



Talbot Mackenzie & Associates
Consulting Arborists

Browns Crafthouse, Victoria West

Construction Impact Assessment & Tree Preservation Plan

REPAIRED FOR: Ron Baron
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DATE OF ISSUANCE: January 4, 2019

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Jobsite Property: Unit 100-184 Wilson Street, Victoria BC

Date of Site Visits: January 3 & 4, 2019

Site Conditions: Existing commercial building under interior renovation, no construction activity near municipal trees.

Summary: The proposed patio design encroaches into a portion of the critical root zone of an Atlas cedar tree (*Cedrus atlantica*) located on municipal property. Based on a limited exploratory excavation and our experience, we anticipate that portion of the patio area will have to be cantilevered over the root system by stepping back the footings in this area or by using a pad footing / grade beam design. Based on our review of the patio design and the finished elevations, there is enough room to cantilever the proposed patio area over the existing grades without having to excavate in this area. From our discussions with the owner and architect, is our understanding the final footing design is flexible, can be adapted to the root zone of the tree, and the final design will have to be determined at the time of excavation. Based on our experience with similar projects, we are confident the patio area can be constructed while minimizing any impacts to the tree providing the recommendations in this report are followed. Once the project receives approval, we can conduct further excavations and design the patio footings accordingly.

Scope of Assignment:

- Address concerns raised by the city of Victoria Parks department in the application review summary for the proposal.
- Review the proposal to add an exterior patio area to the existing building within a portion of the critical root zone of an Atlas cedar tree on municipal property and comment on how it may impact the tree.
- Prepare a tree retention and construction damage mitigation plan to be used during the construction process to reduce any potential impacts to the tree.

Methodology: We visually examined the municipal Atlas cedar tree (*Cedrus atlantica*), reviewed the proposed construction plans (see attached) and conducted an exploratory excavation to quantify the root densities in the corner of the proposed patio located closest to the tree (see pictures 1 and 2).

Limitations: Only a limited exploratory excavation was conducted and thus the conclusions reached are based on the excavation completed, the critical root zone calculations and our best judgment using our experience and expertise. Once significant roots were encountered, we stopped the exploratory excavation to limit any unnecessary disturbance to the root system.

Municipal Atlas cedar tree: The municipal Atlas cedar tree has a diameter at breast height (d.b.h.) of 85.0 cm, a crown spread of 13 meters, a calculated critical root zone of 8.5 meters, is in good

health and has fair structure based on a visual examination. We anticipate there is a limited rooting area on the North east side of the tree due to the existing sidewalk, curb and roadway.

Potential Impacts on the Atlas cedar tree and Mitigation Measures

- **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.
- **Patio Construction in area closest to Atlas cedar:** Based on the plans provided and the existing site conditions we anticipated that roots would be encountered in the northeast area of the patio where it is closest to the tree. Based on our exploratory excavation, we confirmed the presence of several significant roots in this area. In order to retain these roots and facilitate the proposed construction, a portion of the patio areas will have to be cantilevered over the root area or suspended using a grade beam and pad footings, or using similar construction techniques. Based on our experience in similar situations and our discussions with the owner and the project architect, we are confident the patio can be constructed while minimizing any impacts to the municipal tree.
- **Maintaining existing soil hydrology:** For the portion of the root system that will be retained under the cantilevered patio, it will be necessary to supply supplemental irrigation as part of the landscape irrigation system to ensure the existing soil hydrology is maintained.
- **Concrete work:** In areas where concrete will be poured near the critical root systems of trees to be retained, efforts must be made to ensure concrete wash is not allowed to leach into the root zones.

- **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 that cannot be retained must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound. Roots that are critical to the trees survival and stability must be retained and the patio must be designed to retain these roots. In particular, the following activities should be completed under the direction of the project arborist:
 - Any excavation within the critical root zone of the Atlas cedar tree on municipal property.
- **Pruning:** We anticipate that some minor clearance pruning will have to be completed to facilitate the awning construction, but do not feel that this will have a negative impact on the health of the tree. The branches observed that are in conflict to the proposed structure are less than 10 cm in diameter (see picture 3). We recommend that any pruning be completed by an ISA Certified Arborist to ANSI A300 pruning standards.
- **Work area and material storage:** It is important that the storage of excavated soil, and construction material be kept away from the critical root zone areas of the trees to be retained.
- **Services:** It is our understanding that there are no new services proposed within the critical root zone of the municipal Atlas cedar.
- **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.



Picture 1: Proximity of exploratory excavation in relation to tree.



Picture 2: roots encountered.



Picture 3: Small branches that will likely require pruning for awning clearance.

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

Yours truly,

Talbot Mackenzie & Associates

ISA Certified Consulting Arborists

Encl. 5-pages proposed patio plans, 1-page barrier fencing specifications.

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.