



Talbot Mackenzie & Associates
Consulting Arborists

Art Gallery of Greater Victoria

Renewal Project

Construction Impact Assessment & Tree Preservation Plan

Prepared For: HCMA Architecture and Design
205–26 Bastion Square
Victoria, BC V8W 1H9

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(revisions in #4-5 are marked by a red asterisk *)

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Jobsite Property: 1040 Moss St, Victoria, BC
Date of Site Visits: February 5 - March 8, 2019
Site Conditions: No ongoing construction activity. Recent road repair and root loss observed adjacent to Sequoia #261. Exposed rock outcrops visible and surface roots from Garry Oaks; limited soil volumes likely in areas.

* **Summary:**

- The report as been revised to show trees originally listed with a retention status as “to be determined” as either retained or removed, as per CoV Parks comments dated October 09, 2019. Trees listed as to be retained are subject to the limitations listed and factors that are currently unknown (such as the success of pipe-bursting, soil depth, etc.).
- The following trees on the art gallery property will require removal as part of the proposal: NT#1, #262, 266, 271, 285, 286, 287 and 295.
- The following trees have been listed as “removals*” with retention to be attempted at the time of excavation: NT# 4, 5, 7, 8, 10, 11 and #274. These 5 neighbour’s trees (NT #4-11) will be impacted by the underground hydro and foundation excavations near the property line.
- Sequoias #261 and 263 are now listed as to be retained. Stability impacts are not likely, but will depend on the success of pipe-bursting, hydro-vac work and existing soil depths. Health impacts are expected to #261 and possibly to #263, largely due to the foundation excavations.
- The grading of the Moss St. pathway near the sequoias has now been raised to reduce the amount of root loss.
- Stability impacts are not likely to occur to oak #277, but significant health impacts could occur as a result of the entrance walkway excavation.
- The health of some Garry Oaks may be impacted as a result of the conversion of turf to impervious paving within their root zones.

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 most of the existing art gallery building, and construct a larger building with a plaza and new parking. Telecommunications, hydro, water, storm, and sanitary sewer services will be upgraded.
- 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 tree was identified using a numeric metal tag attached to its lower trunk. 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 conclusions reached were based on the information provided within the attached Servicing Plan from OnPoint Project Engineers (dated November 21, 2019), building plans from HCMA Architecture + Design (dated November 21, 2019) and the Landscape Plan from Durante Kreuk Landscape Architects (dated November 21, 2019)
- A Tree Protection Site Plan was created using the Servicing Plan provided and adding approximate locations of trees not surveyed

Limitations:

- *As specified, exploratory excavations have been conducted in certain areas adjacent to the row of Douglas-firs NT#12-25. Minimal exploratory excavation occurred adjacent to oak #277. No other exploratory excavations have been conducted 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.
- The extent of impacts to some trees will largely depend on the cut-slope prescribed by the geotechnical engineer during excavation for the foundations and services. Therefore, the proximity of excavation to trees (without shoring) can only be estimated, and may be closer or farther from trees than we estimate.
- Where trees were not surveyed on the plans provided (such as neighbour's trees), we have added their approximate locations (green circles). The accuracy of our estimated locations has not been verified by a professional surveyor.

Summary of Tree Resource: 73 trees were included within the inventory. Most trees on the property are Garry Oaks, many of which have large deadwood within their canopies and limbs with excessive end-weight, which would benefit from pruning to reduce risk (see spreadsheet comments). In particular, we recommend Garry Oak #279 be assessed further as it is leaning with limited roots on the side opposite the lean due to exposed rock. Oak #297 has a cracked limb over the sidewalk. Exposed rock outcrops and surface roots from Garry Oak trees are visible, indicating there is likely limited soil volumes in these areas.

There are two large Sequoia trees and a large Atlas Cedar #262 near the south-east corner of the property on the Moss St frontage.

Trees to be Removed

1. **#262 Blue Atlas Cedar** (~113cm DBH) – Located within proposed building addition footprint.
2. **#266 Oriental Spruce** (42cm) – Located within proposed trenches for water, storm and sanitary sewer services and beside new foundation. Not bylaw protected.
3. **#271 Garry Oak** (57cm) – Located 3m from the new foundation and most of the canopy would require removal for building clearance.
4. **#274 Garry Oak** (55cm DBH) –

*We have now listed this tree as a removal as a large portion of the canopy will likely require removal for building clearance. If an attempt is to be made at retaining this tree, we recommend the project arborist be consulted during the construction process and after the required pruning to determine the feasibility of retaining it (see “Scaffolding” section of report).

This tree is located 6.5m to 7m from the art cloud overhang and clearance pruning will be required. The tree has an asymmetric canopy towards this area. The extent of canopy pruning from the art cloud façade will be determined by the amount of scaffolding and working room required to construct it. The amount of room is unknown at this point and will have to be determined at the building stage with the contractor. There is the potential for a significant amount of its canopy to be removed, which would have significant health impacts as well as large pruning wounds and an increase in the future risk associated with the tree.

5. **#285 Holly** (31, 27, 19cm) – Located within proposed plaza. Not bylaw protected.
6. **#286 Douglas-fir** (71cm) – A significant portion of the canopy will require removal for the art cloud structure south of the tree and half of the root system underneath.
7. **#287 Garry Oak** (50, 49cm) – Located within the proposed parking lot driveway.
8. **#295 Garry Oak** (57cm) – This tree has significant structural concerns. Assessment attached.
9. **NT#1 Elm** (32cm) – A group of non-bylaw protected elm tree exists on the art gallery property, which will require removal for the underground hydro line. Of this group, this one 32cm DBH tree may cross the property line and therefore may be under shared ownership with the municipality.

* NT #2-11 are owned by 1010 Moss St and it is our understanding that that they have been informed of the potential impacts to their trees and consented to their potential removal. A retaining wall exists along this portion of the property line beginning adjacent to Juniper NT #8 and running north of Douglas-firs NT 9-11. The wall and grade change may be restricting root growth away from the proposed excavations.

10. * **Neighbour's Elms NT#4, 5 and 7** - The installation of the underground hydro line and PMT near the property boundary may result in the removal of these neighbour's trees and therefore we have listed them as to be removed. An attempt will be made to retain the trees with the project arborist supervising the excavation.
11. * **Neighbour's NT #8 Juniper (55cm)** – The trunk is 1.4m from the retaining wall located along the property boundary where the underground hydro and possibly the foundation excavation will be (the tree's location has not been surveyed). Root loss at this distance could be significant; the amount of roots encountered will depend on whether the retaining wall and/or grade change have deflected roots away from the art gallery's property. There is a reasonable chance that the tree can be retained if this has occurred, but as per CoV Parks requirements, we have listed the tree as a "removal." We recommend the excavation be supervised by the project arborist.
12. * **Neighbour's NT #10 Douglas-fir (37cm)** – This tree is 5m tall with deflected leaders, having been previously topped. Most of the canopy will be removed for building clearance. The trunk could be left as a snag if desired.
13. * **Neighbour's NT#11 Douglas-fir (45cm)** - The stability and health of #11 could be significantly impacted by the foundation excavation adjacent to the property line in this location. It is possible that the retaining wall has deflected roots away from this location. We recommend the project arborist supervise the excavation and make the final determination at that time. If retained, the canopy of #11 will likely require only a minor amount of clearance pruning.

Impacts to Trees and Mitigation Measures

14. **NT #2 Laurel:** Most of the stems from this Laurel plant are on the neighbour's property, but some may cross the municipal property line (the stems begin approximately 60cm from the sidewalk). The trunks by the sidewalk are damaged and are obstructing the sidewalk. Replacement of the sidewalk may result in root loss unless the excavation depth is reduced and the underground hydro may also result in root loss. Laurels have a high tolerance to root loss. The municipality may prefer that the trunks obstructing the sidewalk be removed.
15. * **Neighbour's NT #9 Douglas-fir:** It is unlikely that stability impacts will occur as a result of the excavation for the building foundation near the property line adjacent to this tree. Some root loss and health impacts are possible, but considering the distance to the property line (~3.5m), NT#9 and 10 acting as a buffer and the wall and grade change along the property line, we do not anticipate significant root loss to this tree. The tree will be exposed to new wind dynamics if #11 is removed.
16. **NT #12-25 Row of Douglas-firs (14-45cm)**

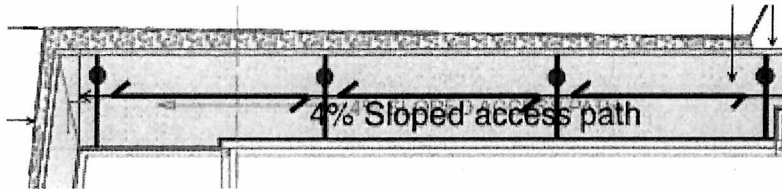
This row of trees is likely located on the neighbour's property at 1035 Pentrelew Place, but some stems may cross the property line. They are all approximately 0.5m west of a low retaining wall near the property line that is approximately 40cm tall.

* Exploratory excavations were conducted beside the retaining wall to determine if roots had grown underneath the wall and if the trees could be significantly impacted by the proposed excavation for the storm drain (if replacement is required), underground hydro and foundation excavation. Photos are attached to this report.

* Three trenches were hand-dug directly beside the wall in front of the largest firs in the row with trenches located roughly at the south, middle and north end of the row. The trenches were approximately 1.5m in length and reached an average of 75cm in depth. Rocks were encountered throughout which made excavation not possible in certain areas. Only two 1cm Douglas-fir roots were observed and a low density of small fibrous roots that may have been from the firs and grew through small cracks in the wall. It is possible that roots have grown below the exposed trenches or between the trenches in the areas not excavated, but based on the observations of the areas exposed, we anticipate the wall and rocks have deflected most root growth away from the art gallery property and that these trees can be retained. We recommend an arborist supervise the excavation and the new retaining wall avoid root loss as per the recommendations below.

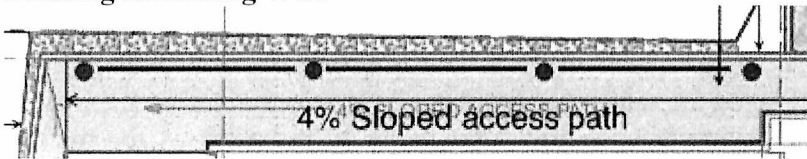
A new retaining wall will likely be required as the grade of the walkway in this area will be raised above the existing wall. If these trees are retained, excavation for the new retaining wall should avoid root damage. Either of the following design options will accomplish this:

Raised Wood Deck:



- build concrete piles (sonotubes) at about 3000 spacing (avoiding any significant roots encountered)
- put wood beams between sonotubes and building's exterior wall
- span wood joists/deck over beams

Floating Retaining Wall



- build concrete piles (sonotubes) at about 3000 spacing (avoiding any significant roots encountered)
 - put solid wood wall between sonotubes right at grade creating a floating retaining wall
- If retained, pruning of the east side of the canopies of these trees will likely be necessary for building clearance approximately 3m from the trees (2m from the trees if 1m of building clearance is desired) of clearance is desired, above the one storey portion of the existing building).

17. Sequoia #261 (167cm DBH)

a) * Hydro and Telecommunications Servicing

We recommend the new hydro and telecommunications lines be joined in one trench and run as close to the south property line as possible east of the PMT (final locations will be determined by the utility providers).

Initial servicing plans showed the PMT between the Sequoias and it was shifted to the south property line in order to avoid additional root loss to the Sequoias. The trade off is the impacts to the elm trees on the neighbour's property.

b) Storm Drain and Sanitary Sewer Servicing

In an effort to reduce root loss, pipe bursting or directional drilling has been specified on the attached Site Servicing Plan (see note 5) to install the upgraded storm drain and sanitary sewer services in the same locations as the existing services. This should be done after the building excavation and before foundation construction, to allow working room for machinery on the building side. Excavation and potential root loss will still be necessary at the property line 2m north-east of the trunk of the tree in order to connect to city installed services and for the city to install services on their property (we recommend this be completed by hydro-vac under arborist supervision).

Previous servicing schemes showed the sanitary and storm services running from the corner of the new building through the driveway to within 4.4m south of the trunk of the tree. The excavation depth would have likely been 2 to 3m in depth. Safe working practices would have resulted in shoring or a wide trench width, making root retention across the trench less feasible and the trench less than 4m south from the trunk of the tree.

With the pipe-bursting alternative, root loss will occur instead between 6.6m and 8.3m south of the trunk (depending on if roots can be retained across the Telus trench to the edge of the hydro trench).

c) Foundation

The new foundation wall will be 5m west from the trunk of this tree (5.8m from the centre of the tree). It is our understanding a continuous footing is required for shear strength requirements at this location. Assuming one metre of working room is required, we anticipate roots will be severed 4m west of the trunk of this tree (depending on when bearing soil is reached and the cut slope required for safe working conditions). An existing concrete retaining wall exists in a portion of this area, which may be restricting some root growth. However, we still anticipate a significant amount of roots to be encountered throughout the excavation for the new foundation as Sequoias have widespread root systems with large roots far from the trunk (as can be seen within the existing upheaving driveway).

d) Loading Bay Surfacing

If possible, we recommend leaving a portion of the existing surface of the loading dock driveway in place to reduce the chances of damaging roots underneath the existing pavement. There is evidence of roots upheaving the existing surface in multiple locations. If a new surface must be constructed and this cannot be paved over the existing asphalt, the removal of the existing surface must be done carefully under arborist supervision, and construction of the new surface should conform to the Paved Surfaces Over Tree Roots specifications.

e) New Loading Bay Driveway Apron & Curb

The new apron will be approximately 2m north of the existing driveway apron (4m south-east of the Sequoia's trunk). Surface roots are visible in this area and these will have to be pruned as the driveway surface cannot be raised if it is to slope down to the grade of the existing roadway. A new curb is specified in the area of the driveway which will also likely result in root loss. The supervising arborist will likely recommend that curb excavation depth be reduced where possible to retain roots underneath (pending approval by the municipal engineering department). The city has approved the use of an asphalt driveway apron in order to reduce the amount of root loss and it is our understanding that no other areas of the curb will be replaced in this area.

f) Previous Road Repair Work

It is our understanding that recent road repairs by the city adjacent to the Sequoia were the result of roots upheaving the roadway. During our site visits we observed severed roots from this work placed on the boulevard, including a 15-20cm diameter root. Without having seen the arborist report or documentation of roots encountered, it is unknown what the amount of root loss or potential health impact this work has already had.

g) Fill soil

The existing retaining wall west of the tree is proposed for removal and the area currently covered in asphalt will be removed and converted to landscape. Fill soil will be necessary to slope the grade away from the building and for the grade at the top of the existing retaining wall to slope down to meet the new edge of the driveway. We recommend a well-drained sandy loam soil be used. Part of this area will be excavated for the new foundation.

h) * Walkway (see section 25, c)

In order to avoid root loss, the walkway grade has been revised to be raised above the existing grade by 20cm if necessary. Some root loss may be unavoidable where the walkway meets the sidewalk, although the intention is to locate the path where there is already some disturbance for the connections on the municipal frontage.

i) * Summary of Impacts to Sequoia #261

We anticipate a significant amount of root loss as a result of the cumulative impacts of the servicing, foundation, and driveway apron excavations. Despite Giant Sequoias having a high tolerance to root loss and the measures taken to reduce the root loss, we still anticipate a significant health impact as a result of the expected cumulative root loss and the root loss that has already occurred for the road repair work. Mulching (see section below) and supplemental irrigation during periods of drought are recommended to help mitigate these impacts.

The retention status of this tree has been changed from “to be determined” to retain with health impacts (as per requirements by the City of Victoria Parks department). It is likely that its stability will not be impacted if pipe bursting is successful, a hydro-vac is used on the municipal frontage to retain structural roots and soil depths are not shallow in the surrounding area.

18. ***Sequoia #263** (138cm DBH)

This tree’s retention status has been changed from “to be determined” to retain with health impacts (as per requirements by CoV Parks staff).

The walkway grades have been revised so that the walkway will no longer result in root loss. It is our understanding based on recent discussions with On Point Engineers that the water line can be stacked vertically above the storm and sanitary services and contained within 90cm outside of the proposed foundation. This will result in excavation 4.2m west of the trunk of the tree. It is unlikely that the tree’s stability will be impacted at this distance (depending on soil depths and roots encountered), but health impacts are possible.

We recommend a hydro-vac be used by the city crews to cap the existing storm drain service and reduce root loss in the process (see note 3 of Site Servicing Plan). This should be done as far from the tree as possible. The concrete stairs leading from the building exit will likely mostly be within the excavated area for the services; the supervising arborist may recommend that the stairs outside be raised above roots encountered or cantilevered.

19. **Garry Oaks #264-272:** The new water service will be 4.4m from the centre of the trunk of the closest tree (#264) and farther from the remaining trees located closer to the sidewalk. If the extent of excavation can be restricted to less than 0.5m outside the water service, we do not anticipate a significant stability impact to these trees. With the same excavation extent, health impacts in the form of areas of dieback and reduced annual shoot growth are a possibility for the larger trees, but we anticipate recovery in the long-term if their remaining CRZs are undisturbed.

Root loss is possible within the CRZs of Garry Oaks #264 and 265 as a result of the pathway (see section 25 C)

20. **Garry Oak #275:** We recommend a hydro-vac be used by the city crews to cap the existing storm drain and sanitary sewer and reduce root loss in the process (see note 11 of Site Servicing Plan). This should be done as far from the tree as possible.

21. **Garry Oak #277** (60cm DBH):

* Exploratory excavations were conducted at the location of the proposed front entrance pathway (photos attached). A high density of small roots were encountered close to the surface including one 2-3cm diameter root. To continue the excavation would have resulted in cutting most, if not all, of the roots within the top 15-20cm of soil and therefore excavation was stopped. It is unlikely that the stability of the tree will be impacted at this distance, but health impacts are possible. Therefore, the retention status has changed from TBD to “Retain” with health impacts.

Root loss is possible as the proposed grading away from the building does not allow the walkway to be raised above tree roots potentially encountered near the surface (see section 25). The finished grade of the walkway 2.3m north of the trunk is 10cm below existing grade with the landscape plan indicating 10cm of base material and 10cm of concrete. If roots are encountered, the supervising arborist will recommend that the base material and amount of concrete be reduced in order to retain roots 15-30cm below the existing grade. However, roots in at least the top 15cm of soil will require removal and this could impact the health and stability of the tree. Less significant root loss is possible from Garry Oak #276.

Paving over the root system of Garry Oak #277 with impermeable materials and root loss elsewhere are additional impacts. The existing turf areas within the boulevard drop off area (3m east from the trunk) and the entrance walkway (2.3m north) are proposed to be paved over with concrete. Cumulatively, this will total a significant portion of the CRZ of this tree, which could result in health impacts to the tree in the long-term (see section 26 for paving recommendations). Within the boulevard, the paved surface must meet the top of the existing curb, and therefore cannot be raised above any roots encountered close to the surface; i.e., root loss is a possibility. We have been informed that reducing the width of the pathway (so that it aligns more with the existing driveway footprint) results in an indirect path from the drop off area to the entrance doors, which is undesirable from a wayfinding and accessibility perspective.

We recommend the existing water service be left in place and capped as far from the tree as possible (potentially using a hydro-vac) in order to reduce root damage to this tree (see note #1 in Servicing Plan).

22. **Garry Oak #278** (74cm DBH) – The proposed water service will be located 2.6m from the trunk of this tree (3m from the centre). Exposed rock is visible 2m west and north-west of the tree and therefore a significant amount of roots may be encountered. However, the existing water line may have previously severed roots in this direction, depending on when it was installed. This area is also currently covered by the asphalt driveway.

If a hydro-vac is used under arborist supervision, large stabilizing roots can likely be retained across the trench; the trench should be as narrow as possible. If this occurs, stability impacts are unlikely. This tree has been listed as to be retained with potential health impacts dependent on the amount and size of roots encountered and retained across the trench.

23. **Garry Oak #283** (47cm DBH) – The project arborist should supervise the removal and replacement of the sidewalk and curb within its CRZ. Health impacts in the long-term are possible as a result of the impermeable paving of the plaza (see section 26). The area currently covered in turf 1.5m south of trunk will be paved, totaling approximately one third of CRZ. Most of the north half of the CRZ is already covered in impermeable material (the sidewalk and roadway).

24. **Garry Oak #284** – This tree was originally to be removed in earlier designs. Plaza re-designs have allowed for its retention. However, the majority of its CRZ, currently covered in turf, will be converted to mostly impermeable concrete. See section 26 for a discussion on permeability. Health impacts in the long-term are possible as a result of the impermeable paving of the plaza, especially in the north-east portion of the CRZ.

25. **Garry Oak #289** (62cm) – The existing hard surface surrounding this tree will be removed and replaced under arborist supervision and the planting bed will be enlarged and maintained at its existing grade.

* The extent of blasting shown on the landscape plan is an estimation based on the assumption of rock being encountered along the perimeter of the building. We do not anticipate a significant health or stability impact to oak #289 if our recommendations for blasting are followed (if rock is encountered) and only 1m of working room is required along the perimeter of the building foundation.

26. * **Garry Oak #302** (72cm) – The catch basin near the south-west corner of the parking lot is proposed to be replaced and raised in order to match finished grades. The existing storm drain pipe within the parking lot is intended to be left in place unless it is damaged or at the end of its service life. If only replacement of the catch basin occurs and over-excavation is limited, we do not anticipate the tree will require removal as a result.

27. **Garry Oak #305** (76cm DBH) – Building clearance pruning will be required, which will likely include pruning limbs of the following diameter sizes: 15cm, 10cm, 5cm and 3cm. If scaffolding is required in this area, additional pruning may occur (see “Scaffolding” section below for recommendations). We recommend this pruning be done during the framing portion

of construction so that it is clear which limbs require pruning and what laterals can be cut back to. This pruning should be completed by an ISA Certified Arborist.

Significant root loss from the new retaining walls is unlikely considering the roots from the oak have likely been restricted by the existing planting bed, but excavation should be completed under the direction of the project arborist. If a significant amount of roots are encountered, the project arborist may recommend excavation for the new retaining wall footing be limited.

* As noted above, a new retaining wall is proposed to end 3.5m south-east of the trunk within the patio area that is 1m below the patio where the tree is located (a loose rock retaining wall separates the patios). We do not anticipate significant root loss as a result, but if significant roots are encountered, we may recommend the footings be altered or the wall be eliminated (a guard rail may be required on the remaining retaining wall). Portions of the paving within the patio will be removed and planted with shrubs.

28. Paved Surfaces Above Tree Roots

Paving within the following CRZs will occur:

- Parking lot and driveway - trees #288-300
- Plaza and pathway - trees #279-283
- Walkway from drop off area - oaks #277 and 278
- Paved drop off area adjacent Oak #277
- Pathway through the CRZs of #261 and 263-272 (pathway to begin where service connection at property line has likely already disturbed)

If the new paved surfaces within the CRZ of retained trees require excavation down to bearing soil and roots are encountered in this area, this could impact the health or stability of the retained trees. If tree retention is desired, a raised and permeable paved surface should be constructed in the areas within the critical root zone of the trees. See section 25 and 26 for areas where we have been informed this is not possible.

The objective is to avoid root loss and to instead raise the paved surface and its base layer above the roots. This may result in the grade of the paved surface being raised above the existing grade (the amount depending on how close roots are to the surface and the depth of the paving material and base layers). This may also result in soils which are high in organic content being left intact below the paved area.

Within the CRZs, the project arborist should supervise any excavation associated with constructing these hard surfaces, including the removal of the existing paving or turf. If an excavator machine is used, the project arborist may recommend this be completed in combination with hand-digging and using a flat-edged bucket to avoid accidental root damage.

If significant roots are encountered, excavation should be stopped and a geogrid material (such as CombiGrid 30/30 or similar) placed over the area to reduce compaction and to disperse

weight over soils high in organics and roots. The base material for the paving should be placed above this material and should be well-draining (filter cloth or geotextile fabric may be recommended to separate coarse and fine layers in order to ensure this layer is well-aerated). 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 grading, soil conditions and requirements, while also avoiding root loss, reducing compaction to the sub-grade and ensuring long-term permeability.

The parking area is proposed for re-paving. Regarding the removal of the existing asphalt, Garry Oaks do not typically have a significant amount of surface roots and with a competent machine operator, we have successfully removed asphalt around oaks with limited root disturbance. If during removal of the existing asphalt, root loss is occurring due to the presence of roots close to the surface and/or limited existing base layers, we may recommend that the existing asphalt be left in place and the new surface paved above it. This will result in a decrease in permeability however. Within at least the parking stalls, the benefit of replacement with permeable pavers will likely outweigh the risks associated with removing the asphalt.

29. Areas Where Paving Cannot Be Raised Above Tree Roots

The grade of the plaza will be 20cm above existing in most areas and thus will allow the retention of root systems. However, listed below are the areas where the concrete cannot be raised above roots, if encountered:

- a) The driveway letdown adjacent to Sequoia #261
- b) Garry Oak #277 – Walkway and boulevard drop-off area

Attached is a schematic drawing indicating where existing grades will be cut into in order to achieve the desired grading; namely sloping the ground away from the building and not exceeding a slope greater than 5% (we have been informed the latter goal is due to accessibility concerns). Within the drawing, the red zones are cutting out of the existing soft landscape, whereas the purple zone is cutting where there is currently asphalt (root loss from #278 is possible but unlikely due to the presence of asphalt and the finished grade being close to existing).

30. Permeability of Paving

To mitigate the impacts of paving over the root systems of trees, we recommend that all paving over the CRZ of retained trees be made permeable in order to allow water to drain into the root systems below. Permeable materials can include paving stones or other porous paving materials and designs such as those utilized by Grasspave, Gravelpave, Grasscrete and open-grid systems.

Some trees will have a significant portion of their CRZ covered in paving, which makes this particularly important. Trees and their roots have adapted to the existing hydrology and site conditions over a long period of time. Limited soil volumes are also likely. Paving over the

root systems with impermeable materials, especially when the current surface is turf (where more roots are likely), can lead to significant health stress.

The parking stalls within the parking lot will be made permeable. Concrete is proposed throughout the plaza with permeable strips in areas to allow water to infiltrate into the root systems below. Water will not be as evenly distributed throughout the root systems as it would with permeable pavers (depending on how the water travels underneath the paving, some areas are likely to be left more dry than others). This design will allow more water through than only concrete and Garry Oaks are a drought tolerant species typically highly tolerant of construction related impacts.

However, health impacts in the long-term as a result of impervious paving are possible for the following trees:

- Garry Oak #277 – Walkway and boulevard area
- Garry Oak #283 – Plaza
- Garry Oak #284 – Plaza
- Garry Oaks #279 and 282: A small portion of the CRZ will be paved over, so we normally would not anticipate a significant health impact. But there also appears to be limited soil volumes in this area, with root systems likely significantly more widespread than the CRZs show.
- Garry Oak #288 (56cm) – Most of the area that is currently turf will be paved over for the parking lot driveway. The current driveway will be converted to landscape, which will help in this portion of the root zone.

We have been informed that concrete paving in the plaza is retained to be consistent with the original Development-Permit-approved site strategy, with the exception that the plaza has been updated to incorporate permeable strips and the retention of oak #284.

31. Bench West of Oaks #267-277

The proposed location of the bench has been relocated 1m west so that it is now located within the footprint of the existing building and therefore root loss is no longer a concern.

32. Parking Lot Lighting

The parking lot lighting will be connected via overhead wires with the exception of the underground line from the building to the first pole east of trees #291 and 292 (see lighting plan attached). This line will require 45cm of cover and will therefore require excavation that may result in root loss. There is 14m of space between trees #288 and 289, and therefore space for the line to run outside the CRZs of these trees. If this occurs, we do not anticipate a significant impact to these trees or to trees #291 and 292 (the trench would begin 4m south-east of these trees).

The base of the poles will be constructed using screw piles instead of concrete footings in order to reduce root loss. We do not anticipate significant health or stability impacts as a result. The

pole design itself will be 5m tall and almost entirely vertical. We have been informed that the locations can shift slightly in order to avoid present or future conflicts with large limbs. The post adjacent to #294 has been moved one metre west (not shown on the plans) to lessen the chances of hitting significant roots.

There will be underground lighting to the wheelstops within the vicinity of each pole, but it is our understanding that this conduit does not require a specific amount of cover and therefore can be installed shallowly within the base layers of the old or new parking lot surface (if necessary) and thus avoid root loss. If it is discovered that this cannot be accomplished without significant root loss, we will recommend this underground portion of the lighting system be eliminated.

33. Parking Lot Paving Proximity to Trunks

We have recommended that the paving of the parking lot allow for proper future buttress root expansion, especially for trees #300, 297 and 294. The paving west of #300 has been shifted away from the trunk by 60cm. However, space limitations to accommodate onsite parking stalls prevented more space around the trunks of trees being given. We have recommended protection be installed around the lower trunks of #299 and 300 in order to prevent further vehicle damage.

34. Relocation of Gas Meter

The gas metre is to be relocated to the side of the new building. If this results in re-locating gas line within the CRZ of retained trees, we recommend this be done through the use of a pneumatic borer and under arborist supervision.

35. Purple Leaf Plum NT #27 (50cm diameter, at Wilspencer Pl and Moss St)

We recommend an arborist supervise the removal of the existing sidewalk and curb, and any excavation for the new curb and sidewalk, within the CRZ of this tree.

36. Arborist Supervision: All excavation occurring within the critical root zones of protected trees should be completed under supervision by the project arborist. In particular (but not limited to), the following activities within the CRZ of retained trees should be completed under the direction of the project arborist:

- Removal of existing building's foundation and retaining walls within the CRZ of retained trees such oak #274 (if retained), Sequoias 261 and 263
- Driveway apron and curb excavation (Sequoia #261)
- Removal of existing paved surfaces & any excavation associated with constructing the new surfaces within the CRZs of retained trees (such as trees within parking lot, plaza and surrounding pathways)
- Excavation associated with the installation of any underground services that cross the CRZ of the two Sequoias and the oaks along the Moss St frontage.
- Excavation associated with constructing the bench west of oaks #267-277

- Sidewalk replacement adjacent to oaks #277, 281 and 282
 - Any relocation of the gas line within the CRZ of retained trees
 - Excavation associated with the parking lot light poles, wheelstop lighting, bollard lights and underground conduit to the building.
 - Galvanized steel edging around Garry Oak Meadow area
37. **Pruning Roots:** Any severed roots must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound. Backfilling the excavated area around the roots should be done as soon as possible to keep the roots moist and aid in root regeneration. Exposed roots should be kept moist until the area is backfilled, especially if excavation occurs during a period of drought. This can be accomplished in a number of ways, including wrapping the roots in burlap or installing a root curtain of wire mesh lined with burlap, and keeping the area moist throughout the construction process.
38. **Barrier Fencing and Trunk Protection:** The areas surrounding the trees to be retained should be isolated from the construction activity by erecting protective barrier fencing (as shown on the attached Arborist Site Plan). Where possible, the fencing should be erected at the perimeter of the critical root zones.

Protective hoarding (3-4m in height) should be installed around the trunks of #278 and 288 and be clearly visible to machine operators in order to avoid potential trunk damage. Similarly, the trunks of #299 or 300 should be protected if machinery is expected in this area.

Fencing specifications: 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.

39. **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.
40. **Demolition of the existing building and paved surfaces:** The demolition of the existing building 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. The machine operator must be aware of the tree canopies at all times in order to avoid potential damage.

We recommend paved surfaces be removed towards the end of the construction process in order to protect the roots and soil underneath them, as well as to allow additional storage space. Similarly, we recommend the retaining wall adjacent to Sequoia #261 be removed towards the end of the construction phase (the portion outside the area of the foundation excavation), so that the area can be backfilled with soil immediately after. Alternatively, if the entire wall is removed, this area should be covered with soil (see “Pruning Roots” section) and fenced immediately.

41. **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.

The rock outcrops adjacent to trees #278 and 279 will be left in place.

42. **Scaffolding:** Other than where specified, 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).

43. Landscaping, Lighting, and Irrigation Systems:

The galvanized steel edge around the Garry Oak meadow and plaza pathways has the potential to prevent foot traffic and compaction within the root systems of the trees. However, it should be constructed in such a way that avoids root loss to the trees at the edge of the existing sidewalk. The design of the edging should be dictated by and adapted to what roots are encountered. In some areas, surface roots will likely prevent any excavation into existing grade (such as around #278 and along the sidewalk on Moss St), in which case the edging will have to be suspended above grade in sections. The lighting along the steel edge will be connected above ground.

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.

- 44. Replacement Tree Locations:** Garry oaks have adapted to limited soil volumes and growing on rocky sites and the applicant would like to plant as many replacement trees onsite as possible. However, replacement tree numbers, locations and sizes will have to be determined at the time of planting and should consider the presence of rock as well as avoiding significant root loss to existing trees.

Some of the new trees on the north side of the parking lot are being planted directly underneath some of the canopies of the existing Garry Oaks. This provides are more naturalized setting and could be viewed as under-plantings for when the older trees are removed in the future, but the trees may start to lean and have poor structure prior to the removal of larger trees. They could also be damaged during the eventual removal of existing trees. Alternative planting locations could exist around the proposed bike parking area.

45. Soil Decompaction and Amelioration

In areas around existing trees where pavement is peeled and converted to soft-scape (such as around #288), it would benefit the existing trees and new plantings to de-compact the upper layers of soil. In areas where roots from retained trees exist, the supervising project arborist may recommend the use of an air-spade to de-compact the upper layers of soil.

- 46. 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.

- 47. Arborist Role:** It is the responsibility of the client or his/her representative to contact the project arborist for the purpose of:

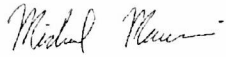
- Locating the barrier fencing
- Reviewing the report with the project foreman or site supervisor
- Locating work zones, where required
- Supervising any excavation within the critical root zones of trees to be retained
- Reviewing and advising of any pruning requirements for machine clearances

- 48. 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,



Michael Marcucci
ISA Certified # ON-1943A
TRAQ – Qualified



Graham Mackenzie
ISA Certified # PN-0428
TRAQ – Qualified

Talbot Mackenzie & Associates
ISA Certified Consulting Arborists

Encl. 3-page exploratory excavation photos, 5-page tree resource spreadsheet, 1-page tree site plan with 4 pages of close-ups, 4-page Servicing Plans, 6-page Landscape Plan, 1-page grading sketch, 7- page building plan excerpts, 1-page Lighting Plan, 3-page Assessment of Trees #279, 295, and 299, 1-paved Paved Surfaces Above Tree Roots specifications, 1-page barrier fencing specifications, 2-page tree resource spreadsheet methodology and definitions

Disclosure Statement

The tree inventory attached to the Tree Preservation Plan can be characterized as a limited visual assessment from the ground and should not be interpreted as a "risk assessment" of the trees included.

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.



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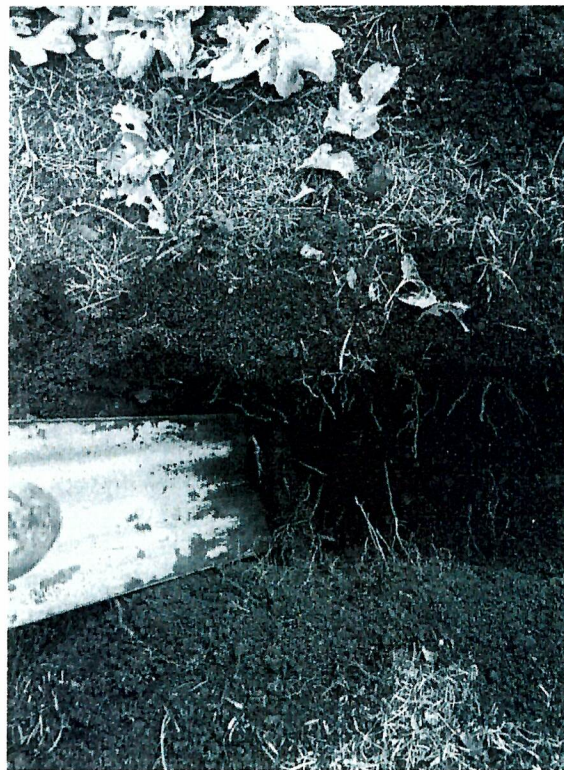
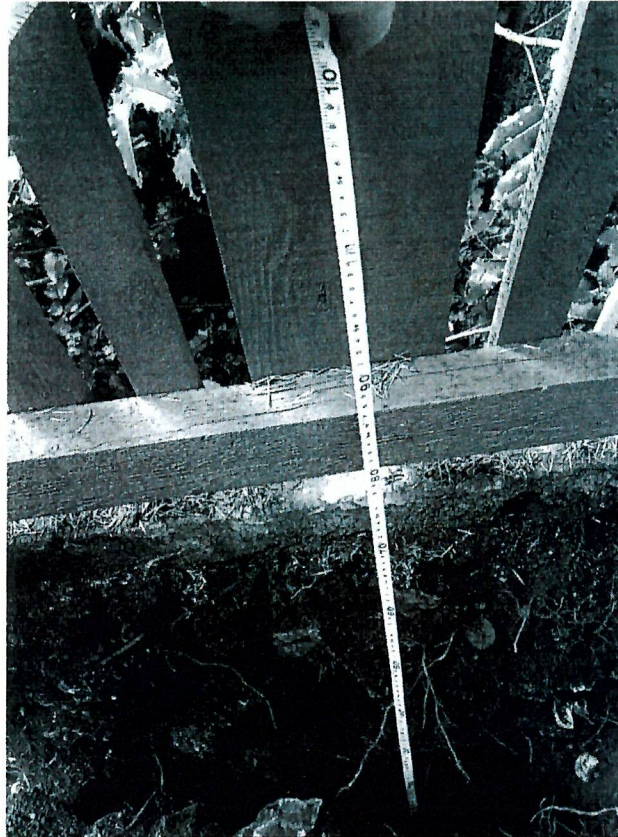
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Email: tmtreehelp@gmail.com

Exploratory Excavation Photos







2-3cm diameter root encountered close to the surface from oak #277.

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Bylaw Protected (per 2005 bylaw #05-106)	Retention Status (* see report for limitations & additional info)	Impacts / Reason for Removal
261	Giant Sequoia	<i>Sequoiadendron giganteum</i>	167	12 0	16.5	G	Good	Good	Flattened top. Recent root loss (including 13cm diameter root) from construction on street.	Y	Retain * with health impacts	Foundation, services, driveway, walkway
262	Blue Atlas Cedar	<i>Cedrus atlantica</i> 'Glaucal'	~113	14 0	13.5	M	Good	Fair	Large secondary stem at base removed historically, crown raised. Confined rooting area due to proximity to building.	Y	Removal	Building footprint
263	Giant Sequoia	<i>Sequoiadendron giganteum</i>	138	10 0	14 0	G	Good	Good	Somewhat asymmetric canopy	Y	Retain * with health impacts	Foundation, services
264	Garry Oak	<i>Quercus garryana</i>	50	15 0	5 0	G	Fair	Fair	Small deadwood.	Y	Retain	
265	Garry Oak	<i>Quercus garryana</i>	50	15 0	5.0	G	Fair	Fair	Old tearout injury in limb over street, deadwood near sidewalk	Y	Retain	
266	Oriental Spruce	<i>Picea orientalis</i>	42	5 0	5 0	M	Good	Good	Clearance pruned from building. Top suppressed by oak.	Not Protected	Removal	Foundation
267	Garry Oak	<i>Quercus garryana</i>	62	16 0	6.0	G	Fair	Fair	Deadwood over sidewalk.	Y	Retain	
268	Garry Oak	<i>Quercus garryana</i>	72	17 0	7.0	G	Fair	Fair	Large deadwood over street and sidewalk, end-weighted limbs over street. Asymmetric canopy. Crossing limbs	Y	Retain	
269	Garry Oak	<i>Quercus garryana</i>	51	14 0	5.0	G	Fair	Fair	Large deadwood over street and sidewalk, end-weighted limbs over street. Asymmetric canopy	Y	Retain	
270	Garry Oak	<i>Quercus garryana</i>	51	8 0	5 0	G	Fair/Poor	Fair	Health stress with epicormic growth. Asymmetric canopy	Y	Retain	
271	Garry Oak	<i>Quercus garryana</i>	57	14 0	5.5	G	Fair	Fair	Health stress evident, limb reduction wounds throughout	Y	Removal	3m from foundation & canopy loss
272	Garry Oak	<i>Quercus garryana</i>	35	12 0	3.5	G	Fair/Poor	Fair	Suppressed, small deadwood. Asymmetric canopy over street. Epicormic growth	Y	Retain	
273	Garry Oak	<i>Quercus garryana</i>	48	8 0	5.0	G	Fair	Fair	Asymmetric canopy over street, large deadwood.	Y	Retain	
274	Garry Oak	<i>Quercus garryana</i>	55	10 0	5.5	G	Fair	Fair	Asymmetric canopy over building. Deadwood. Lighting attached to trunk.	Y	Removal* (retention to be attempted)	Canopy loss from building clearance
275	Garry Oak	<i>Quercus garryana</i>	37	10 0	3.5	G	Fair	Fair/Poor	Leaning over street, nesting hole in old pruning wound. Sparse foliage. Branch stub	Y	Retain	
276	Garry Oak	<i>Quercus garryana</i>	35	13 0	3.5	G	Fair	Fair	End-weighted over street, large deadwood over street.	Y	Retain	
277	Garry Oak	<i>Quercus garryana</i>	60	15 0	6.0	G	Fair	Fair	Large deadwood. Some endweighted limbs	Y	Retain* with health impacts	Entrance walkway excavation
278	Garry Oak	<i>Quercus garryana</i>	74	18 0	7.5	G	Fair	Fair	Mechanical injury on limb over entrance, significantly end-weighted, history of large scaffold removal.	Y	Retain*	2.6m from water service
279	Garry Oak	<i>Quercus garryana</i>	57	12 0	5.5	G	Fair	Poor	Rooted at edge of rock, root collar exposed. Limited rooting on backside of lean, end-weighted, possibly unstable. Assessment completed. May be possible to prune significantly to reduce end-weight if retained. Monitor during high wind conditions. Large deadwood	Y	Retain	

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Bylaw Protected (per 2005 bylaw #05-106)	Retention Status (* see report for limitations & additional info)	Impacts / Reason for Removal
280	Horse Chestnut	<i>Aesculus hippocastanum</i>	26	9.0	2.5	G	Fair	Fair	Growing underneath larger canopies	Not Protected	Retain	
281	Garry Oak	<i>Quercus garryana</i>	38	12.0	4.0	G	Fair	Fair	End-weighted over street.	Y	Retain	
282	Garry Oak	<i>Quercus garryana</i>	62	14.0	6.0	G	Fair	Fair	Asymmetric canopy over road. 15cm diameter deadwood over sidewalk and road	Y	Retain	
283	Garry Oak	<i>Quercus garryana</i>	47	14.0	4.5	G	Fair	Fair	Asymmetric canopy over street. Branch stub. Acute limb bend.	Y	Retain*	Paving
284	Garry Oak	<i>Quercus garryana</i>	46	10.0	4.5	G	Fair	Fair	Asymmetric canopy. Deadwood	Y	Retain*	Paving
285	Holly	<i>Ilex aquifolium</i>	31, 27, 19	6.0	6.0	G	Good	Fair	Suckering at base, non-native species.	Not Protected	Removal	Plaza
286	Douglas-fir	<i>Pseudotsuga menziesii</i>	71	10.0	10.5	P	Fair	Fair	Asymmetric canopy. Deadwood. Surface root damage	Y	Removal	Plaza and art cloud
287	Garry Oak	<i>Quercus garryana</i>	50, 49	19.0	8.0	G	Fair	Fair/Poor	Codominant at base with leaning stems. Large deadwood. Vehicle damage	Y	Removal	Parking Lot Driveway
288	Garry Oak	<i>Quercus garryana</i>	56	16.0	5.5	G	Fair	Fair	Asymmetric canopy. Decayed lower limb. Vehicle damage	Y	Retain	
289	Garry Oak	<i>Quercus garryana</i>	62	15.0	6.0	G	Fair	Fair	Small deadwood. Lower trunk damage, likely from vehicles. Lighting attached to trunk	Y	Retain	
290	Cryptomeria	<i>Cryptomeria japonica</i>	29	6.0	4.5	M	Fair	Fair	Small limb tearout injury. Sparse canopy, likely due to pruning	Not Protected	Retain	
291	Garry Oak	<i>Quercus garryana</i>	51	10.0	5.0	G	Fair	Fair	Asymmetric canopy, small deadwood	Y	Retain	
292	Garry Oak	<i>Quercus garryana</i>	41	11.0	4.0	G	Fair	Fair	Large deadwood over parking lot.	Y	Retain	
293	Garry Oak	<i>Quercus garryana</i>	66	15.0	6.5	G	Fair	Fair	Large deadwood. Lower trunk damage, likely from vehicles.	Y	Retain	
294	Garry Oak	<i>Quercus garryana</i>	52	13.0	5.0	G	Fair	Fair	Deadwood	Y	Retain	
295	Garry Oak	<i>Quercus garryana</i>	57	10.0	5.5	G	Fair	Fair/poor	History of large scaffold removal, asymmetric form, bleeding from trunk wound, lower trunk damage, likely from vehicles. Fungus attached to old pruning wound. Risk Assessment completed previously.	Y	Removal	Structural concerns, parking lot
296	Garry Oak	<i>Quercus garryana</i>	40	7.0	4.0	G	Fair	Fair	Trunk wound, likely from vehicles. Epicormic growth.	Y	Retain	
297	Garry Oak	<i>Quercus garryana</i>	44	14.0	4.5	G	Fair	Fair	Leaning. Large cracked limb over sidewalk. Deadwood. Pruning recommended	Y	Retain	
298	Garry Oak	<i>Quercus garryana</i>	61	15.0	6.0	G	Fair	Fair	One-sided, large deadwood over street	Y	Retain	
299	Garry Oak	<i>Quercus garryana</i>	63, 41	13.0	9.0	G	Fair	Poor	Basal cavity, large deadwood. Lower trunk damage, likely from vehicles. Endweighted limb with acute trunk bend. Assessment completed previously.	Y	Retain	

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Bylaw Protected (per 2005 bylaw #05-106)	Retention Status (* see report for limitations & additional info)	Impacts / Reason for Removal
300	Garry Oak	<i>Quercus garryana</i>	54	10.0	5.5	G	Fair	Fair	History of large scaffold removal. Lower trunk damage, likely from vehicles. Recently pruned	Y	Retain	
302	Garry Oak	<i>Quercus garryana</i>	72	14.0	7.0	G	Fair	Fair	History of large scaffold removal, decaying wound on trunk	Y	Retain	New catch basin
303	Garry Oak	<i>Quercus garryana</i>	82	20.0	8.0	G	Fair	Fair	History of large scaffold removal, rooted in rock, end-weighted, large deadwood. Ivy at base	Y	Retain	
304	Garry Oak	<i>Quercus garryana</i>	82	20.0	8.0	G	Fair	Fair	Located in courtyard area. Deadwood (above entrance). Base will begin to grow into pavement unless pavement cut back.	Y	Retain	
305	Garry Oak	<i>Quercus garryana</i>	76	18.0	7.5	G	Fair	Fair	Located in courtyard area, one-sided, possible Armillaria (noted in 2015). Electrical outlet attached to base will begin to be included unless moved. Deadwood above entrance. Pruning wounds throughout. Growing in raised bed (restricted root growth)	Y	Retain	Asian Garden retaining wall
306	Garry Oak	<i>Quercus garryana</i>	54, 44	11.0	8.0	G	Fair	Fair	Located in courtyard area. 48cm stem removed at base. Asymmetric over neighbour's property. Rooted within rock; restricted root area. Decayed 20cm wide pruning wound on trunk	Y	Retain	
307	Garry Oak	<i>Quercus garryana</i>	112	23.0	11.0	G	Fair	Fair	Edge of courtyard area. Rooted at edge of rock outcrop; restricted root area. Large endweighted limbs. Ivy at base.	Y	Retain	
NT 01	Elm	<i>Ulmus spp</i>	32	10.0	3.0	G	Good	Fair	Potentially shared ownership with municipality.	Not Protected	Removal	Hydro
NT 02	English Laurel	<i>Prunus laurocerasus</i>	Multistem	9.0	3.0	G	Good	Fair	On neighbour's and municipal property. Some trunks damaged and obstructing sidewalk	Not Protected	Retain *	Sidewalk and hydro
NT 03	Dogwood	<i>Cornus spp</i>	6, 6	4.0	2.0	P	Fair/Poor	Fair	Neighbour's. Suppressed. Protected if Pacific Dogwood (<i>Cornus nuttallii</i>)	Potentially Protected	Retain	
NT 04	Elm	<i>Ulmus spp</i>	46, 36, ~35 17	9.0	10.0	G	Fair	Fair	Neighbour's, ~1-1.5m from fence line. Crossing limbs. Codominant unions.	Y	Removal* (retention to be attempted)	Underground Hydro
NT 05	Elm	<i>Ulmus spp</i>	~35, 15, 15, 13	9.0	6.0	G	Fair	Fair	Neighbour's. ~1m from fence line. Included bark.	Not Protected	Removal* (retention to be attempted)	Underground Hydro
NT 06	Oregon Myrtle Wood	<i>Umbellularia californica</i>	~30, 20, 20, 15	12.0	7.5	M	Good	Fair	Neighbour's, ~3m from fence line.	Not Protected	Retain	
NT 07	Elm	<i>Ulmus spp</i>	~50	12.0	5.0	G	Good	Fair	Neighbour's, ~1m from fence line.	Not Protected	Removal* (retention to be attempted)	Underground Hydro
NT 08	Juniper	<i>Juniperus spp</i>	55	10.0	6.5	M	Good	Fair	Neighbour's, ~1.5m from fence line. 30-40cm below grade of art gallery.	Not Protected	Removal* (retention to be attempted)	Underground Hydro and Foundation
NT 09	Douglas-fir	<i>Pseudotsuga menziesii</i>	77	10.0	11.5	P	Fair	Fair	Neighbour's, ~3.5m from fence line.	Y	Retain	Wind exposure from nt 10 removal likely be retained

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Bylaw Protected (per 2005 bylaw #05-106)	Retention Status (* see report for limitations & additional info)	Impacts / Reason for Removal
NT 10	Douglas-fir	<i>Pseudotsuga menziesii</i>	37	10.0	5.5	P	Fair	Poor	Neighbour's, ~1m from ~1m tall retaining wall along property line. Previously Topped. Deflected leaning leaders, 5m tall.	Not Protected	Removal	Building clearance; can leave snag
NT 11	Douglas-fir	<i>Pseudotsuga menziesii</i>	45	14.0	7.0	P	Fair	Fair	Neighbour's, ~0.5m from retaining wall along property line. Previously topped with deflected leader.	Not Protected	Removal* (retention to be attempted)	Underground Hydro and Foundation
NT 12	Douglas-fir	<i>Pseudotsuga menziesii</i>	~20	9	3	P	Fair	Fair	Within row of neighbour's trees. ~0.5m from ~40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 13	Douglas-fir	<i>Pseudotsuga menziesii</i>	~45	9	7	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 14	Douglas-fir	<i>Pseudotsuga menziesii</i>	~40	9	6	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 15	Douglas-fir	<i>Pseudotsuga menziesii</i>	~20	9	3	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 16	Douglas-fir	<i>Pseudotsuga menziesii</i>	~35	9	5.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 17	Douglas-fir	<i>Pseudotsuga menziesii</i>	~15	9	2.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 18	Douglas-fir	<i>Pseudotsuga menziesii</i>	~40	9	6	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 19	Douglas-fir	<i>Pseudotsuga menziesii</i>	~14	9	2	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 20	Douglas-fir	<i>Pseudotsuga menziesii</i>	~30	9	4.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 21	Douglas-fir	<i>Pseudotsuga menziesii</i>	~17	9	2.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 22	Douglas-fir	<i>Pseudotsuga menziesii</i>	~23	9	3.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 23	Douglas-fir	<i>Pseudotsuga menziesii</i>	~30	9	4.5	P	-	-	Neighbour's row of trees (some may cross the property line) 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Bylaw Protected (per 2005 bylaw #05-106)	Retention Status (* see report for limitations & additional info)	Impacts / Reason for Removal
NT 24	Douglas-fir	<i>Pseudotsuga menziesii</i>	~35	9	5.5	P	-	-	Neighbour's row of trees (some may cross the property line). 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 25	Douglas-fir	<i>Pseudotsuga menziesii</i>	~45	9	7	P	-	-	Neighbour's row of trees (some may cross the property line). 0.5m from 40cm tall retaining wall (trees at lower grade than art gallery property).	Not Protected	Retain *	
NT 26	Shore Pine	<i>Pinus contorta</i> var. <i>contorta</i>	~15	5.0	2.0	M	Poor	Fair/poor	Neighbour's, ~1.5m from retaining wall.	Not Protected	Retain	
NT 27	Purple Leaf Plum	<i>Prunus cerasifera</i>	50*	8.0	6.0	M	Poor	Fair/poor	Neighbour's (1070 Moss St), at NW corner of Wilspercer Pl and Moss St. Dieback throughout canopy. Poor graft union with significant swelling. *Diameter measured at 1m.	Not Protected	Retain	

Tree Preservation
Site Plan
Talbot Mackenzie &
Associates
June 10, 2019

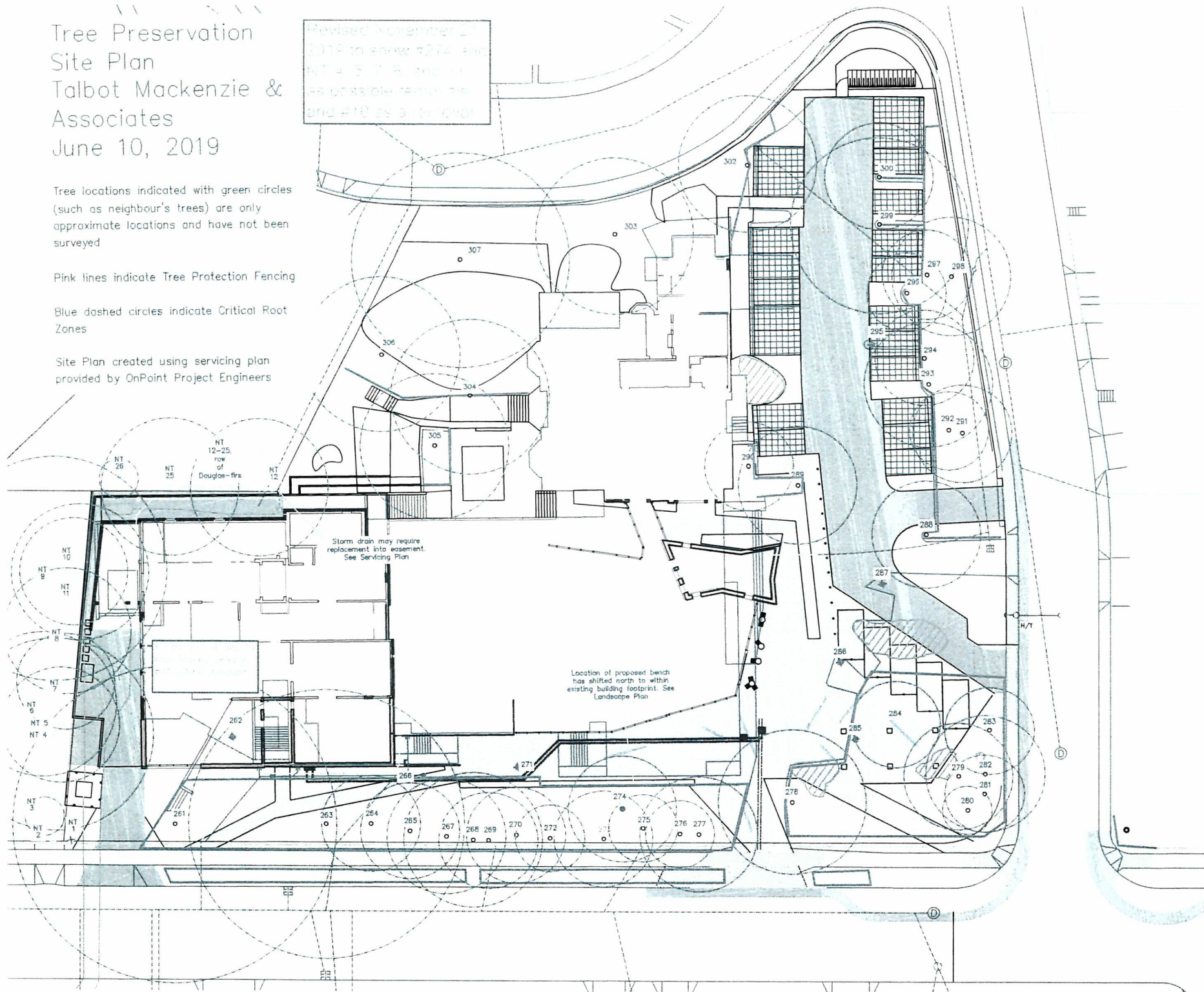
Tree locations indicated with green circles
(such as neighbour's trees) are only
approximate locations and have not been
surveyed

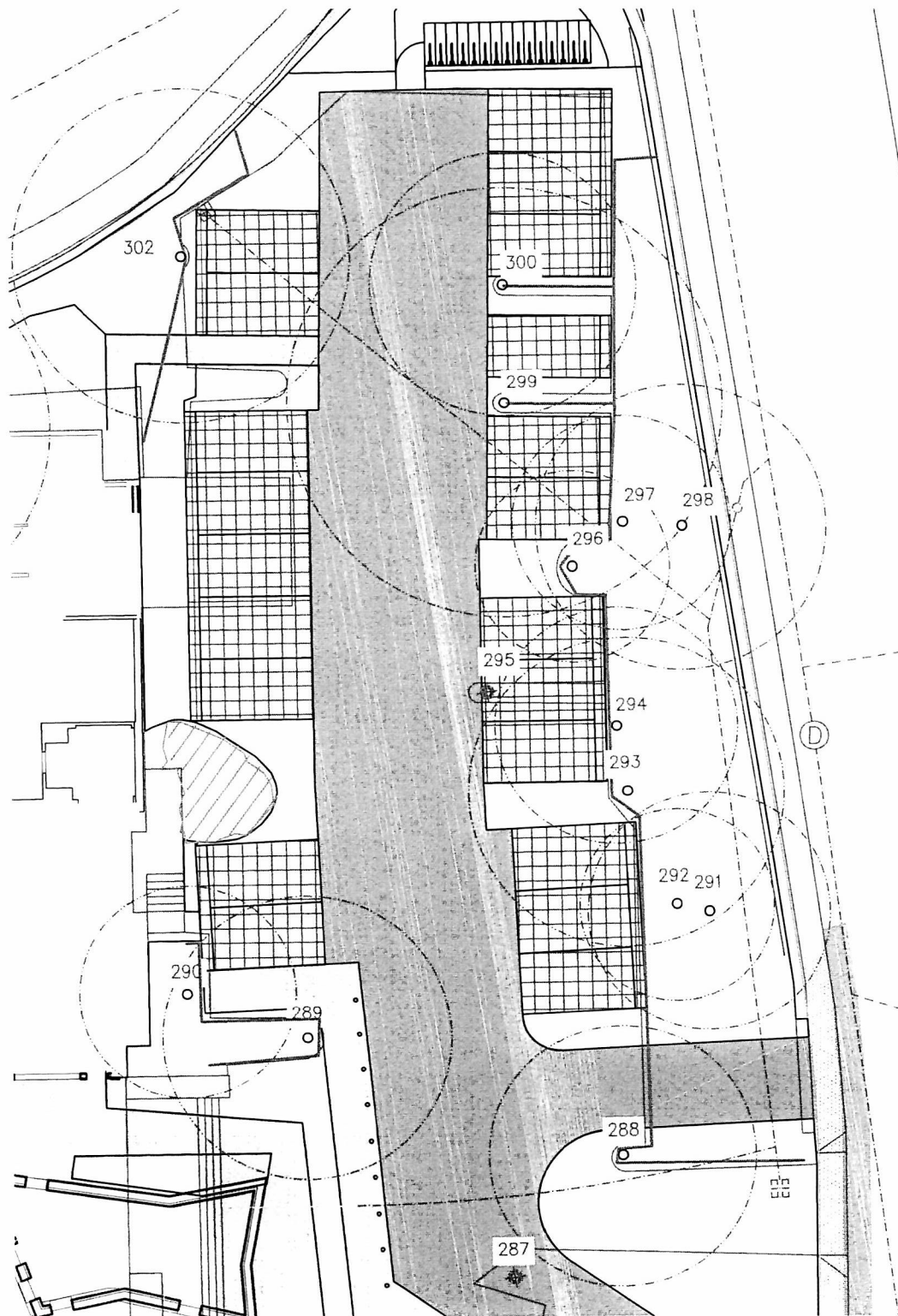
Pink lines indicate Tree Protection Fencing

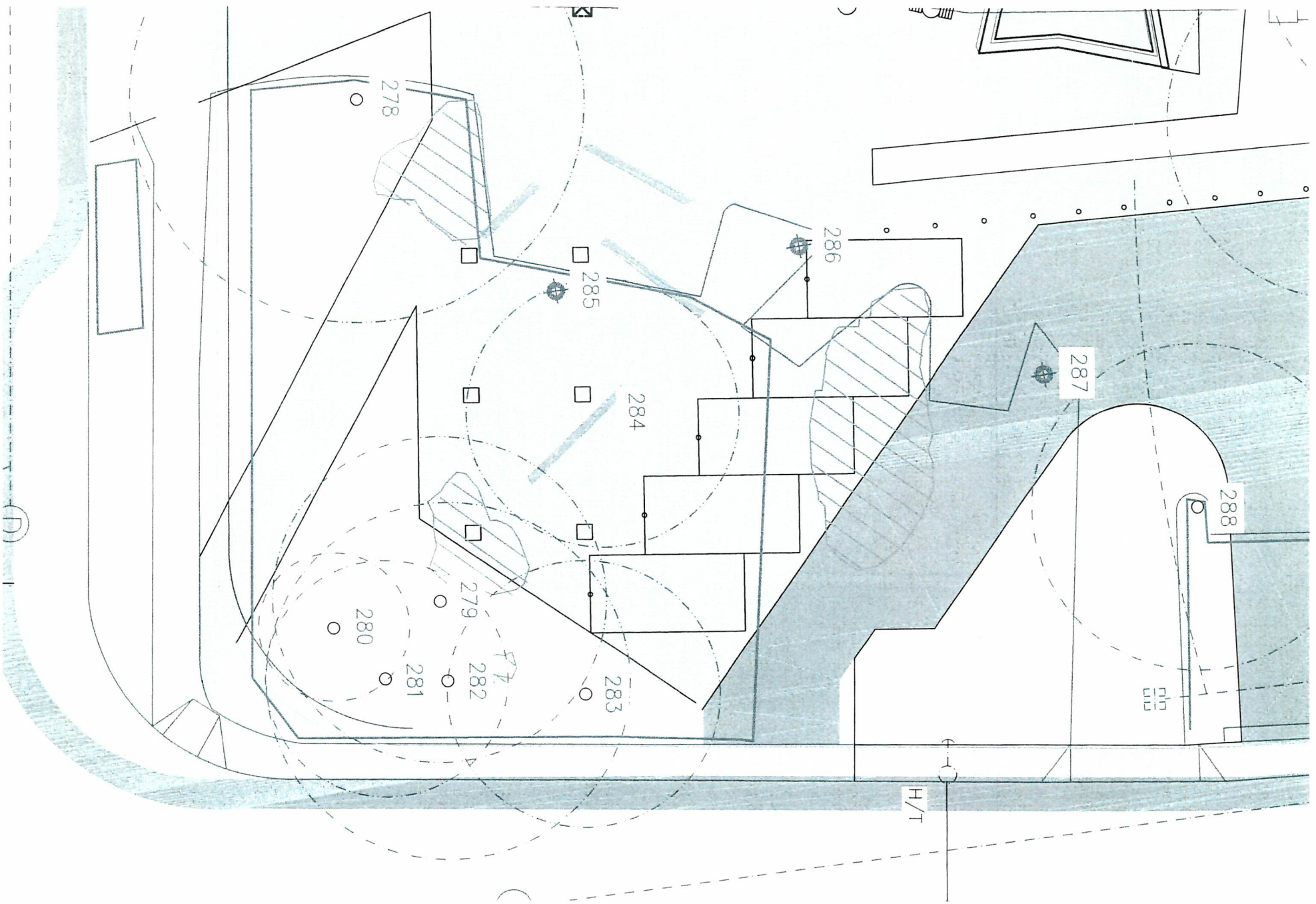
Blue dashed circles indicate Critical Root
Zones

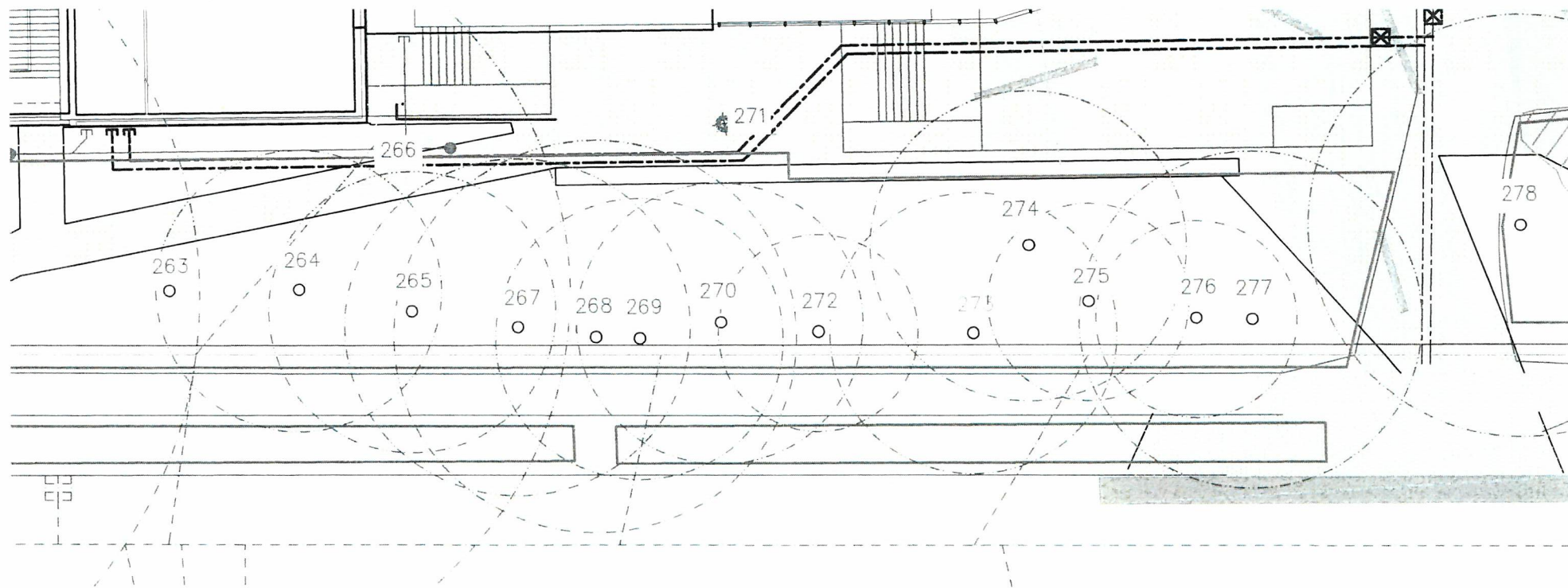
Site Plan created using servicing plan
provided by OnPoint Project Engineers

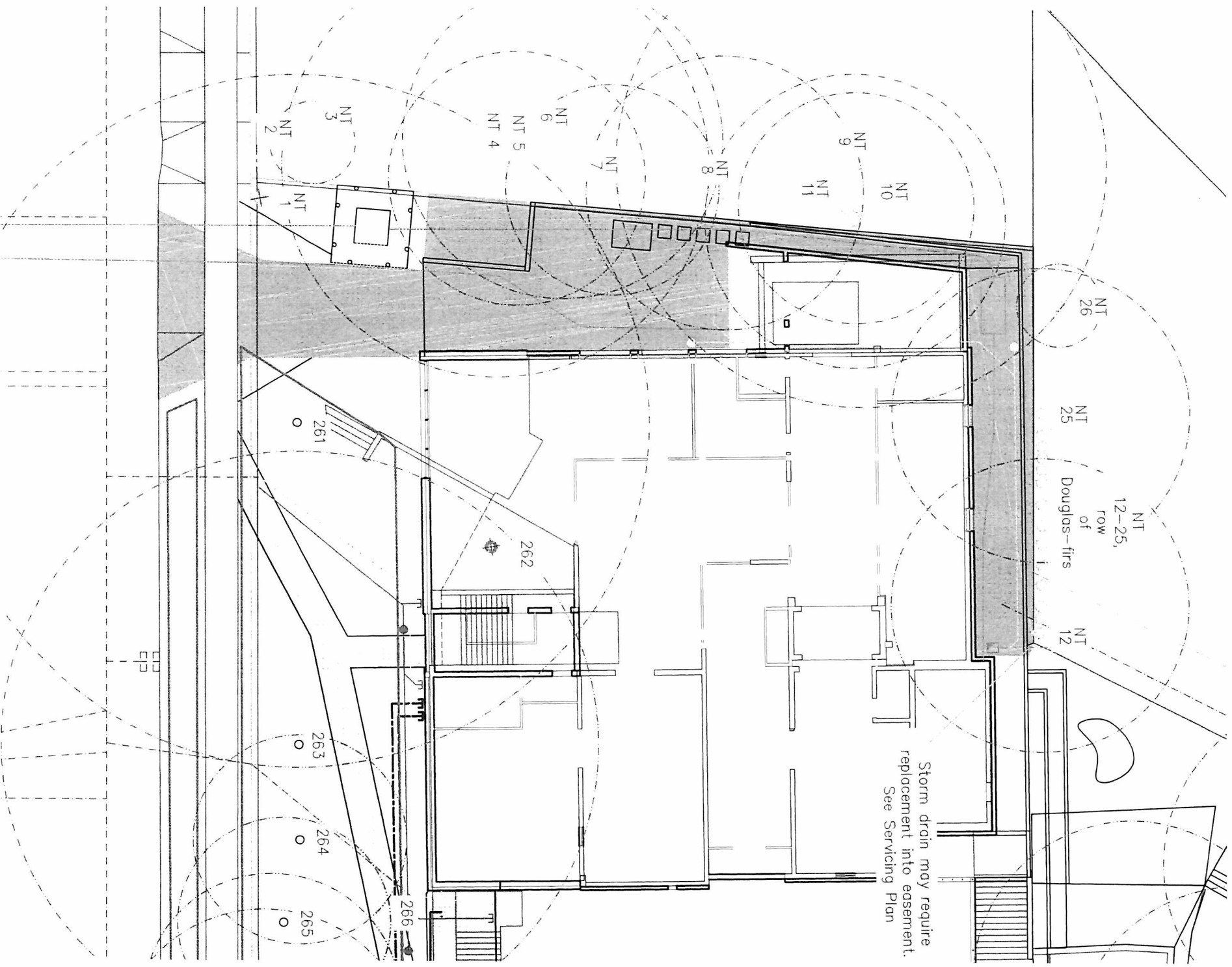
Revised November 2,
2019 to show #274 and
NT 4, 5, 7, 8 and NT
4 as possible removals
and #10 as a new one

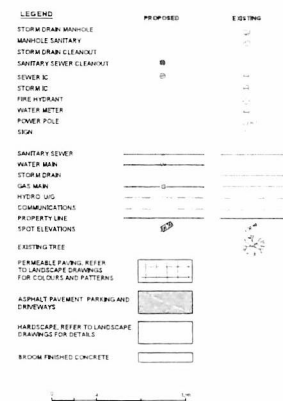


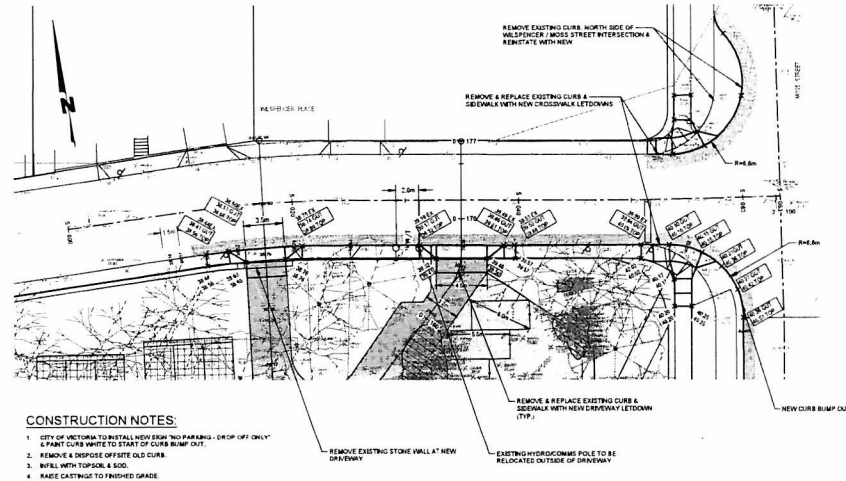
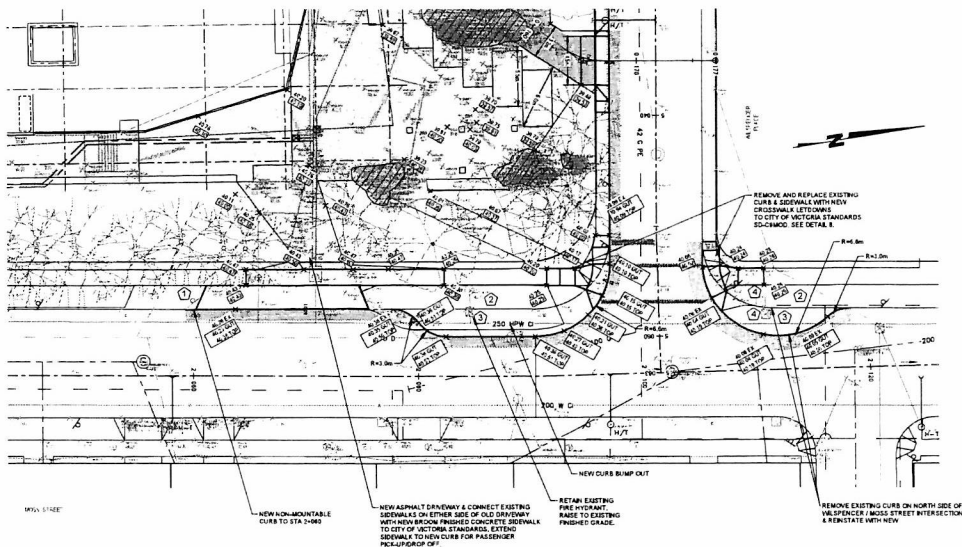
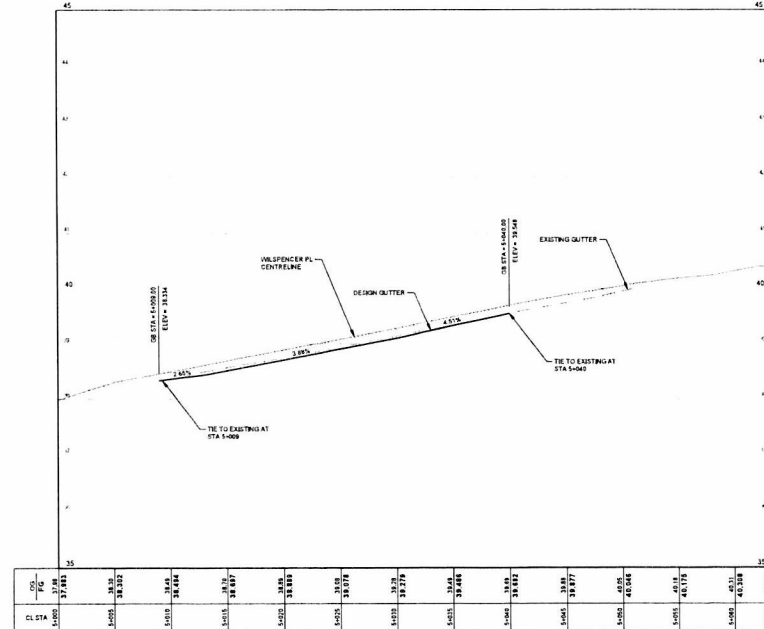
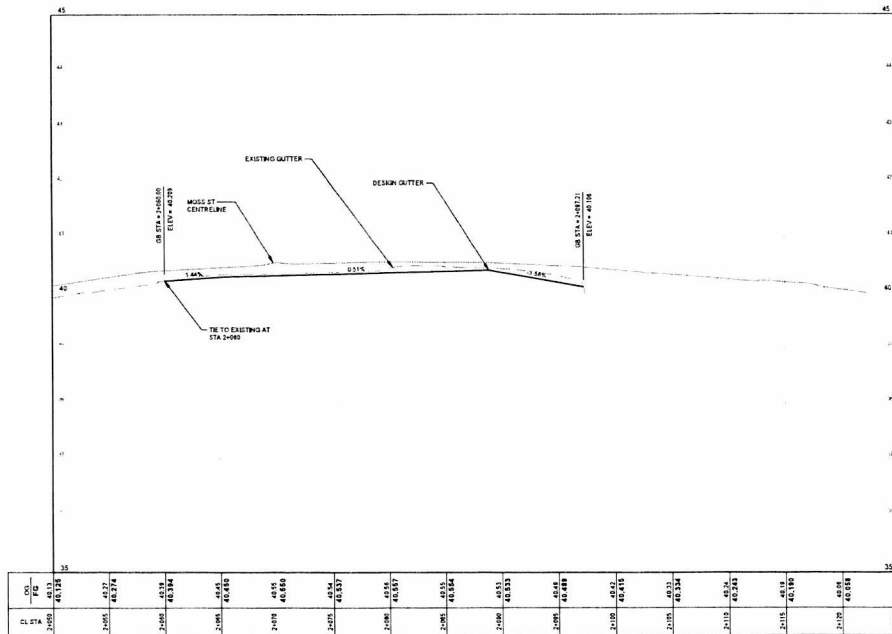












CONSTRUCTION NOTES:

1. CITY OF VICTORIA TO INSTALL NEW DESIGN "NO PARKING - DROP OFF ONLY" & PART CURB IMPROVEMENT TO START OF CURB BUMP OUT.
2. REMOVE & DISPOSE OFF SITE OLD CURB.
3. BUILT WITH TOPSOIL & SOIL.
4. RARE CASTINGS TO FINISHED GRADE.

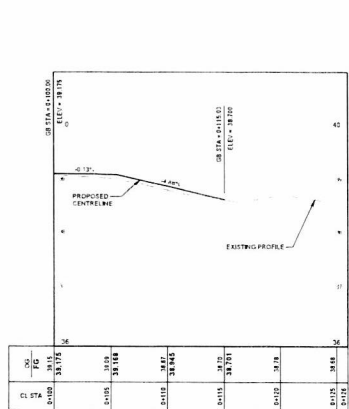
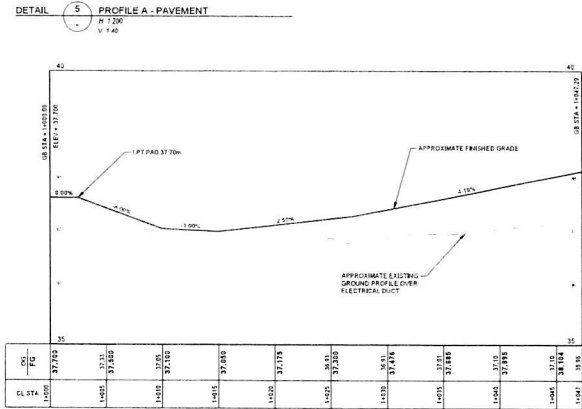
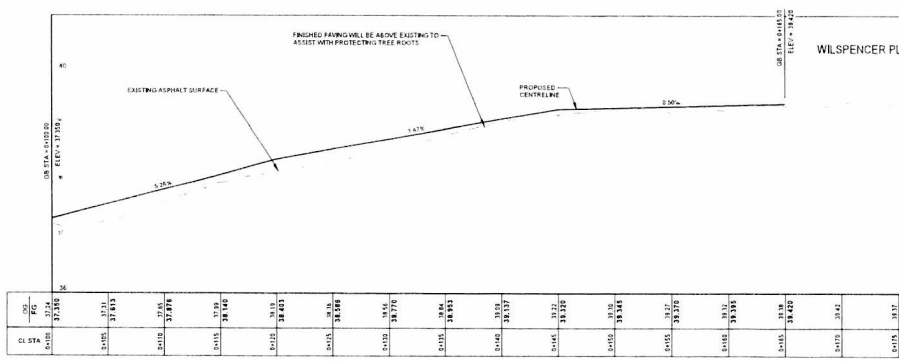
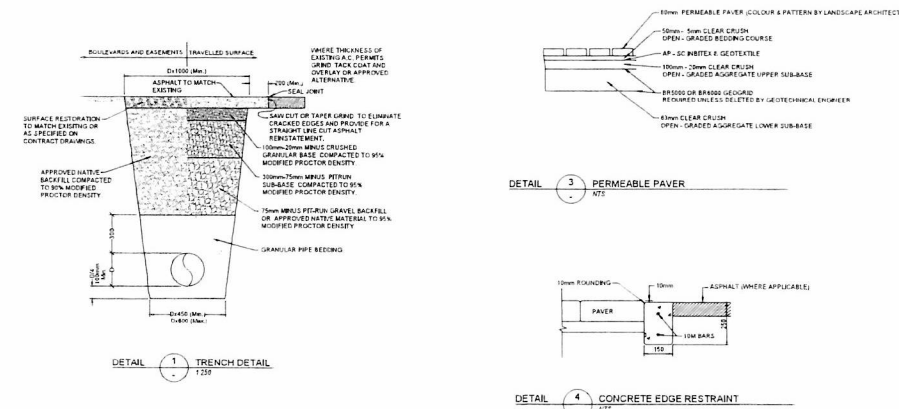
REMOVE EXISTING STONE WALL AT NEW DRIVEWAY

REMOVE & REPLACE EXISTING CURB & SIDEWALK WITH NEW DRIVEWAY LETDOWN (TYP.)

EXISTING HYDROCOMMS POLE TO BE RELOCATED OUTSIDE OF DRIVEWAY

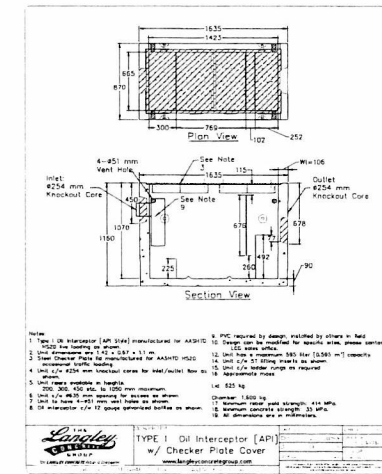
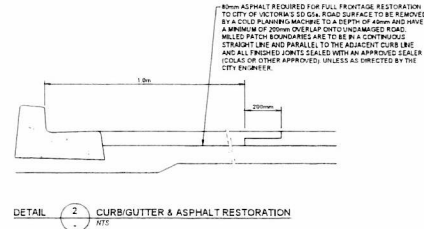
NEW CURB BUMP OUT

NO.	DESCRIPTION	DATE
1	DEVELOPMENT FRAME APPLICATION #2	16.04.2019
2	DEVELOPMENT FRAME APPLICATION #1	16.04.2019
3	DESIGN FRAME APPLICATION #1	16.04.2019
4	DESIGN FRAME APPLICATION #2	16.04.2019
5	DESIGN FRAME APPLICATION #3	16.04.2019
6	DESIGN FRAME APPLICATION #4	16.04.2019
7	DESIGN FRAME APPLICATION #5	16.04.2019
8	DESIGN FRAME APPLICATION #6	16.04.2019
9	DESIGN FRAME APPLICATION #7	16.04.2019
10	DESIGN FRAME APPLICATION #8	16.04.2019
11	DESIGN FRAME APPLICATION #9	16.04.2019
12	DESIGN FRAME APPLICATION #10	16.04.2019
13	DESIGN FRAME APPLICATION #11	16.04.2019
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15	DESIGN FRAME APPLICATION #13	16.04.2019
16	DESIGN FRAME APPLICATION #14	16.04.2019
17	DESIGN FRAME APPLICATION #15	16.04.2019
18	DESIGN FRAME APPLICATION #16	16.04.2019
19	DESIGN FRAME APPLICATION #17	16.04.2019
20	DESIGN FRAME APPLICATION #18	16.04.2019
21	DESIGN FRAME APPLICATION #19	16.04.2019
22	DESIGN FRAME APPLICATION #20	16.04.2019
23	DESIGN FRAME APPLICATION #21	16.04.2019
24	DESIGN FRAME APPLICATION #22	16.04.2019
25	DESIGN FRAME APPLICATION #23	16.04.2019
26	DESIGN FRAME APPLICATION #24	16.04.2019
27	DESIGN FRAME APPLICATION #25	16.04.2019
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29	DESIGN FRAME APPLICATION #27	16.04.2019
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39	DESIGN FRAME APPLICATION #37	16.04.2019
40	DESIGN FRAME APPLICATION #38	16.04.2019
41	DESIGN FRAME APPLICATION #39	16.04.2019
42	DESIGN FRAME APPLICATION #40	16.04.2019
43	DESIGN FRAME APPLICATION #41	16.04.2019
44	DESIGN FRAME APPLICATION #42	16.04.2019
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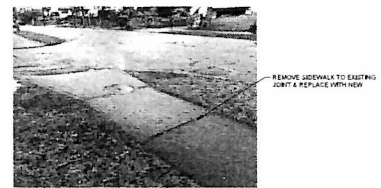


DETAIL 6 PROFILE - ELECTRICAL DUCT
H 1:200
V 1:40

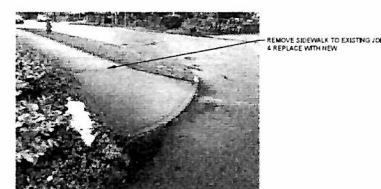
DETAIL 7 PROFILE B - PAVEMENT
H 1:200
V 1:40



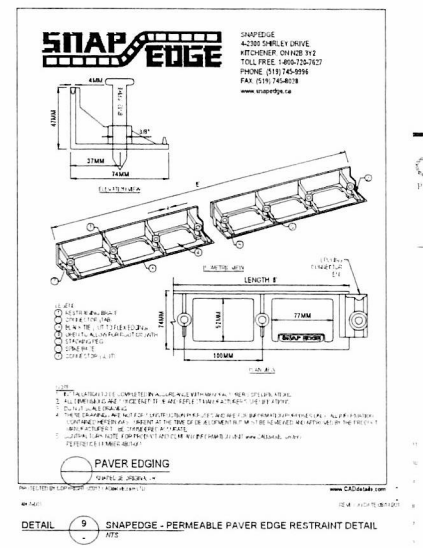
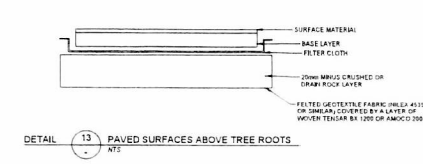
DETAIL 12 LANGLEY - TYPE 1 OIL INTERCEPTOR DETAIL
H 1:200
V 1:40



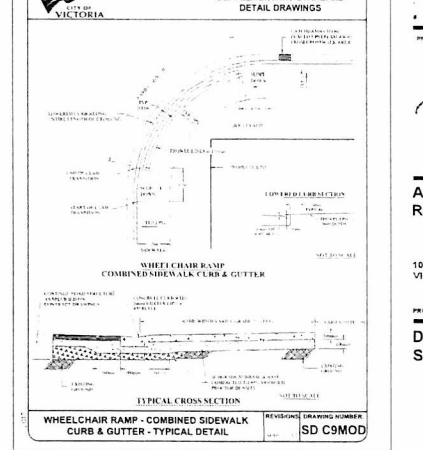
DETAIL 10 MOSS ST. - SOUTH SIDEWALK REMOVAL
H 1:200
V 1:40



DETAIL 11 MOSS ST. - NORTH SIDEWALK REMOVAL
H 1:200
V 1:40



DETAIL 9 SNAPEDGE - PERMEABLE PAVER EDGE RESTRAINT DETAIL
H 1:200
V 1:40



DETAIL 8 CITY OF VICTORIA - WHEELCHAIR RAMP DETAIL
H 1:200
V 1:40

HCMA

ONPOINT
PROJECT ENGINEERS LTD.

NO.	DESCRIPTION	DATE
1	REVISION	2015-11-20
2	REVISION	2015-11-20
3	REVISION	2015-11-20
4	REVISION	2015-11-20
5	REVISION	2015-11-20
6	REVISION	2015-11-20
7	REVISION	2015-11-20
8	REVISION	2015-11-20
9	REVISION	2015-11-20
10	REVISION	2015-11-20
11	REVISION	2015-11-20
12	REVISION	2015-11-20
13	REVISION	2015-11-20
14	REVISION	2015-11-20
15	REVISION	2015-11-20
16	REVISION	2015-11-20
17	REVISION	2015-11-20
18	REVISION	2015-11-20
19	REVISION	2015-11-20
20	REVISION	2015-11-20

19
2015-11-20

AGGV RENEWAL

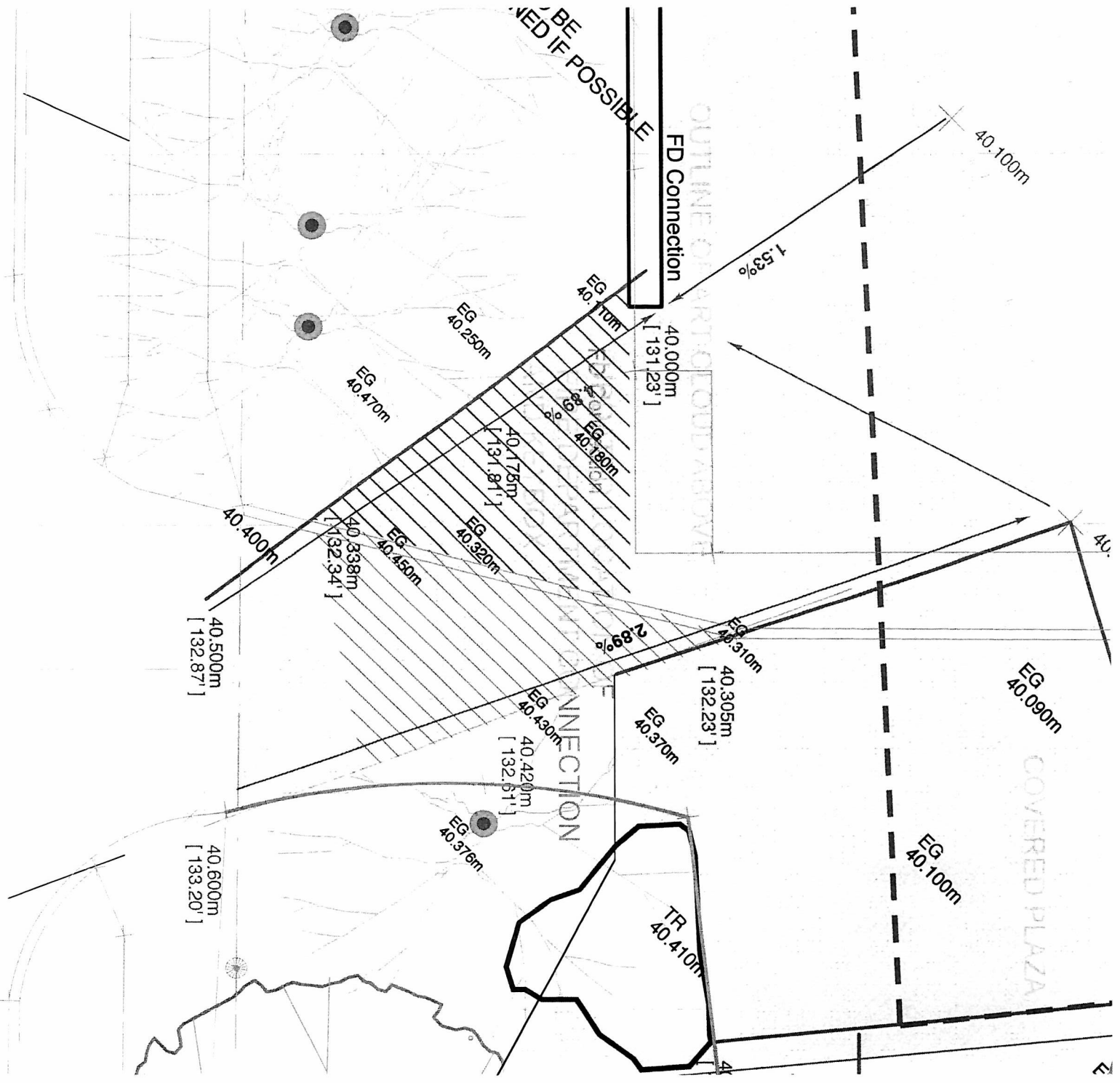
1040 MOSS ST.
VICTORIA, BC, V8V4P1

PROJECT # 1054
DETAILS AND SECTIONS

C301

SCALE: 1:250

DROP OFF & FIRE ACCESS



PROJECT INFORMATION

CIVIC ADDRESS - 1040 Moss St. Victoria, BC
CLIENT - Art Gallery of Greater Victoria
LANDSCAPE CONSULTANT - Durande Kreuk Ltd. Contact: Dylan Chernoff

DRAWING LIST

L01.1 OVERALL LANDSCAPE PLAN
L01.2 ENLARGED LANDSCAPE PLAN
L01.3 ENLARGED LANDSCAPE PLAN
L01.4 ENLARGED LANDSCAPE PLAN
L02.1 LANDSCAPE DETAILS
L02.2 LANDSCAPE DETAILS

TREE PROTECTION NOTES

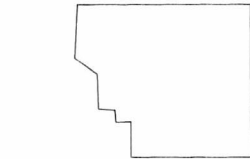
- Existing trees to remain, where possible and be protected during construction.
- Any tree removals are to be compensated with the planting of Garry Oak trees.
- Refer to Arborist report for detailed tree information, tree protection details, root zone build up and all associated notes.

LANDSCAPE NOTES

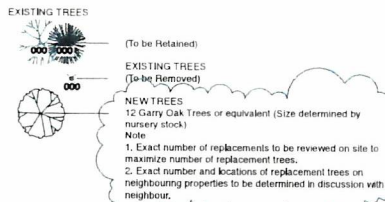
- Refer to Architectural and Survey plans of site dimensions.
- Refer to Survey and Civil Drawings for utility information.
- All work shall meet or exceed the requirements as outlined in the Current Edition of the Canadian Landscape Standards.
- Plant sizes and related container classes are specified according to the current edition of the B.C. Landscape Standard. For container classes #3 and smaller, plant sizes shall be as shown in the plant list and the Standard; for all other plants, both plant size and container class shall be as shown in the plant list. Specifically, when the plant list calls for #5 class containers, these shall be as defined in the BCNTA (ANSI) Standard.
- All "Soft Landscape Areas" are to be irrigated with a high efficiency design build irrigation system to IABC Standards, c/w rain sensor.
- All trees to be staked in accordance with BCNTA Standards.

LEGEND

[Symbol]	GARRY OAK MEADOW
[Symbol]	PLANTING - West coast vegetation
[Symbol]	PERMEABLE PAVING
[Symbol]	GIP CONCRETE PAVING
[Symbol]	ASPHALT
[Symbol]	GRAVEL
[Symbol]	ILLUMINATED GALVANIZED STEEL ANGLE



TREE LEGEND



DEVELOPMENT PERMIT R2

1. Tree N11, N114, N115, N17, N18, N19, N21, N22, N23, N24, N25, N26, N27, N28, N29, N30, N31, N32, N33, N34, N35, N36, N37, N38, N39, N40, N41, N42, N43, N44, N45, N46, N47, N48, N49, N50, N51, N52, N53, N54, N55, N56, N57, N58, N59, N60, N61, N62, N63, N64, N65, N66, N67, N68, N69, N70, N71, N72, N73, N74, N75, N76, N77, N78, N79, N80, N81, N82, N83, N84, N85, N86, N87, N88, N89, N90, N91, N92, N93, N94, N95, N96, N97, N98, N99, N100, N101, N102, N103, N104, N105, N106, N107, N108, N109, N110, N111, N112, N113, N114, N115, N116, N117, N118, N119, N120, N121, N122, N123, N124, N125, N126, N127, N128, N129, N130, N131, N132, N133, N134, N135, N136, N137, N138, N139, N140, N141, N142, N143, N144, N145, N146, N147, N148, N149, N150, N151, N152, N153, N154, N155, N156, N157, N158, N159, N160, N161, N162, N163, N164, N165, N166, N167, N168, N169, N170, N171, N172, N173, N174, N175, N176, N177, N178, N179, N180, N181, N182, N183, N184, N185, N186, N187, N188, N189, N190, N191, N192, N193, 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30	DEVELOPMENT PERMIT APPLICATION R1	07/12/2019
29	DEVELOPMENT PERMIT APPLICATION	06/10/2019

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AGGV
RENEWAL

1040 MOSS ST.
VICTORIA, BC. V8V4P1

PROJECT A 1054

PROPOSED SITE PLAN

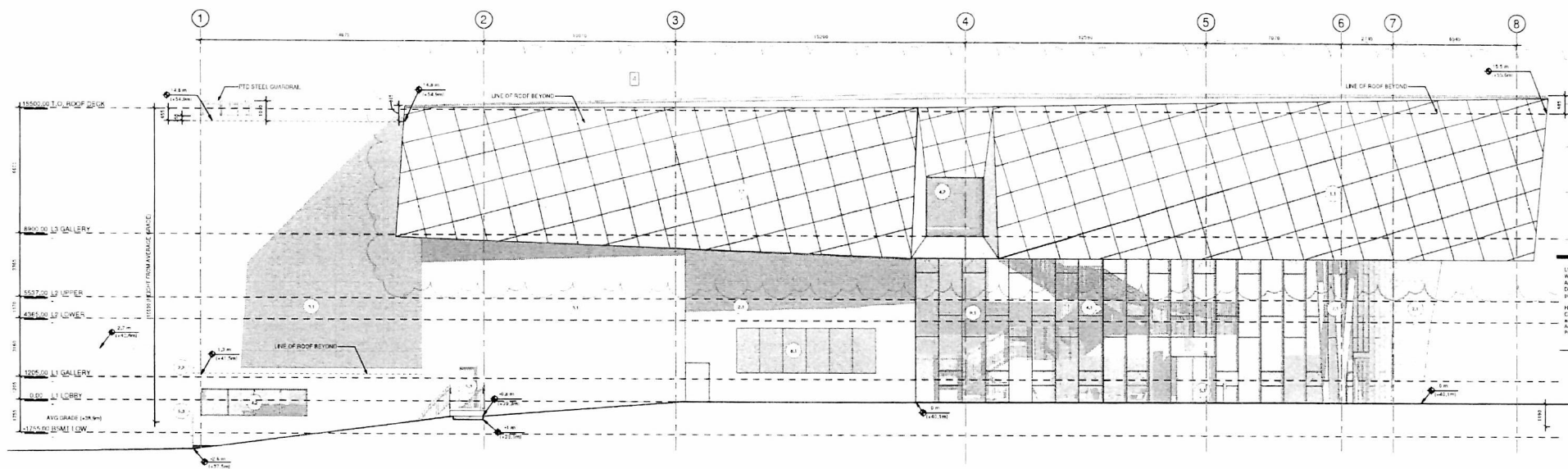


A-102

SCALE: As indicated

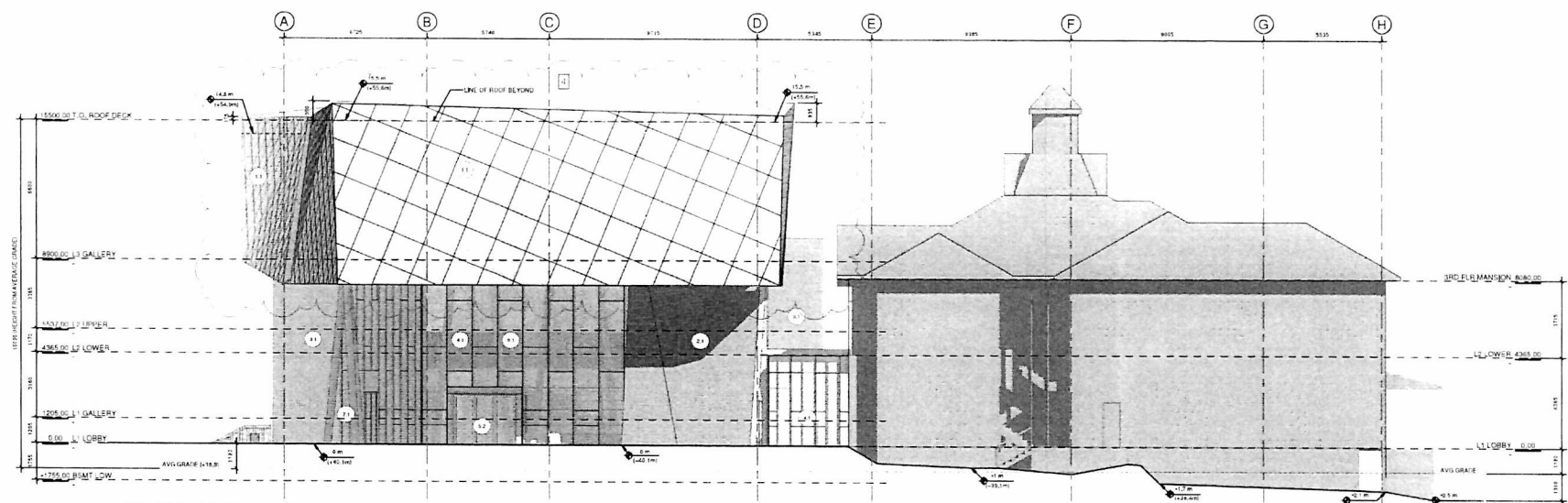
LIVRAC Architect and Planner
Wilson Architects Inc., Associate
Architect for the Schematic
Design and Design Development
phases of the project

HCM Architecture + Design
Contract Documents, Building
and Requirements, and Contract
Administration phases of the
Project



① EAST ELEVATION
1:100

MATERIALS LEGEND		
1.1 FACETED ALUMINUM COMPOSITE PANEL - BRUSHED FINISH	4.2 DOUBLE-GLAZED WINDOWS IN BRONZE ANODIZED ALUMINUM MULLIONS	6.2 GLASS GUARD
2.1 CAST-IN-PLACE CONCRETE - BOARD FORMED	5.1 GLAZED SWING DOORS	7.1 PAINTED STEEL COLLARS
2.2 CAST-IN-PLACE CONCRETE - SACK FINISH	5.2 FEATURE GLAZED BRUSHING DOORS INTERIOR EXTENSION INTO OUTDOOR PLAZA	8.1 AREA RESERVED FOR ARTWORK
3.1 FIBER CONCRETE PANEL - TEXTURED FINISH	5.3 PAINTED METAL DOOR	9.1 "HALOCK-KLAC" FEATURE STAR-BEAM CURTAIN WALL
4.1 DOUBLE-GLAZED STRUCTURAL BRONZE CURTAIN WALL IN BRONZE ANODIZED ALUMINUM MULLIONS & OPERABLE VENTS	6.1 GLASS CANOPY	10.1 EXISTING MASONRY



② NORTH ELEVATION
1:100

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AGGV
RENEWAL

1040 MOSS ST.
VICTORIA, BC V8V4P1

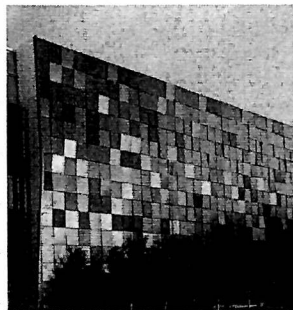
PROJECT # 1054

BUILDING
ELEVATIONS

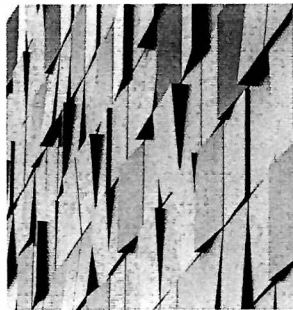


// ALUMINUM COMPOSITE PANEL
NATURAL BRUSHED FINISH

1.1

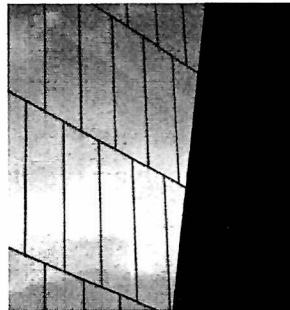


// COLOUR AND ABSTRACTED REFLECTION OF
SURROUNDING CONTEXT



// LIGHT AND SHADOW WITHIN PANELED FACETED
VOLUME

2

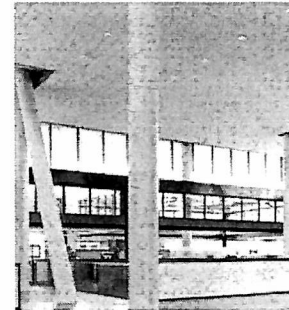


// DOUBLE-GLAZED CURTAIN WALL AND WINDOWS
STRUCTURAL SILICONE / DARK BRONZE MULLIONS

4.1 / 4.2

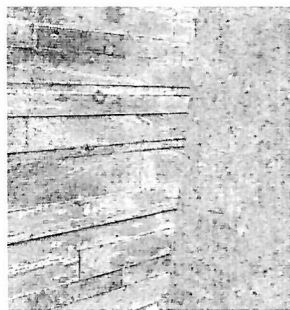


// INTERIOR ACTIVITY ILLUMINATED FOR CONNECTION TO
NEIGHBOURHOOD AND STREETSCAPE



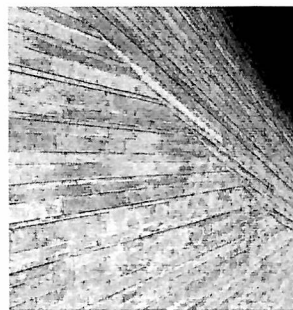
// PAINTED INTERIOR AND EXTERIOR STEEL COLUMNS
TILTED TO REFERENCE GARRY OAK TREE TRUNKS

7.1



// CAST-IN-PLACE CONCRETE
BOARD-FORMED / SACK FINISH

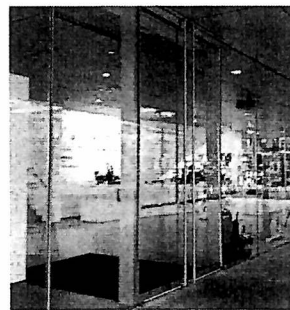
2.1 / 2.2



// NATURAL VARIANCE IN TEXTURE AND TACTILITY

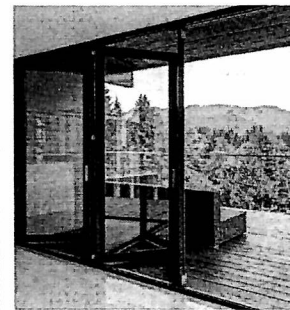


// ENHANCING SCULPTURAL FORM AT PUBLIC FACE



// GLAZED SWING DOOR ENTRANCES FOR
PRIMARY ACCESS

5.1 / 5.2

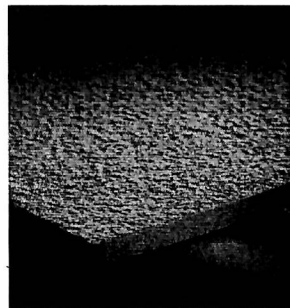


// FEATURE GLAZED BIFOLDING / SLIDING DOORS TO
EXTEND INTERIOR INTO OUTDOOR PLAZA



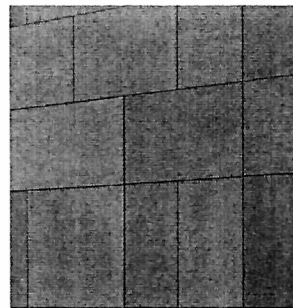
// EXTERIOR ARTWORK PANELS
NEW EXTREME ART PROGRAM AT THE AGGV

8.1

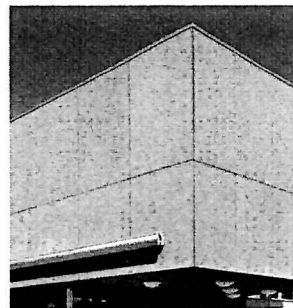


// FIBER CEMENT PANEL,
TEXTURED FINISH

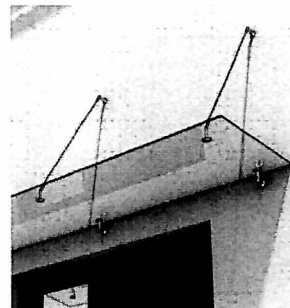
3.1



// RAW STONE-LIKE TEXTURE WITH PATTERN AND TONAL
VARIATIONS IN EACH PANEL



// CLEAN LINES AND QUIET PATTERN AS
BACKDROP TO ACTIVITY



// GLASS DETAILING - GLASS CANOPY

6.1 / 6.2



// GLASS DETAILING - GLASS GUARDRAIL



// HEMLOCK-CLAD FEATURE STAIR
BEHIND CURTAIN WALL

9.1

HCM

LYRIC Architect and Nicole Wilson Architects Inc., Associate Architects for the Schematic Design and Design Development phases of the project.

HCM Architecture + Design Contract Documents, Building and Negotiations, and Construction Administration phases of the Project.

DEVELOPMENT	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019
DESIGN	11.27.2019

FIG. 3 - COVER TILES

AGGV
RENEWAL

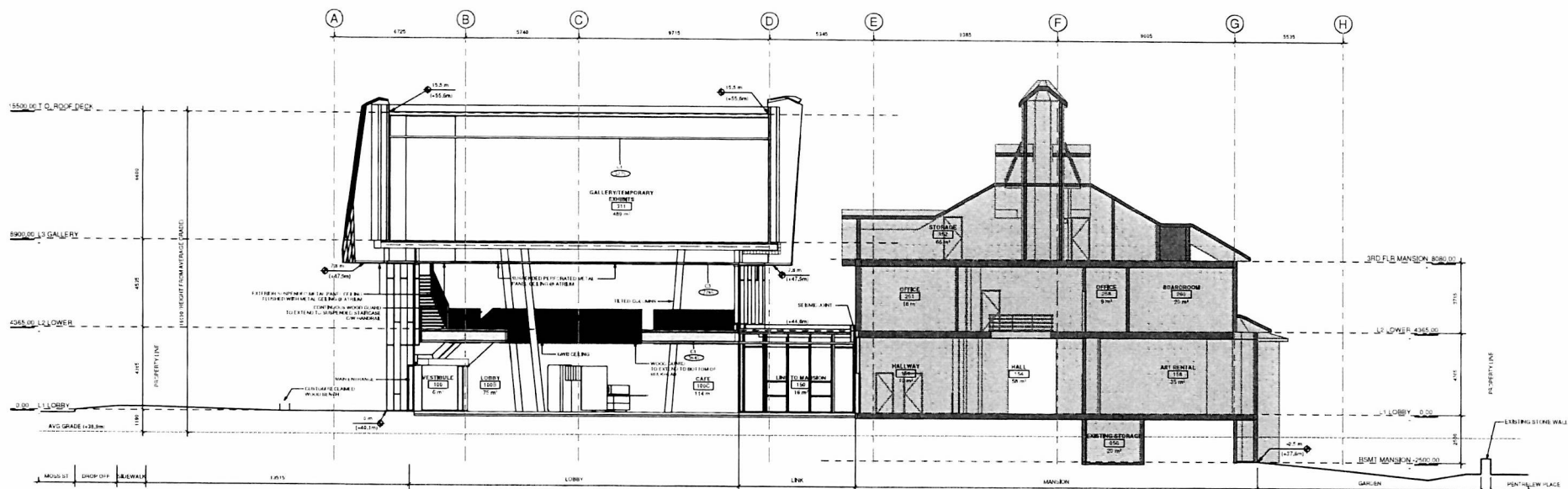
1040 MOSS ST.
VICTORIA, BC V8V4P1

PROJECT # 1004

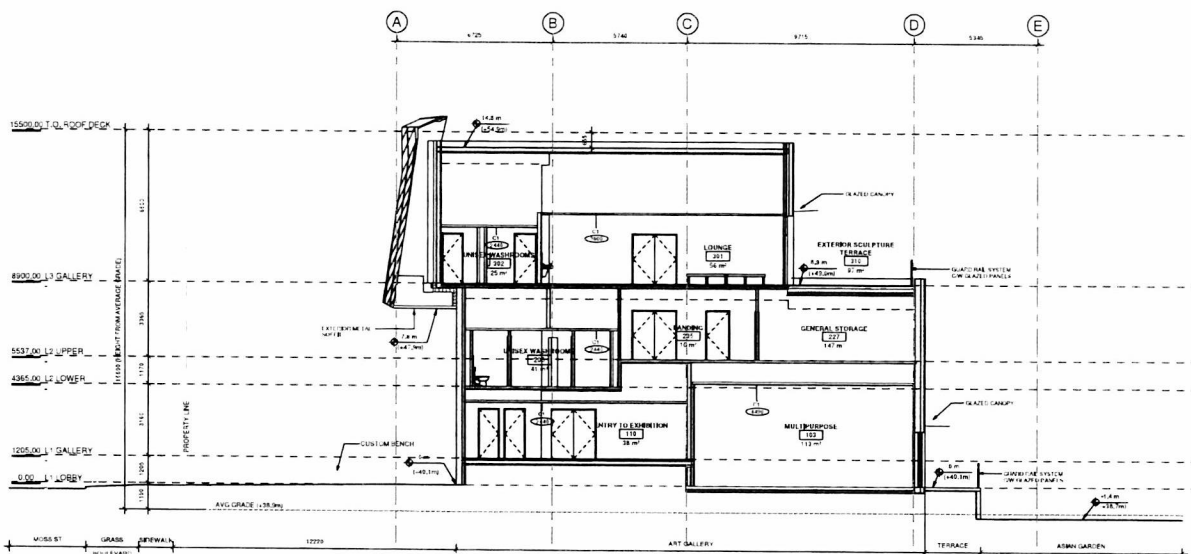
MATERIAL
BOARD

A-303

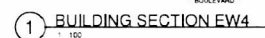
SCALE:



2 BUILDING SECTION EW1
1:100



1 BUILDING SECTION EW2
1:100



#	DESCRIPTION	DATE
32	DEVELOPMENT PERMIT APPLICATION R2	11.21.2011
36	DEVELOPMENT PERMIT APPLICATION R1	07.12.2011
29	DEVELOPMENT PERMIT APPLICATION	06.10.2011

AGGV
RENEWAL

1040 MOSS ST.
VICTORIA, BC, V8V4P1

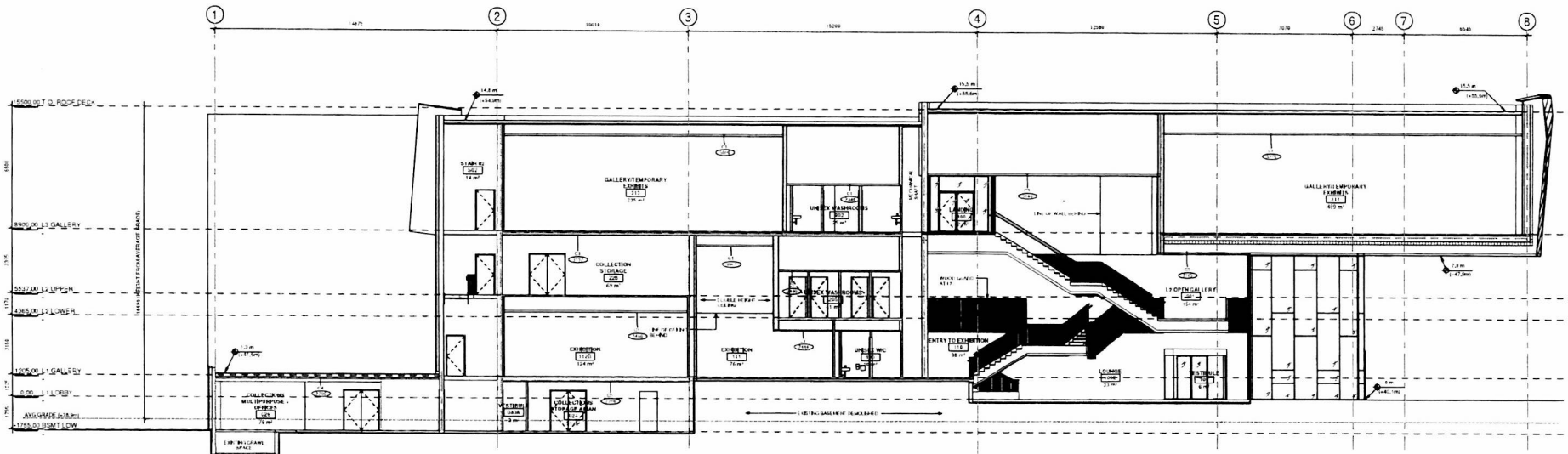
PROJECT #: 1054

BUILDING SECTIONS

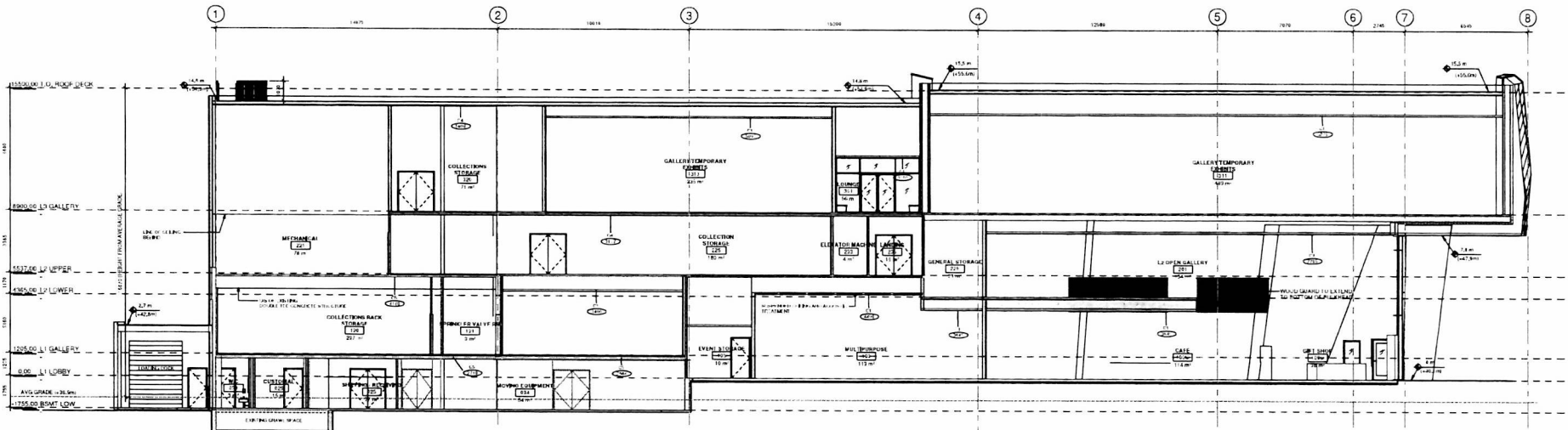
A-312

SCALE: 1 : 100

LVPAC Architect and Master Vision Architects Inc., Associate Architects for the Subsequent Design and Design Development phases of the project.
HCM Architects + Design Contract Documents, Building and Negotiations, and Contract Administration phases of the Project.



BUILDING LONGITUDINAL SECTION NS1
1:100



BUILDING LONGITUDINAL SECTION NS2
1:100

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DEVELOPMENT	DATE
12 PERMIT APPLICATION B0	11/11/2019
13 PERMIT APPLICATION B1	11/11/2019
14 PERMIT APPLICATION B2	11/11/2019
15 PERMIT APPLICATION B3	11/11/2019
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112 PERMIT APPLICATION B100	11/11/2019

AGGV RENEWAL

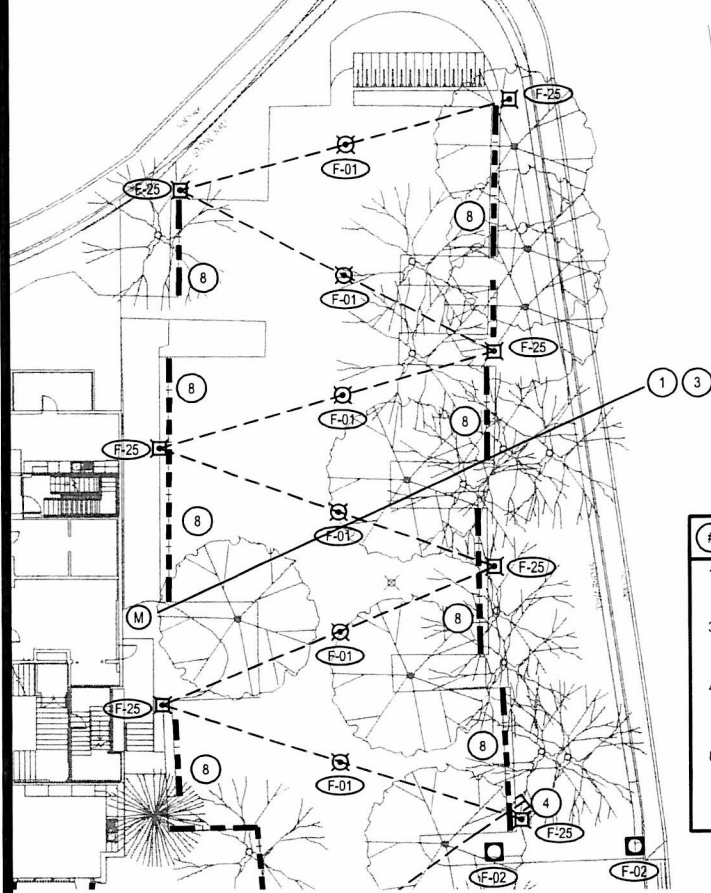
1040 MOSS ST, VICTORIA, BC V8V4P1

PROJECT # 1554

BUILDING SECTIONS

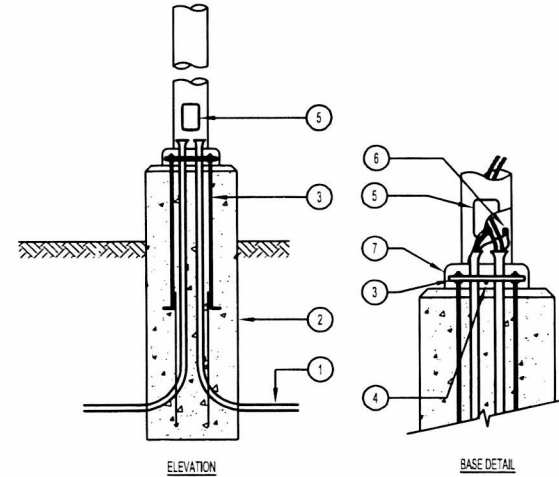
A-313

SCALE: 1:100



#	KEYNOTES
1	EXISTING UTILITY POLE TO REMAIN.
3	REMOVE EXISTING OVERHEAD ELECTRICAL SERVICE AFTER NEW SERVICE HAS BEEN ENERGIZED. CONFIRM EXACT LOCATION ON OF SERVICE ON SITE.
4	PROVIDE 53MM CONDUIT FOR FUTURE VEHICLE CHARGING STATION. CAP OFF CONDUIT.
8	PROVIDE GALVANIZED STEEL CHANNEL WITH INTEGRAL LIGHTING (RJCROSS SL3 SERIES LED WITH SLC-007S CHANNEL. REFER TO LANDSCAPE DRAWINGS FOR EXACT QUANTITY AND LOCATIONS.

1 PARTIAL ELECTRICAL SITE PLAN
ESK-E01 SCALE: 1:250



KEY NOTES:

- 1 TYPICAL LIGHTING CIRCUIT CONDUIT, MIN. 600mm BELOW GRADE
- 2 CONCRETE FOUNDATION, VERIFY EXACT LOCATION WITH ARCHITECT
- 3 TYP. ANCHOR ROD C/W LEVELING SHIMS, NUTS AND LOCK WASHERS
- 4 DRAINAGE HOLE
- 5 HANDHOLE
- 6 GROUND LUG IN POLE, CONNECT ALL GRD. CONDUCTORS
- 7 POLE BASE COVER

2 CATENARY LIGHTING BASE DETAIL
ESK-E01 NTS

REVS

NO.	DESCRIPTION	DATE	BY	APP.
A	ISSUED FOR INTERNAL COORDINATION	2019.02.25	AK/NP	
NO.	DESCRIPTION	YYYY-MM-DD	BY	APP.

VICTORIA OFFICE
202 - 31 Bastion Square
Victoria, BC V8W 1J1

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THIS DRAWING IS NOT TO BE SCALED.

WILLIAMS
ENGINEERING
CANADA



JOB TITLE:

AGGV RENOVATION

DWG TITLE:

CATENARY LIGHTING
PARTIAL SITE PLAN
AND POST DETAIL

DWN BY:

DES BY:

PROJ MGR:

CC

PEER REVIEW:

DATE: (YY-MM-DD)

SCALE:

19-02-25

AS SHOWN

CLIENT PROJ #

C_NO

WE PROJ #

31677.00

DWG #

ESK-E01

REV #

REV #



Talbot Mackenzie & Associates

Consulting Arborists

March 16, 2015

Art Gallery of Greater Victoria
% CitySpaces Consulting Ltd.
844 Courtney Street, 5th Floor
Victoria BC V8W 1C4

Re: Three Garry oak Trees – Art Gallery of Greater Victoria Property

Assignment: Visually examine three Garry oak trees located around the Art Gallery of Greater Victoria property, and for the purpose of detecting internal cavities and or decay, take resistograph readings from the lower trunk and at the root collar of tree #0295 and 0299.

Findings and recommendations:

56 cm dbh Garry oak # 0279

This tree appears to be relatively healthy with average shoot elongation and bud development for the age and species. A rock outcrop on the west side of the tree is restricting the root growth on the backside of the trunk lean, and the underside of the root collar is exposed at the edge of this rock. Based on a visual examination and the present form of the tree, it appears that it has partially uprooted in the past, and due to the limited rooting environment on the west side, the root system is not able to support the current size of the tree sufficiently. Although the only way to eliminate the risk associated with the tree would be to remove it entirely, the tree is in relatively good health and has a form that could, in our opinion, be reduced to address the structural weakness that appears to be present in the root system. If you choose to retain this tree, we recommend that it be reduced by approximately 25%, and be pruned to clean the crown of any dead, diseased or weak limbs, and pruned to reduce weight on any limbs showing indications of excessive end weight. We are available to meet and discuss the pruning with your pruning contractor, if you wish.

57 cm dbh Garry oak # 0295

This tree appears to be relatively healthy with indications of sparse foliage and reduced shoot elongation and bud development for the age and species. The trunk is located between two parking stalls and has some mechanical injuries as a result of being struck by vehicles. The canopy has an asymmetric form as a result of historical pruning and some decay visible within the pruning wounds. At the time of our initial site visit, we documented a fruiting body of a wood decay pathogen attached to a pruning wound on the main trunk. Resistograph readings taken from the lower trunk and into the root crown encountered localised drops in resistance.

In our opinion, due to the existing health and structural characteristics of the tree and its location in a high target area where considerable injury or damage could occur, should the tree fail, we recommend that it be removed to eliminate all risk associated with the tree.

41/63cm dbh Garry oak # 0299

This tree appears to be relatively healthy with average foliage colour, size and density for the age and species. The trunk splits into co-dominant stems with no visible signs of included bark or weakness at the stem union. The trunk is located between two parking stalls and has some mechanical injuries as a result of being struck by vehicles. Resistograph readings taken to determine the extent of decay associated with a small basal cavity and another small trunk cavity detected localised drops in resistance, indicating that they are localized at this time and do not appear to be associated with any fungal wood decay pathogens. We recommend that this tree be pruned to clean the crown of any dead, diseased or weak limbs and be pruned to reduce weight on any limbs showing indications of excessive end weight.

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

Yours truly,
Talbot Mackenzie & Associates



Graham Mackenzie & Tom Talbot
ISA Certified, & Consulting Arborists

Enclosure: Picture Page

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.



Garry oak #0279



Garry oak #0295



Garry oak #0299

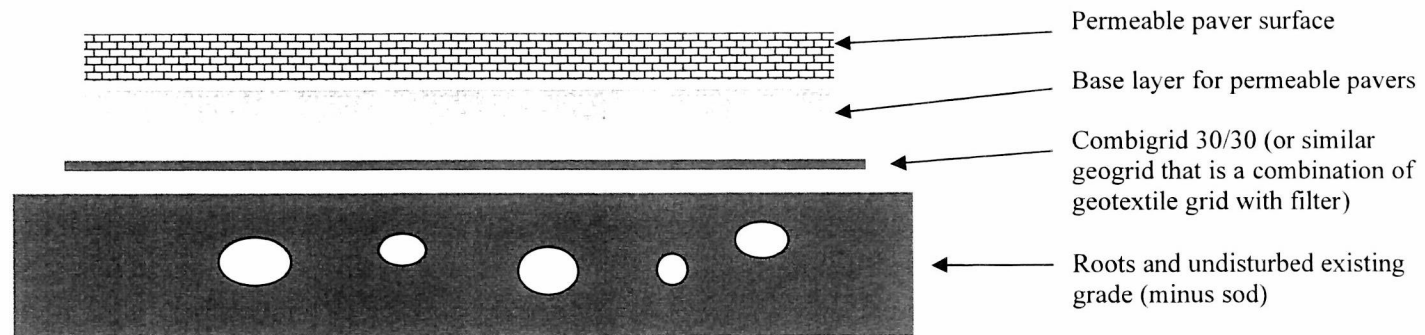


Garry oak #0299 – lower trunk cavity

Talbot Mackenzie & Associates

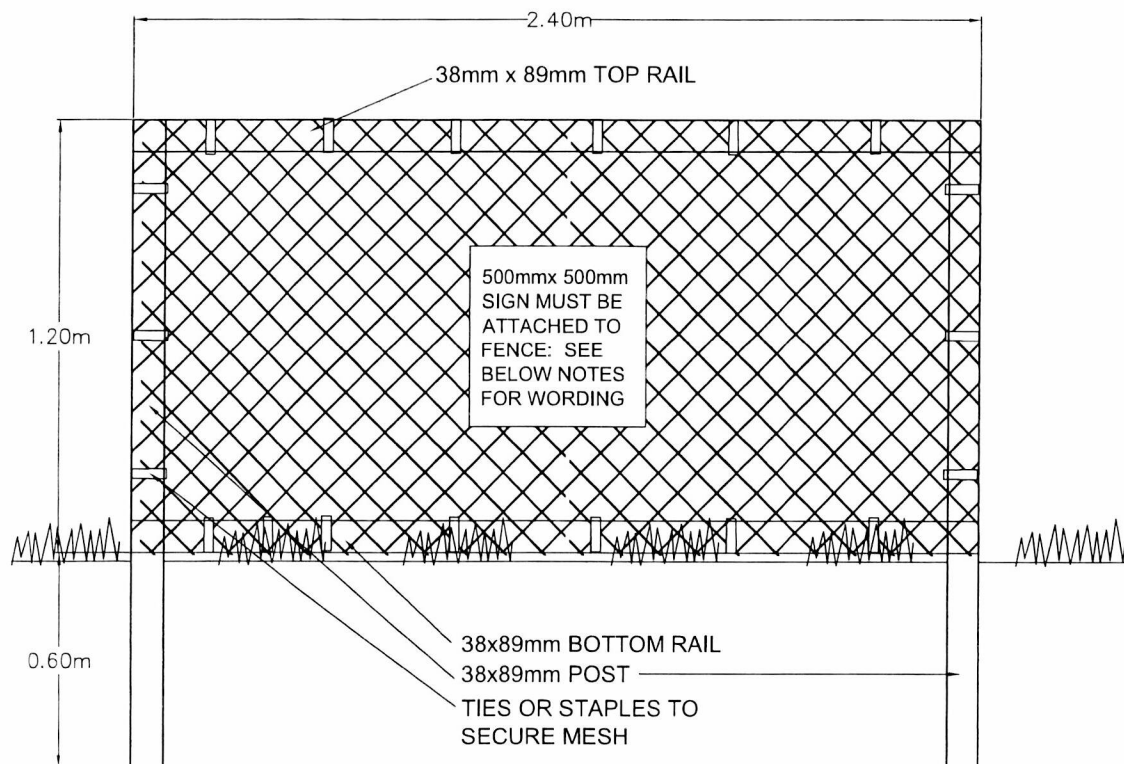
Consulting Arborists

Diagram – Permeable paver surface crossing over Critical Root Zone



Specification #1 for Paved Surfaces Over Critical Root Zones (driveway, parking or walkway areas)

1. Minimal excavation to remove turf, plant material and/or loose soil for the required permeable surface, under the supervision of the project arborist. Excavation to be stopped prior to any significant root loss.
2. A layer of Combigrd 30/30 geotextile is to be installed over the area where the paved surface overlaps with the critical root zone.
3. Construct base layer of well-draining material and permeable surface over geogrid layer to required grade.



TREE PROTECTION FENCING

1. FENCE WILL BE CONSTRUCTED USING 38 mm X 89mm WOOD FRAME: TOP, BOTTOM AND POSTS * USE ORANGE SNOW-FENCING MESH AND SECURE THE WOOD FRAME WITH "ZIP" TIES OR GALVANIZED STAPLES.
 2. ATTACH A 500mm X 500mm SIGN WITH THE FOLLOWING WORDING: WARNING- TREE PROTECTION AREA. THIS SIGN MUST BE AFFIXED ON EVERY FENCE OR AT LEAST EVERY 10 LINEAR METERS.
- * IN ROCKY AREAS, METAL POSTS (T-BAR OR REBAR) DRILLED INTO ROCK WILL BE ACCEPTED



Talbot Mackenzie & Associates

Consulting Arborists

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Tree Resource Spreadsheet Methodology and Definitions

Revised July 24, 2019

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 generally not tagged ("NT #").

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.

~ 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

This method is solely a mathematical calculation that does not consider factors such as restricted root growth, limited soil volumes, age, crown spread, health, or structure (such as a lean). To calculate the critical root zone of trees with multiple stems below 1.4m, the diameter is considered the sum of 100% of the diameter of the largest stem and 60% of the diameter of the next two largest stems. This however can result in multi-stem trees having exaggerated CRZs. Where noted, sometimes the CRZ for trees with multiple stems will be calculated using the diameter of the trunk below the unions.

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:

- Removal (or “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