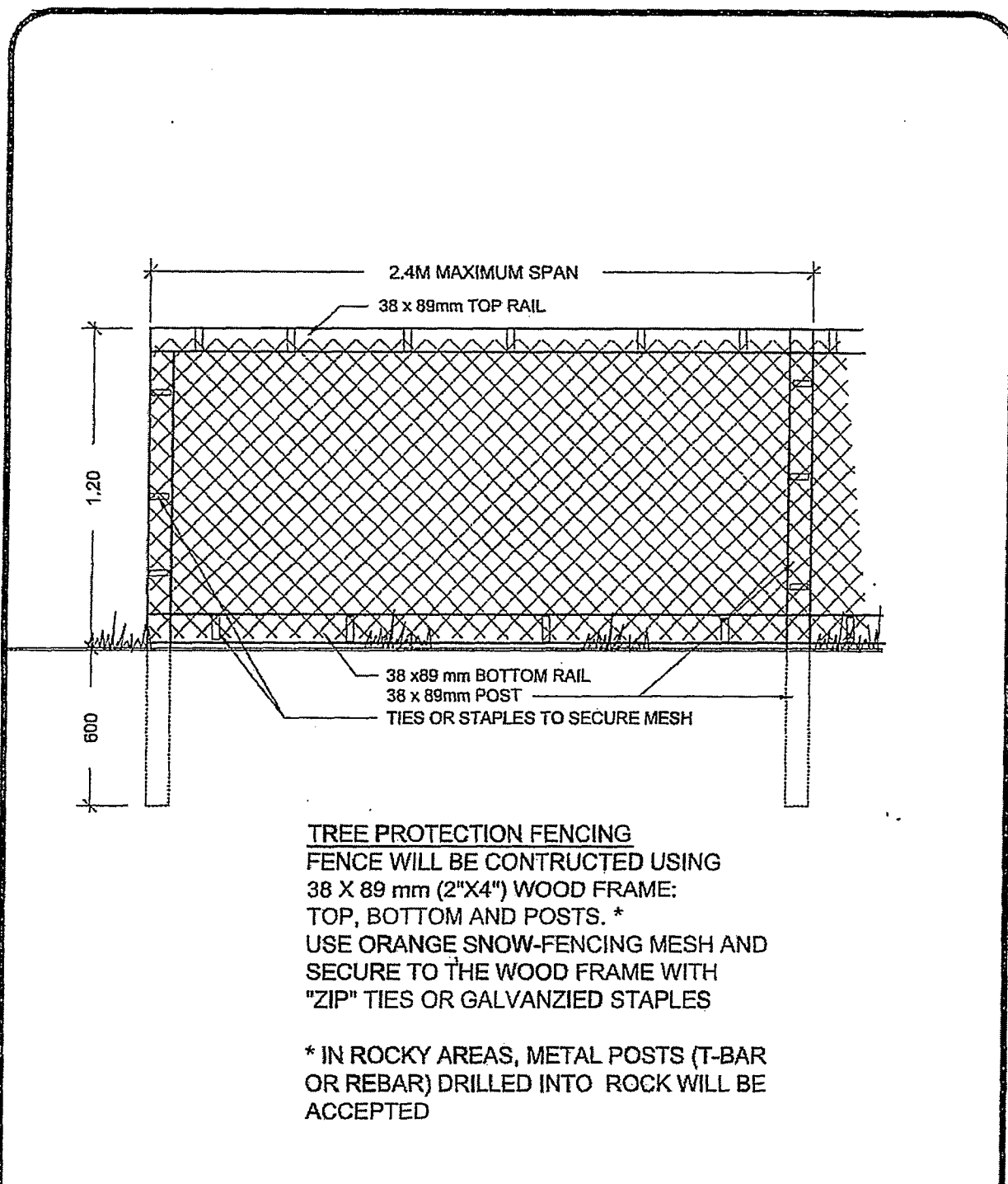
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65	2 x 35	n/a	6.5	Elm	10.0	good	fair	moderate	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Not bylaw-protected
66	34	n/a	3.5	Scotts pine	6.0	good	fair	good	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Heavily end-weighted limbs in canopy. Not bylaw-protected
67	29	n/a	3.5	Scotts pine	6.0	good	fair	good	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Heavily end-weighted limbs in canopy. Not bylaw-protected
68	31	n/a	3.5	Scotts pine	6.0	good	fair	good	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Heavily end-weighted limbs in canopy. Not bylaw-protected
69	60	n/a	6.0	Weeping willow	10.0	fair	fair/poor	good	Ivy covering trunk and canopy. Difficult to assess structure due to extent of ivy. Assess structure and suitability for retention once site cleared and ivy removed. Numerous dead stems. Infected with willow leaf and twig blight. Heavy canopy lean. Not bylaw-protected
71	32	n/a	3.5	Yellow cedar (Chamaecyparis)	6.0	good	good	good	Not bylaw-protected
72	1 x 12 4 x 9	n/a	2.0	Pyramid cedar (Thuja)	3.0	good	fair/poor	good	Weakness at stem union. Some separation of stems. Not bylaw-protected
73	26	n/a	3.0	Yellow cedar (Chamaecyparis)	5.0	good	good	good	Not bylaw-protected

**TREE RESOURCE
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Tree #	d.b.h. (cm)	PRZ	CRZ	Species	Crown Spread(m)	Condition Health	Condition Structure	Relative Tolerance	Remarks / Recommendations
74	20/20/ 31	n/a	5.0	Variegated cedar (Thuja)	5.0	good	fair	moderate	Some weakness at union of main stems. Not bylaw-protected
75	19/24	n/a	5.0	Variegated cedar (Thuja)	5.0	good	fair	moderate	Some weakness at union of main stems. Not bylaw-protected
76	21/28/ 34	11.4	6.5	Big Leaf maple	10.0	good	fair	good	Bylaw-protected.
77	15	n/a	3.0	Yellow cedar (Chamaecyparis)	5.0	good	good	good	Canopy covered with Polygonum vine. Not bylaw-protected
78	12/15/ 15	n/a	3.5	Hawthorne	8.0	fair	fair	moderate	Multiple stemmed tree, suppressed in grove. Leaf shedding due to insect infestation and fungal infection of foliage. Not bylaw-protected
79	35	n/a	3.5	Apple	8.0	good	good	moderate	Fruit tree. Not bylaw-protected
80	23	n/a	3.0	Yellow cedar (Chamaecyparis)	4.0	good	good	good	Not bylaw-protected
81	2 x 30 1 x 5	n/a	5.0	Variegated cedar (Thuja)	7.0	good	fair	moderate	Some weakness at stem union. Not bylaw-protected
82	12/17	n/a	3.0	Yellow cedar (Chamaecyparis)	3.0	poor	poor	good	Declining tree, one dead stem and stress in remainder. Recommend removal. Not bylaw-protected

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83	13/17	n/a	2.0	Pyramid cedar (Thuja)	3.0	good	fair	good	Some weakness at union of main stems. Not bylaw-protected
84	13/17/32	n/a	4.5	Variegated cedar (Thuja)	9.0	good	fair	moderate	Some weakness at union of main stems. Not bylaw-protected



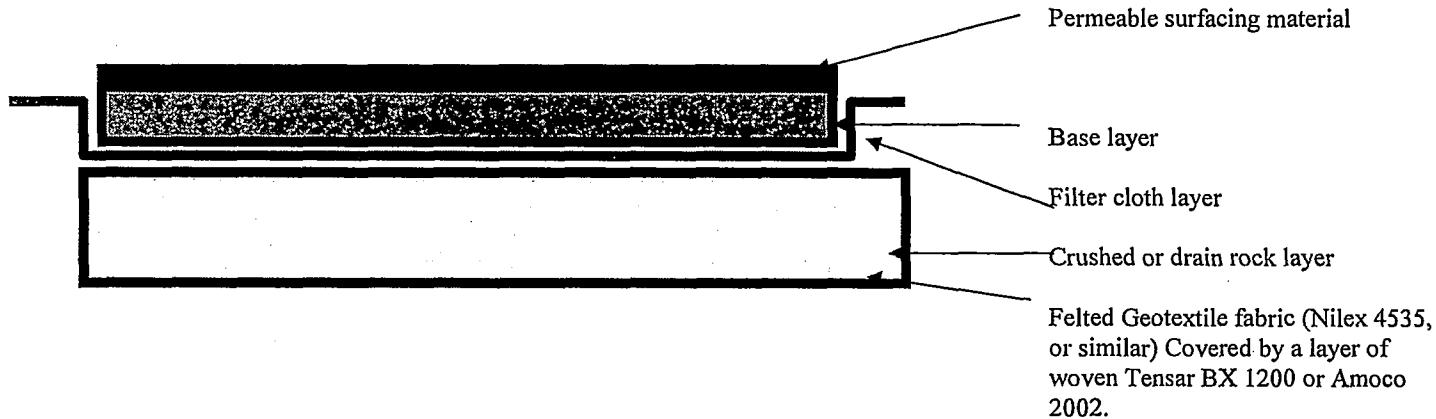
DETAIL NAME:

TREE PROTECTION FENCING

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

E105
 DRAWING

Diagram – Site Specific Floating Driveway, Parking and Sidewalk Areas



Specifications for Floating Driveway and Parking Areas

1. Excavation for sidewalk 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 driveway. 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.