TREE Permit: Tree Assessment & Preservation Plan (TAPP) Requirements

A TREE Permit is required prior to Residential Grading and Servicing (RGS) approval. Conditions of a Tree Permit are to be in place before construction begins when tied to a Housing Permit (HP), Demolition Permit (DP), Alterations (AL) or Pool Enclosure Permit (PE). The following information is required by the City of Markham in order to provide applicants with the Tree Permit necessary for RGS approval. HP, DP, AL, or PE applications can proceed with review but require confirmation of tree preservation in advance of construction. ePlan submissions are now required for RGS applications: https://www.markham.ca/wps/portal/home/business/building-permits/eplan/public-search-and-sign-on

Purpose and overview of the Tree Permit Requirements:

- The root system of trees extend 2 to 3 times beyond the outermost edge of the canopy (dripline). Activities associated with construction cause root loss, soil compaction, and grade changes. Due to these construction related disturbances, most trees on urban residential properties are likely to sustain injury during development.

- All privately owned trees 20 cm DBH (diametre at breast height measured 1.37 meters up from the base of the tree) and greater must remain protected from all injury and or destruction by the by-law until a Tree Permit is issued. **The injury or destruction of a privately owned tree 20cm DBH or greater or a City tree of any size without a permit is a violation of the Tree Preservation By-law 2023-164 and is a chargeable offence**.

- The City of Markham will require the submission of a Tree Assessment and Preservation Plan (TAPP) in order to assess and mitigate the impact of the proposed development on the trees located on the subject property, neighbouring properties, parks or ravines, and road allowances.

- Tree Protection Zone (TPZ) barriers and any other injury mitigation infrastructure must be installed to the specifications outlined in the approved TAPP before a Tree Permit can be issued. For HP, DP, AL and PE Applications, barriers are required prior to work commencing.

- The TAPP must be prepared and signed by an Ontario Qualified Arborist, accredited by Skilled Trades Ontario, an International Society of Arboriculture (ISA) Certified Arborist, or a Registered Professional Forester (RPF).

- Once accepted by a City of Markham Tree Preservation Technician, complete copies of the TAPP (Arborist Report/Tree Assessment and Tree Preservation Plan) are to be distributed

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to the property owner and all Planners, Architects, Landscape Architects, Engineers, Contractors and or Sub-contractors involved in the project.

- **The following document provides the details needed to successfully satisfy conditions of a Tree Permit without delay. Please provide a copy of this to the Consulting Arborist.**

Please upload the TAPP to ePlan for RGS applications, or mail to the attention of the Tree Preservation Technician at City of Markham, 101 Town Centre Blvd, Markham, ON, L3R 9W3 or email it to treepreservationadmin@markham.ca

If you require further information on this or any tree by-law related matters, please do not hesitate to contact the Tree Preservation Technician.

1. Pre-construction Requirements

Before any site alteration (i.e. demolition, excavation or site preparation) the following **will** be required:

a. The submission of a TAPP, often called the Arborist Report and Tree Preservation/Protection Plan, to the Tree Preservation Technician. The TAPP must contain all the required information (outlined in Section 4) in order to be accepted for review.

b. Revisions to the TAPP and/or changes to the proposed development may be requested by the Tree Preservation Technician based on their review. These revisions or changes would be for the purpose of increasing the number of trees to be preserved, or improve tree injury mitigation throughout the construction process, or to fix discrepancies in the report or plan.

c. The TAPP and Lot Grading Plan (RGS)/Site Plan (HP, DP, AL, or PE) need to match specifications. The grading plan/site plan drawing must show the location for all tree protection barriers, as per the arborist report. The TPZ barrier for each tree is to be drawn to scale, with all distances from the tree trunk to the edge of the hoarding labelled in metres for each tree hoarding. This must correspond directly with the tree protection requirements set out in the TAPP. Tree numbers are also to be included on the site plan drawing as they correspond to the TAPP. By hand excavation and arborist supervision notes shall be indicated on the grading/site plan where identified in the TAPP.

d. The TPZ barrier and any other injury mitigation infrastructure must be installed (as per the approved TAPP) and inspected by a Tree Preservation Technician at the City of Markham prior to any demolition or construction activity. The purpose of the barrier is to

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prevent any construction related activities (including but not limited to storage of any kind), inside the defined TPZ throughout the entirety of the project.

e. Tree Permit signage is required on the subject property **prior to any demolition, construction activity, or tree removal at least 48 hours prior to tree removal**. The signage must be printed by the applicant on a 46cm X 61cm coroplast sheet and placed in a visible location from the street and protected from the elements. The signage must include the approved Tree Protection Plan, with tree removals, tree preservation, and TPZ barrier locations clearly marked, the tree inventory, contact information for the Tree Permit Administrator, and/or any other information requested.

f. TPZ barrier signage provided in Appendix A shall be installed **prior to any demolition or construction activity**. TPZ barriers signs shall be printed by the applicant on 46cm x 61cm coroplast sheets and installed in the approved locations specified in the TAPP. Signs in the front yard shall be clearly visible from the street. Once the TPZ barrier signs are installed, they must be confirmed and signed off by the Administrator prior to the initiation of construction.

g. RGS applicants may be required to provide tree preservation securities through a Letter of Credit. The tree preservation securities include the value of conditional planting obligations, the value of retained trees on the subject site/neighbouring properties, and TPZ barriers.

h. RGS applications are subject to Tree Preservation review fees per Schedule A of By-law 211-83, as amended. Fees must be paid by the applicant prior to Tree Permit issuance.

i. Once the pre-construction compliance inspection is completed, tree preservation securities are obtained, and/or the TPZ barriers are approved by the Tree Preservation Technician or designate, a permit may be issued.

2. Injury, Mitigation and Monitoring

During demolition, excavation, construction and/or landscaping, the following **<u>may</u>** be required dependent on site conditions above and below grade:

a. Tree preservation methodologies and injury mitigation techniques as described in the approved TAPP can be initiated after the permit is obtained. In some instances, advanced exploratory assessment may also be required to determine level of impact. Some examples of injury mitigation measures that may be implemented are: root excavation/exploration using an air-spade, root and canopy pruning, compaction prevention, soil de-compaction (vertical mulching), and/or deep root fertilizing. The work is to be performed by applicant's Consulting Arborist and a Tree Impact Report (TIR)

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shall be submitted to the Tree Preservation Technician. In specific situations, and at the discretion of the Tree Preservation Technician, root exploration may be requested in advance of RGS and Tree Permit issuance to determine appropriate course of action to preserve trees.

b. Periodic monitoring of the subject site during demolition, excavation and construction may be required to ensure tree protection measures are performed or remain in place throughout the duration of the construction. Monitoring will be performed by applicant's Consulting Arborist and Tree Monitoring Reports (TMR) shall be submitted to the Tree Preservation Technician.

c. Arborist supervision/monitoring and by hand excavation requirements for any encroachment in to the minimum TPZ for activities such as, but not limited to driveway removal/installation, gas, water, sewer, sanitary, or other services are mandatory, and will require verification post construction. Tree Impact Reports are to be submitted to the City of Markham outlining root removals including, number of roots and size, monitoring information and tree impact/assessment. Failure to retain the arborist may result in lot grading security deposits being retained in full or partial. Further site remediation may be Ordered as per Tree Preservation By Law 2023-164.

3. Post-construction Requirements

After construction, the following **may** be required:

a. Compensation tree plantings and conditions compliance must be performed as described in the issued Tree Permit. The compensation replacement ratio will vary based on size, condition, and species of tree(s) at the discretion of the Tree Preservation Technician.

b. A follow-up compliance inspection will be completed at the 1 month mark from building completion. **The TPZ barriers must remain in place until approval to remove is given by the Tree Preservation Technician.**

Once the compliance inspection is completed by the Tree Preservation Technician or designate and all permit requirements have been met, the file will be closed. Failure to comply with permit conditions could result in fine of up $100,000.00, the cash-in-lieu added to the tax roll for collection purposes, issuance of an Order, retention of tree preservation securities, and/or legal action.

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4. Tree Assessment and Preservation Plan Minimum Requirements

The submitted TAPP must include the following information, additional information may be supplied by the Consulting Arborist or requested by the Tree Preservation Technician if appropriate.

a. Property Owner Information: name, address, phone number, and email.

b. Applicant Information: name, address, phone number, and email.

c. Consulting Arborist Information: name, certification number, company, phone number, and email.

d. A site plan, inventory, arborist report, and photos of all the inventoried trees.

e. Trees 20cm DBH or greater on the subject site must be inventoried and included on the TAPP. For multi-stemmed trees, measure each stem at 1.37 metres and use the quadratic equation to determine the sum of the square root to equal effective DBH, that is, multiply each stem measurement by itself, add up all the values, and calculate the square root of the total to determine the DBH.

f. All neighbouring and City owned trees within 6 meters of the subject site of **<u>any</u>** diameter must be inventoried and included on the TAPP.

g. If there are more than 30 trees on the subject site, field tagging of trees shall be required.

h. The <u>inventory and assessment</u> of the trees must include:

   i. tree number or tag number
   ii. regionally common and botanical name
   iii. DBH in centimetres (diametre at 1.37 m above ground level)
   iv. biological health and structure rating using standard arboriculture procedures (five word rating (Very Poor, Poor, Fair, Good, Excellent) with definitions key)
   v. tree ownership- city owned, neighbour owned, privately owned, or boundary
   vi. minimum TPZ distance based on City chart
   vii. results of assessment – protect, injure, remove or transplant

i. The <u>site plan</u> used for the TAPP must include:
   i. The most recent grading plan
   ii. All relevant trees labelled with numbers corresponding to the inventory
   iii. All relevant trees plotted with the minimum TPZs shown

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iv. an accurate metric scale
v. the location of all TPZ barriers to be installed
vi. all existing structures, driveways, hard surfaces and grades
vii. all proposed structures, driveways hard surfaces, grade changes, and machine access routes
viii. all proposed new underground services and connections (e.g. water sanitary, hydro)

j. Tree appraisals are required for all trees measuring 40cm DBH or greater. If required, tree appraisals are to be completed using the Trunk Formula Method from the Council of Tree and Landscape Appraisers (CTLA) *Guide for Plant Appraisals, 9th Edition or newer*.

5. TPZ (Tree Protection Zone) Barrier Specifications

The TPZ barriers must be installed to the following specifications (Appendix B) unless alternative materials or designs are approved by the Tree Preservation Technician. All TPZ barriers:

a. must be installed in all the locations that correspond with the approved TAPP

b. must be installed <u>prior to any demolition, excavation, or construction activity</u> on the site

c. must completely enclose all trees to be preserved, or up to property lines where applicable

d. must be continuous rigid and immovable solid wood hoarding

e. must be constructed from 3/4in plywood on 1.22 metres (4') high, 2"x4" wood frames, secured to the ground and installed with screws

f. <u>only</u> where sightline is a safety issue, the TPZ barrier must be, orange safety fencing mounted on a rigid and immovable 1.22 metres (4') high, 2"x4" wood frame, secured to the ground and installed with screws

g. Horizontal TPZ barrier specifications (Appendix C): 10 cm of wood mulch covered by two staggered, overlapped and screwed together layers, of 3/4in plywood. It must also be adequately secured to the ground.

h. must remain in place throughout the entire project, and cannot be altered, moved or removed in any way without the written authorization of City of Markham, Tree Preservation Technician

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i. no grade change, storage or temporary storage of any materials or equipment, washing of equipment, nor the dumping of any debris is permitted within this area

6. Tree Preservation Measures and Injury Mitigation Techniques

Tree preservation methodologies, measures and mitigation could include, but are not be limited to:

a. root excavation and/or pruning at the limits of excavation using a hydro-vac or air excavation tool (Air-spade), supervised by the applicant's consulting Arborist, with the submission of a TIR to the City's Tree Preservation Technician

b. canopy pruning by a qualified tree expert or certified Arborist

c. deep root fertilization, mycorrhizal inoculant and or soil aeration or fracturing

d. installation of horizontal protection barriers over soft-scape to prevent compaction

e. wood mulch outside of TPZs

f. irrigation during summer months

g. alternative construction methods in the vicinity of trees, (e.g. piers and grade-beams, cantilever, geo-grid on grade, etc.)

h. ongoing monitoring by the applicant's consulting Arborist and scheduled TMRs submitted to the City's Tree Preservation Technician

i. Replacement ratios for tree removal will be calculated using the Progressive Aggregate Caliper Method. This method evaluates the value of trees for replacement where the DBH is multiplied by the average of a health and structure factor, as determined by a Qualified Tree Expert, to depreciate the trees with less than perfect health and structure. The outcome of the calculation is the number of 50mm caliper (deciduous) or 250cm height (coniferous) conditional replacement trees.

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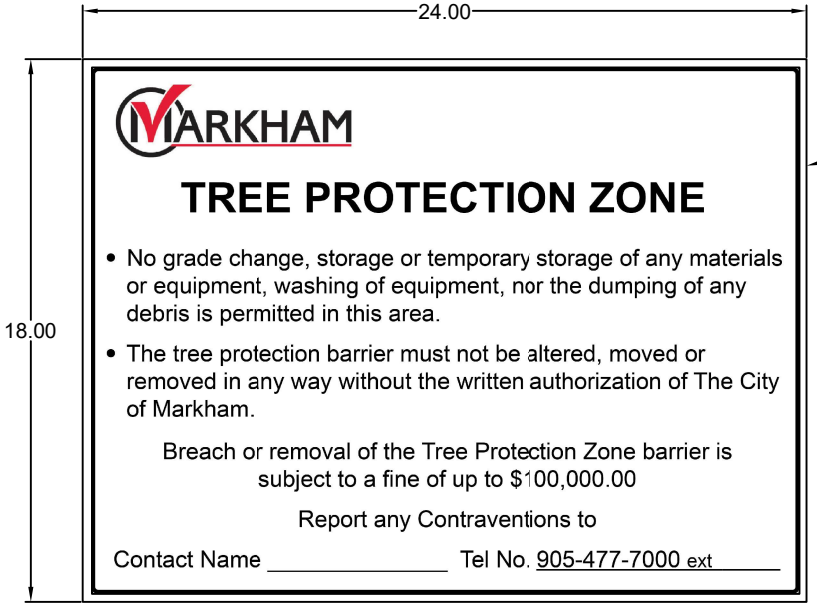
Appendix A - Tree Protection Zone Barrier Signage



- 4mm white coroplast (square corners)
- black and red ink
- vertical flutes

No.	Revision/Issue	Date

MARKHAM

The Corporation of the City of Markham
Operations Department

Project Name and Address

Tree Protection Signage

City of Markham

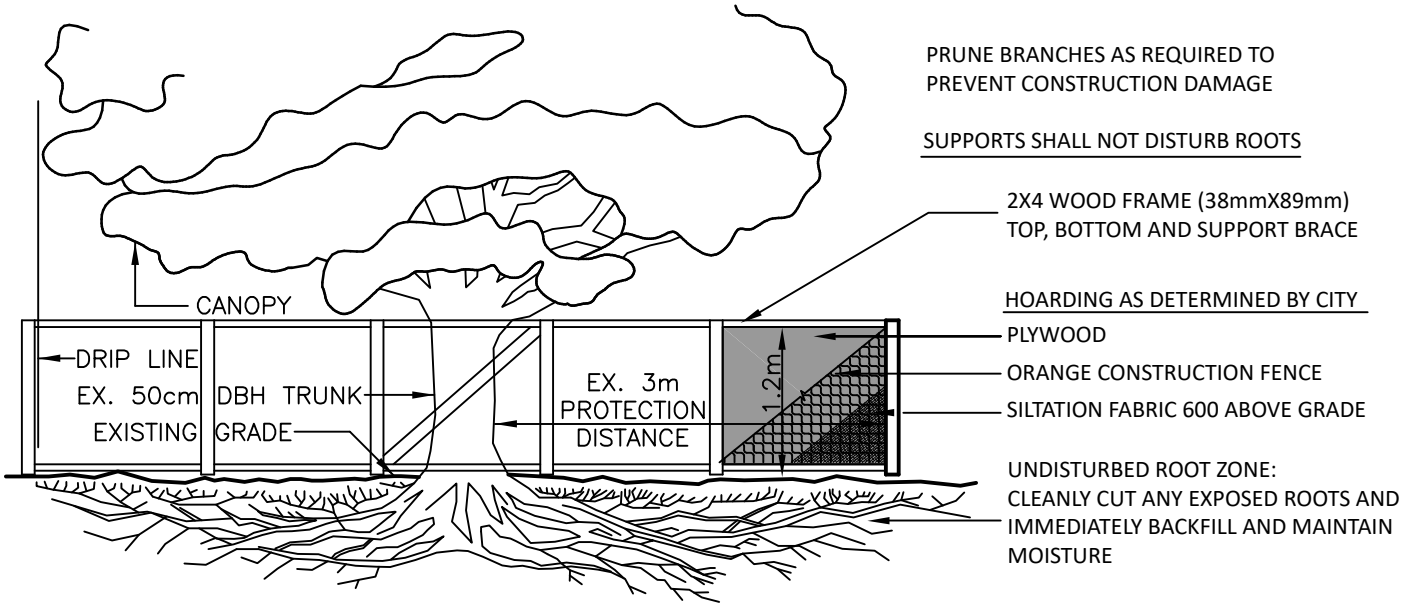
Project

Date
August 1, 2018

Scale
1:1

Sheet
D1

Appendix B - Tree Preservation Details



MINIMUM TREE PROTECTION DISTANCE FROM TRUNK:

< 10cm DBH	1.2m
10–19cm DBH	1.8m
20–40cm DBH	2.4m
41–50cm DBH	3.0m
51–60cm DBH	3.6m
61–70cm DBH	4.2m
71–80cm DBH	4.8m
81–90cm DBH	5.4m
91–100cm DBH	6.0m
> 100cm DBH	6cm/1cmØ

(DIAMETER AT BREAST HEIGHT) DBH = TRUNK DIAMETER AT 1.37m HEIGHT MEASURED UP FROM BASE OF TREE

THE TREE PROTECTION ZONE (TPZ) BARRIER SHALL FULLY ENCLOSE THE TREES, AND BE CONTINUOUS, RIGID AND IMMOVABLE. ALL VERTICAL TPZ BARRIER SHALL BE SOLID WOOD HOARDING (PLYWOOD ON RIGID FULL 1.22 METRES (4') HIGH, 2X4 WOOD FRAMES, ADEQUATELY SECURED TO THE GROUND AND INSTALLED WITH SCREWS NOT NAILS AND BE RIGID AND IMMOVABLE). WHERE SIGHTLINE IS A SAFETY ISSUE, THE TPZ BARRIER SHALL BE, ORANGE SAFETY FENCING MOUNTED ON FULL 1.22 METRES (4') HIGH 2X4 WOOD FRAMES, ADEQUATELY SECURED TO THE GROUND AND INSTALLED WITH SCREWS NOT NAILS, AND BE RIGID AND IMMOVABLE.

46cmx61cm SIGN MOUNTED ON ALL SIDES OF BARRIER

MARKHAM

TREE PROTECTION ZONE

- No grade change, storage or temporary storage of any materials or equipment, washing of equipment, nor the dumping of any debris is permitted in this area.
- The tree protection barrier must not be altered, moved or removed in any way without the written authorization of the City of Markham.

Breach or removal of the Tree Protection Zone barrier is subject to a fine up to $_____

Report any Contraventions to

Contact Name _____ Tel No. 905-477-5530

TREE CONSTRUCTION FENCE:

1. ALL TREE PROTECTION BARRIERS SHALL BE IN PLACE AND APPROVED BY THE CITY PRIOR TO CONSTRUCTION ACCESS.

2. ALL SUPPORTS AND STAKES SHALL BE OUTSIDE THE TREE PROTECTION ZONE AND SHALL MINIMIZE ROOT DAMAGE.

3. TREE PROTECTION BARRIERS SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED BY THE CITY.

4. ALL ARBORICULTURE WORK SUCH AS PRUNING OF BRANCHES AND ROOTS, SHALL BE DONE BY A QUALIFIED TREE WORKER CERTIFIED WITH THE INTERNATIONAL SOCIETY OF ARBORICULTURE APPROVED BY THE CITY.

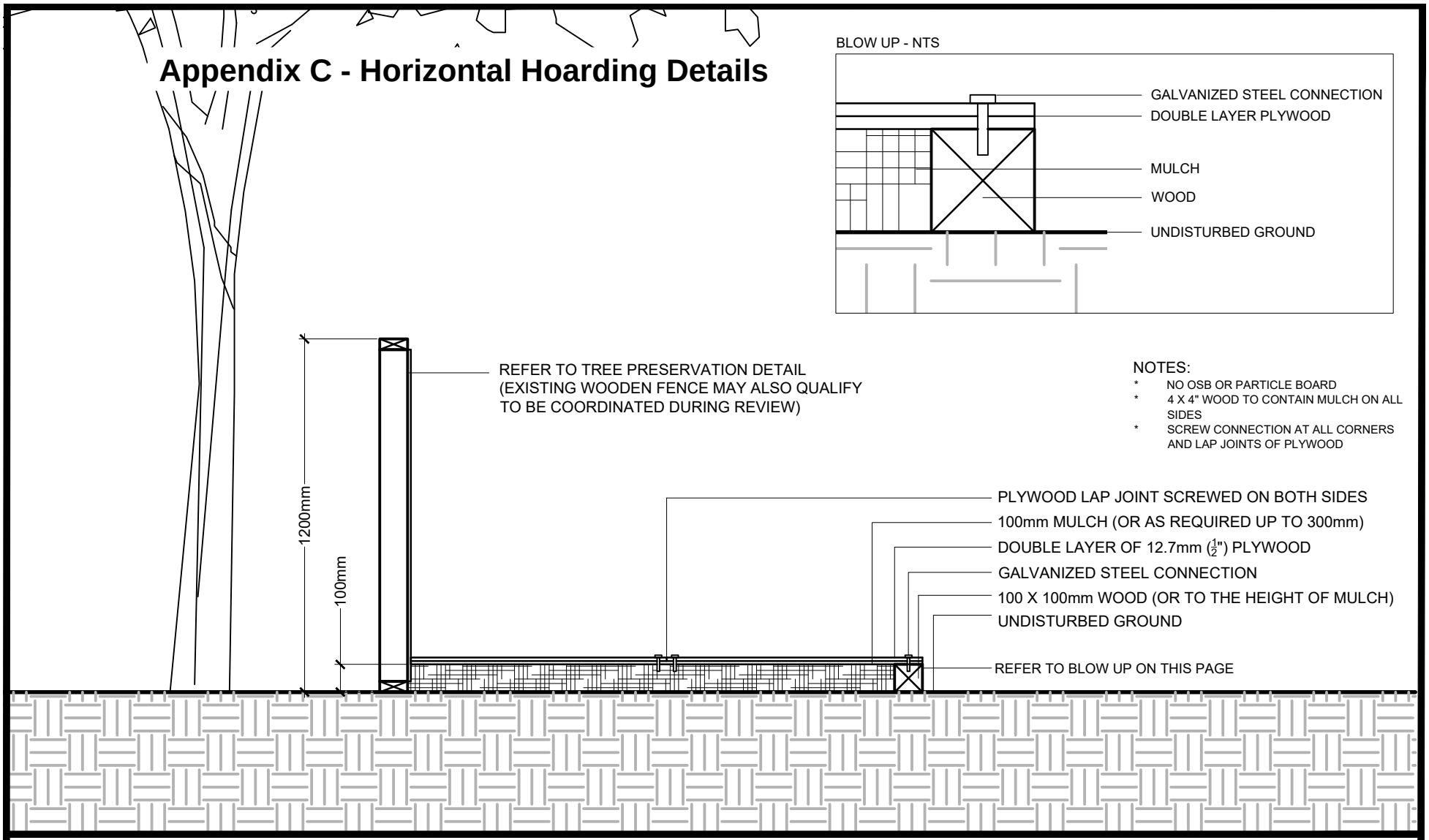
TREE PRESERVATION DETAILS

MARKHAM

THE CORPORATION OF THE CITY OF MARKHAM

SCALE:	DATE:	DRAWING No.
N.T.S.	MARCH 2022	T-1

Appendix C - Horizontal Hoarding Details



NOTES:

* NO OSB OR PARTICLE BOARD
* 4 X 4" WOOD TO CONTAIN MULCH ON ALL SIDES
* SCREW CONNECTION AT ALL CORNERS AND LAP JOINTS OF PLYWOOD

HORIZONTAL HOARDING DETAIL

	DATE	SCALE	DRAWING NO.
MARKHAM THE CORPORATION OF THE CITY OF MARKHAM	MARCH 2019	1:20	D-1