

# Street Tree Planting Standards for New York City 2016



City of New York  
Parks and Recreation

NYC Parks



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**Important Note: All permit holders are expected to be familiar with and to plant in accordance with NYC Parks Standards. Detailed Parks approved specifications may be available. Ask your NYC Parks Forester for further details when applying for or requesting a permit. All permit request must be made using the new *Tree Work Permit and Plan Review Application* found at the following link:**

<https://www.nycgovparks.org/services/forestry/forestry-application>

# Introduction

The mission of Forestry, Horticulture, and Natural Resources is to protect, restore, expand and manage New York City's green spaces and natural areas to maximize the benefits for environmental and community health and resilience.

## Overview

Street trees are important to our quality of life in the city. They are living elements of our street infrastructure. Located on the public right-of-way, they provide cooling shade, cleaner air, and more beautiful urban streetscapes. Trees confer important aesthetic and ecological benefits to city residents as well. Plants in the urban landscape, however, face a variety of environmental and physical stresses including pedestrian and vehicular traffic, soil compaction, air pollution, and drought. Some of the key factors to maximize long-term plant survival are proper handling, careful planting, and immediate and continued aftercare.

All trees planted on the public right-of-way are under the jurisdiction of the Department of Parks & Recreation as property of the City of New York. A valid tree planting permit must be obtained in order to plant on the public right-of-way, and plantings must be done in accordance with the agency's current street tree planting standards. Any tree work improperly performed or otherwise not in accordance with these specifications may be subject to remedial work at the tree work entity's expense, and/or additional penalties.

## Street Tree Planting Requirements for New Buildings

All new buildings and all enlargements exceeding 20 percent of the floor area must provide one new street tree for every 25 feet of building road frontage. These requirements must be satisfied for the builder to obtain a Certificate of Occupancy from the Department of Buildings (DOB). All jobs pre-filed with DOB after May 3, 2010 are required to undergo a Parks Plan Review before any permits or tree fund invoice can be issued.

# Design Requirements

## Spacing Requirements

The following requirements shall be followed when siting tree pits along sidewalks. These guidelines generally follow regulations of other agencies with jurisdiction or infrastructure on the right-of-way. These requirements are design and tree species dependent. The *American with Disabilities Act* (ADA) guidelines must also be followed.

- a. Do not plant in front of building entrances in order to permit easy access by the Fire Department.
- b. Do not plant within bus stops.
- c. Do not plant within no standing zones
- d. Do not plant directly over DEP water mains less than 20 inches in diameter.
- e. Minimum horizontal distance from DEP water main to tree trunk is 6 feet.
- f. Minimum distance between trees (trunk to trunk) shall be 20 feet to 30 feet, depending upon the tree species and other local conditions.
- g. Minimum distance from a streetlight or utility pole to the tree trunk is 25 feet (this may vary with tree species).
- h. Minimum distance from a stop sign to the tree trunk is 30 feet.
- i. Minimum distance from other traffic signs to the tree trunk is 6 feet.
- j. Suggested distance from a parking meter back to tree trunk shall be no more than 5 feet, to allow for the swing of car doors.
- k. Minimum distance from a gas or water valve to the edge of the pit is 2 feet.
- l. Minimum distance from an oil fill pipe to the edge of the pit is 4 feet.
- m. Minimum distance from the edge of a coal chute to the edge of the pit is 2 feet.
- n. Minimum distance from a fire hydrant to the edge of the pit is 3 feet.
- o. Minimum distance from a curb cut or driveway to the edge of the pit is 2 feet and to the tree trunk is 7 feet.
- p. Minimum distance from the corner of a street intersection to the tree trunk is 40 feet.
- q. Minimum distance from the edge of the pit to any opposite obstruction (building wall, stoop, railing, property line etc.) is from 4 to 6 feet, depending upon local conditions and the amount of sidewalk traffic.
- r. All tree pits must be contiguous to the street curb (except as noted below, or with the permission of the Forester).
- s. Trees may be planted on either side of sidewalks (if any exist) in lawn areas where there is sufficient room between the property line and the street curb.

Additional design or spacing requirements may be imposed at the discretion of the Parks Forester reviewing your application depending on the location and site conditions.

## Tree Pit Dimensions

Tree pits should be as large as possible to allow for ample growing space for the tree's roots and to reduce the likelihood of future sidewalk lifting. The standard street tree pit size is 5 feet by 10 feet. The overall width of a sidewalk can limit the size of a tree pit. Where a 5 feet by 10 feet tree pit is not possible, alternate dimensions must be approved by the Forester.

The installation of continuous tree pits is encouraged whenever possible, and design proposals that call for continuous tree pits may be given more flexible spacing requirements by the Forester.

## **Grouped Plantings**

Grouped plantings are sites where trees are planted closer than 20 feet from each other (trunk to trunk). Grouped plantings provide a number of environmental benefits which include: increased shading, reduced evapotranspiration, reduced soil compaction, greater available soil volume, and reduced exposure to reflective heat for an individual tree. A grouped planting can be achieved in several types of sites: (1) a GreenStreet, such as a median or traffic triangle, with opportunity for a large planting bed; (2) a continuous tree pit, where two or more trees are planted in a single trench in the sidewalk (at least 30 feet long); or (3) a raised planting bed within a plaza or alongside a pedestrian passageway. Grouped plantings are not often the preferred method of planting and are subject to approval at the discretion of the Forester reviewing your proposal.

## **Species Selection**

Growing conditions and microclimates can vary from location to location within a borough and across the City. Species selection should take into account site conditions, design goals, and diversity goals. In choosing a species, the mature height and spread shall be considered to ensure that it will not interfere with existing or proposed structures and overhead utilities. The final selection of the species is made by the Forester. Parks will not allow large trees to be planted under primary wires and discourages small trees in large open spaces. NYC Parks publishes a list of approved species for planting on the right-of-way. (Appendix A). Alternate species not found on the approved list may be considered on a case by case basis, however, NYC Parks retains the right to determine what species is planted on the right-of-way.

## **Structural Soils**

NYC Parks encourages the use of structural soils where appropriate, and may require its use where it is deemed necessary. Trees are not to be planted directly in structural soil, and structural soil is only to be used as a base material under hard surfaces such as concrete, permeable pavement, or permeable pavers. Exposed soil or grass covered surfaces should be excavated and replaced with fresh topsoil meeting DPR street tree planting specifications. NYC Parks has approved the use of CU and Swedish Structural Soils, and they must be installed in accordance with Parks' specifications (Appendix B). Structural soils can only be installed with the prior consent of the Parks Forester reviewing your application and the use of a licensed structural soil manufacturer is required.

## **Soil Cells (Silva Cells)**

Soil cells such as Silva Cells, may be used where appropriate. They can only be installed with the prior consent of the Parks Forester reviewing your application, and must be installed in accordance with Parks' specification (Appendix C).

## **Permeable Pavement or Pavers**

NYC Parks encourages the use of permeable pavement or pavers where appropriate to increase the amount of water available to trees and to assist in storm water capture and management. All pavement or pavers must conform to Department of Transportation (DOT) standards (Refer to DOT for materials and specifications). Parks may approve or require the placement and use of

permeable pavers or pavement around new and existing trees. The proposed use of permeable pavers or pavement should be noted in the permit application.

## **Bioswales / Green Infrastructure**

Bioswales installed on the right-of-way help collect and manage storm water runoff from streets and sidewalks by directing storm water to engineered systems that typically feature soils, stones, and vegetation. At this time, Parks does not issue permits for private installations of bioswales on the right-of-way without the consent of appropriate city agencies, and provisions for maintenance in place.

## **Plant Pest Control Requirements**

Any planting on the public right-of-way is required to comply with all state and federal regulations for plant pest control. More information can be obtained from the appropriate state and federal pest control agencies.

## **Asian Longhorned Beetle**

Quarantine zones for the Asian Longhorned Beetle currently cover areas of Brooklyn and Queens. Applicants must read and understand the nature and area of the quarantine as presented in *Rule Making Activities, New York State, Department of Agriculture & Markets, Emergency Rule Making (Asian Longhorned Beetle; I.D. No. AAM - 53 96 00016 - E)*. The applicant shall become familiar with restrictions and regulations established by all authorities having jurisdiction.

Anyone working within the Quarantine Zone must have certification from the New York State Department of Agriculture and Markets to do so. State Department of Agriculture regulations requires that applicants operating in infested areas to thoroughly clean all equipment units before relocation to non-infested areas.

Parks imposes restrictions on the planting of tree species listed as hosts for the Asian Longhorned Beetle in parts of Brooklyn and Queens. Exceptions may be considered on a case-by-case basis.

## **Materials**

### **Plants**

*Digging.* All trees shall be dug immediately before moving unless otherwise specified. All trees shall be dug to retain as many fibrous roots as possible. Balled and burlapped trees shall have a solid ball of earth of the minimum specified size (32 inches), securely held in place by untreated burlap and stout rope (nylon rope is NOT acceptable). Oversize or exceptionally heavy trees are acceptable if the size of the ball or spread of roots is proportionally increased. Loose, broken, or manufactured balls are unacceptable. Size and grading standards shall conform to those of the *American Association of Nurserymen American Standards for Nursery Stock, 1996 Edition*, unless otherwise specified.

*Form and structure.* All trees shall be typical of their species or cultivar. They shall have



normal, well developed branches and a fibrous root system. They shall be sound, healthy, vigorous trees, free from defects, disfiguring knots, sunscald, injuries, abrasions of the bark, plant diseases, insect eggs, borers and all forms of infestations. All trees shall have a single, straight trunk, with leader intact (not all species have a leader but one must be present in those that do) and be branched at least five feet from the ground unless otherwise specified or approved by the Forester.

*Provenance and tree size.* All trees shall be nursery grown in a USDA hardiness zone of 7B or lower (material collected from the wild is unacceptable), except with permission from Parks. Tree size shall be at least 2.5 inch caliper measured at 6 inches from the ground and no larger than 3.5 inches in caliper unless otherwise authorized by NYC Parks.

*Plant names.* Plant names shall agree with the nomenclature of “Standardized Plant Names” as adopted by the American Joint Committee on Horticultural Nomenclature 1942 edition. All tree cultivars, patented or otherwise, must be certified by the supplying nursery. All nurseries shall be required to have a registration certificate from the Division of Plant Industry of the New York State Department of Agriculture & Markets certifying that plant material is apparently free from injurious insect and plant diseases. A similar certificate shall be required from other states where plant material is obtained.

*Species selection.* Species shall be selected by Parks from the list of approved street trees for New York City (Appendix A). You may only plant the species indicated on the permit and must follow any terms and conditions described on the permit. Season, site conditions, and location will affect what species may be planted.

**Backfill**

Material shall consist of natural loam topsoil with the addition of humus only, and no other soil type, such as a sand or clay soil type, shall be accepted. Topsoil must be free from subsoil, obtained from an area which has never been stripped. It shall be removed to a depth of one foot or less if subsoil is encountered. Topsoil shall be of uniform quality, free from hard clods, stiff clay, hardpan, sods, particularly disintegrated stone, lime, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, sticks or any other undesirable material. Topsoil shall meet the following requirements:

- a. *Organic Matter.* Backfill shall contain between 5%-9% organic matter.
- b. The pH shall be in the range of 6.0 to 7.5 inclusive, unless otherwise approved or specified by the Forester.
- c. *Soil Textural Analysis.* Topsoil shall consist of the following percentages of sand, silt and clay. Any soil that does not meet the requirements below will be rejected and removed from the site.

Rocks, Stone and Gravel (>2.0 mm)	<25%
Sand (0.05-2 mm)	40%-70%
Silt (0.002-0.05 mm)	10%-50%
Clay (<0.002 mm)	20% maximum
- d. When the topsoil complies with the requirements of the specification but show a deficiency of not more than one percent in organic matter, it may be incorporated when and as permitted by the Forester.
- e. Electrical conductivity shall be a maximum of 1.0. mmhos/cm. A higher level would indicate that the salt content is too high to be acceptable, and the soil must be removed from the site by the permit holder.

NYC Parks may require that soil be changed at the expense of the applicant and/or the tree work entity if the soil does not appear to meet Parks specifications. It is the applicant's responsibility to prove that the soil used meets Parks specifications. The applicant may provide a report from an approved lab showing a passing soil sample if they wish to show that their soil meets Parks specifications. The soil should be tested for the following: nutrients, pH, soluble salt level, organic matter content, percentages of sand/silt/clay, soil textural class, gravel content, + Extra Sieve ¼. The choice of lab must be approved in advance by the appropriate Parks Forester, and soil samples must be taken by a Parks Forester or their designate, and delivered to the lab by the Forester or their designate. Only a passing sample acceptable to the Parks Forester will exempt the applicant from having to replace the soil.

## **Mulch**

The applicant shall furnish and place Shredded Bark Mulch in accordance with the plans, specifications and directions of the Forester. All mulching shall be done during planting operation.

Shredded Bark Mulch shall be a natural forest product composed of shredded bark or wood not exceeding 3 inches in length and 1 inch width. Mulch shall be derived from tree material, not from wood waste or by-products like sawdust, shredded palettes, or other debris. Mulch shall be natural in color and not dyed. It shall be of a uniform grade with no additives or any other treatment. Mulch with leaves, twigs, and/or debris shall not be acceptable.

Shredded Bark Mulch shall be applied as a ground cover to the surface of all planting beds at the time of planting, one year after planting when the tree stakes are removed, at the start of each watering season during the 2 year guarantee period and when the tree is watered when directed by the Forester. Shredded Bark Mulch shall be applied to a uniform depth of 3 inches and shall be so distributed as to create a smooth, level cover over the exposed soil. A gap of approximately 2 inches should be left between the Shredded Bark Mulch and the trunk of the tree to avoid mounding above the trunk flare.

## **Water**

If conditions do not allow the use of New York City water sources, the applicant must obtain their own source of water.

## **Planting Specifications**

Planting shall consist of excavating all tree pits, planting, and maintaining new trees of the type and size designated on the approved list. All work shall be in accordance with these specifications (Appendix E) and to the satisfaction of the Parks Forester.

If any new tree pits have to be cut, a permit must first be obtained from DOT. A permit shall be required for each block where the pavement is broken for a new pit. It is the responsibility of the applicant to notify all owners/operators of underground facilities (code 753). Owners/operators of underground facilities include but are not limited to Keyspan, Con Edison and telephone authorities. Code 753 notifications are to be made to the NYC/LI One Call Center, Briarwood Plaza, Suite 202, 36-35 Bell Boulevard, Bayside, NY 11361. Telephone No. 1-800-272-4480. A code 753 number must be obtained before any work can begin.

No pits shall be dug until proposed locations have been marked on the ground with a white 'P' by a Parks Forester. Once work begins, the applicant takes full responsibility for the tree pit locations. All excavated materials shall be removed from the site and disposed of properly. The area is to be made safe and secure at the end of the workday.

Site characteristics, such as overhead power lines, existing vegetation, and infrastructure items, such as curbs and sidewalks, shall be considered. Trees that grow taller than 25 feet should not be planted directly under power lines. When possible the tree leader shall be offset from power lines.

Where subsurface obstructions (vaults, utilities, sprinklers) are encountered during excavation and restrict the planting of a tree, the applicant shall restore the disturbed area to its original condition. If damage is done to an underground obstruction, it is the responsibility of the applicant to restore the site to its original condition. A new planting location will be designated if conditions permit.

Trees shall be transported and handled with utmost care to ensure adequate protection against injury and desiccation. When transported in closed vehicles, plants shall receive adequate ventilation to prevent sweating. When transported in open vehicles, plants shall be protected by tarpaulins or other suitable cover material. Balled and burlapped trees shall be set on the ground and balls covered with soil. Until planted, all materials shall be properly maintained and kept adequately watered. Applicants are liable for any damage to property caused by planting operations and related work. All disturbed areas shall be restored to their original condition.

Applicants are only permitted to occupy an 8 foot lane adjacent to the curb. Traffic shall not be blocked off at any time during planting operations. Work shall not be performed on opposite sides of the street at the same time. Existing parking regulations shall be complied within so far as "No Standing" rules apply for the time limits specified.

## **Planting Seasons**

Trees may be planted in the fall from October 1 through December 15, and in the spring from March 1 through May 15. No planting is permitted in the summer. Please be aware of the DOT Construction Embargo from November 21 through January 2 and any other restrictions (streets may vary from year to year, please check DOT's website).

## **Installation**

Remove all materials from the tree pit for the full length and width of the tree pit to the depth of the tree's root ball (Appendix E). For excavation of a lawn strip, excavate an area at least three times the diameter of the root ball in length by the width of the lawn strip (up to 3 times the diameter of the root ball), to the dimensions listed on the permit. Extreme care shall be taken to avoid excavation to a depth greater than required. The subgrade below the root ball shall be tamped slightly to prevent settlement. All ropes, stones, etc. shall be removed from the planting site before backfilling. All excavated materials shall be removed from the site and disposed of in an acceptable manner.

Place balled and burlapped material in the prepared planting pit by lifting and carrying it by the root ball so that the ball will not be loosened. Set the tree straight and in the center of the pit. All trees shall sit, after settlement, with the base of the trunk and the beginning of the roots, known

as the “trunk flare”, level with the sidewalk grade. If the top of the root ball is not consistent with this area, the depth of the planting site should be adjusted by adding or removing soil below the root ball to make the trunk flare level with the sidewalk grade.

Cut and remove rope and wire from the top 2/3 of the root ball. At least 2/3 of the burlap shall be removed from the tree pit. The remaining wires should be pulled back and the burlap adjusted to prevent the formation of air pockets. Backfilling mixture shall be loose and friable and not frozen. Soil shall be firmed at 6 to 8 inch intervals. All tree pits are to be filled with topsoil and made level with existing conditions.

Cultivate and rake over finished planting areas leaving them in an orderly condition. At no time should topsoil be mounded to cover the trunk of the tree. The trunk flare shall always be visible. Final soil level shall be flush with the surrounding sidewalk grade to prevent potential tripping hazard.

## **Tree Wrap**

No tree trunks shall be wrapped. Remove all nursery tags and protective wrapping.

## **Staking**

All staking shall be done during the planting operation and shall be maintained throughout the first year of the 2 year guarantee period. After the first year, the stakes must be removed.

Stakes shall be of white cedar with bark attached and shall show no sign of cracking or decay. They shall have a maximum allowable deflection of ten percent (10%). Stakes shall be cut even so they are the same height. All trees shall be supported by 2 stakes, they shall be 8 feet long; the diameter at the middle shall be not less than 2 inches nor more than 2 ¾ inches and the diameter at the butt shall not exceed 3 inches. Stakes shall be placed outside of the rootball, driven 30 inches into the ground, and shall be fastened to the tree with a suitable length of ¾” wide, flat, woven polypropylene material such as Arbortie™ as manufactured by DeepRoot®, San Francisco, CA or approved equal that is knotted around the tree stakes (Appendix E).

Unless otherwise directed, trees shall be staked as shown on the plans and in accordance with these specifications. Stakes shall be set parallel to curbs. Trees shall stand plumb after staking. Stakes and Arbortie™ shall be removed at the end of the first year of the 2 year guarantee period, unless directed otherwise by the Forester. At the time the stakes are removed any holes left by the stake shall be filled with topsoil of the same quality as that specified in Section B-Backfill.

## **Pruning**

Pruning shall be done in accordance with ANSI A300 Part 1 Standard Practices for structural pruning. When directed by the Forester, trees shall be pruned so the resulting crown retains the growth habit of the tree species. Any and all branches interfering with or hindering the healthy growth of the tree shall be removed. All diseased branches and all dead branches shall be removed. Any branch which may be partly dead, yet has a healthy lateral branch at least one-third the diameter of the parent branch shall be removed beyond the healthy branch. All stubs or improper cuts resulting from former pruning shall be removed. All cuts shall be cleanly made with sharp tools as close to the parent trunk or limb as possible without disturbing the branch

bark ridge or callus collar. Any existing nails, spikes, wire, plastic or other materials found driven into or fastened to the trunk or branches shall be removed or if approved they shall be cut flush in a manner to permit complete healing over.

## **Watering**

At the time of planting, the soil around each tree shall be thoroughly saturated with at least 20 gallons (20 gal) of water. Soil shall be firmed at 6-8 inch intervals and thoroughly settled with water. Water shall be free from oil, have a pH not less than 6.0 nor greater than 8.0 and shall be free from impurities injurious to vegetation. Water may be drawn from mains owned by or supplying water to the City of New York. Please contact DEP for an access permit.

Water shall not be applied in a manner which damages plants, stakes, or adjacent areas. Each tree bed shall be watered evenly in a manner which does not erode the soil or mulch. Watering shall not cause uprooting or exposure of plant roots to the air.

## **Mulching**

Bark Mulch shall be applied as a ground cover to the surface of all planting beds at the time of planting and again after the tree stakes have been removed, one year after planting. (See p.9 for Mulch specifications).

Mulch shall be applied to a uniform depth of 3 inches and shall be so distributed as to create a smooth, level cover over the exposed soil. A gap of approximately 2 inches should be left between the mulch and the trunk of the tree to avoid mounding above the trunk flare.

## **Seasonal Maintenance**

### **Watering**

Watering must take place throughout the 2 year guarantee period, at least 20 gallons at approximately two week intervals from May 15 to October 31. You may need to increase or reduce the frequency of watering based on weather conditions, resulting soil water content or other factors.

Water shall not be applied in a manner which damages plants, stakes, or adjacent areas. Each tree bed shall be watered evenly in a manner which does not erode soil or mulch. Watering shall not cause uprooting or exposure of plant's roots to the air.

Damages resulting from these operations shall be immediately repaired at the expense of the applicant.

### **Other Maintenance Activities**

All newly planted trees shall be maintained by the tree work entity and/or applicant until 2 years after the final inspection of permitted planting (sign-off date).

Maintenance shall include weeding, cultivating, edging, pruning, adjustment and timely removal of stakes, and Arbortie™ (these must be removed after one year), repair of minor washouts,

mulching, soil replacement and other horticultural operations necessary for the proper growth of all trees, and for keeping the entire area within the planting area neat in appearance.

All planting areas shall be cultivated and weeded with hoes or other approved tools within the period from May 15 to October 31, and such cultivating and weeding shall be repeated at least every 3 weeks. Under no conditions shall weeds be allowed to attain more than 6 inches of growth.

Pit pavement shall be maintained flush with adjacent pavement during the 2 year guarantee period. At the expiration of the guarantee period, the area around the tree shall be cultivated and weed free.

## Guarantee Period

All trees must be guaranteed for 2 years. All applicants and tree work entities listed on a permit shall provide a guarantee for the trees planted. Applicants are advised to ensure that their tree work entity provides a guarantee otherwise they will may be held liable under the permit for replacing the tree.

## Tree Replacement

Any tree planted that is dead or, in the opinion of Parks, in an unhealthy or unsightly condition, and/or has lost its natural shape due to dead branches, excessive pruning, inadequate or improper maintenance, or other causes including vandalism, prior to final acceptance, shall be replaced in the next planting season. There shall be a 2 year guarantee on trees commencing after the final inspection of the permitted planting (sign-off date). The topsoil in the tree pit shall be changed when any replacement tree is planted.

Where dead trees have been identified, whether due to natural causes or vandalism, the dead material shall be removed, including stakes, and Arbortie™ within 30 days of notification. When necessary, topsoil, grass seed or appropriate paving material shall be added to the pit to eliminate potential tripping hazards at the time of removal. Photos must be submitted to Parks showing the proper removal of trees. A renewed permit must be obtained to replant during the planting season.

## Vandalism

Where vandalism or related causes are agreed as the cause for tree replacement, the applicant shall be responsible for all necessary replacements during the 2 year guarantee period as determined by the Forester.

## Finishing

### Tree Pit Guards

Tree pit guards may be required by Parks. A tree pit guard is usually a cast-iron fence or wrought iron wickets, installed around a tree pit for protection. Parks recommends a low cast-iron fence or wrought-iron wickets that is 18 inches high. Tree guard posts shall be solid steel or reinforced aluminum. Tree guards must be three sided leaving the street side open and should

not be embedded into concrete. This will protect the tree from dogs and pedestrians and give it enough space to grow for many years to come.

NYC Parks has standardized and approved designs which are encouraged for all tree guard installations (Appendix D). Alternative designs may be approved on a case-by-case basis and must be three-sided, approximately 18 inches tall, with no sharp points, installed on the outer perimeter of the tree bed, and positioned at least one foot short of the curb with the curbside open. Solid walls are not permissible. Water must be able to flow into the tree bed on all sides. The applicant takes full responsibility for maintaining the tree guard in a safe condition. If the condition of the tree guard is not maintained in a safe condition the tree guard will be removed by NYC Parks. Interested parties should apply for a permit to 'Install Tree Guard' before installing a tree guard. The permit is to 'Install Tree Guard'.

### **Tree Grates**

Sidewalk-level tree grates are not permitted.

### **Pavers**

Pavers are also not to be used without express written permission from Parks.

### **Other**

Never plant Ivy or woody shrubs/plants in the tree pit as they compete with the tree for vital nutrients.

# APPENDICES

## Appendix A

### LIST OF APPROVED SPECIES

- |    |  |    |  |
|----|--|----|--|
| 1  | <i>Abies concolor</i>                                | 44 | <i>Betula nigra</i> 'Heritage'                 |
| 2  | <i>Acer buergerianum</i>                             | 45 | <i>Betula nigra</i> 'Duraheat'                 |
| 3  | <i>Acer campestre</i>                                | 46 | <i>Carpinus betulus</i>                        |
| 4  | <i>Acer campestre</i> 'Evelyn'                       | 47 | <i>Carpinus betulus</i> 'Emerald Avenue'       |
| 5  | <i>Acer campestre</i> 'Metro Gold'                   | 48 | <i>Carpinus betulus</i> 'Fastigiata'           |
| 6  | <i>Acer campestre</i> 'Queen Elizabeth'              | 49 | <i>Carpinus caroliniana</i>                    |
| 7  | <i>Acer ginnala</i>                                  | 50 | <i>Carpinus caroliniana</i> 'Native Flame'     |
| 8  | <i>Acer ginnala</i> 'Flame'                          | 51 | <i>Carpinus japonica</i>                       |
| 9  | <i>Acer ginnala</i> 'Ruby Slippers'                  | 52 | <i>Catalpa ovata</i>                           |
| 10 | <i>Acer griseum</i>                                  | 53 | <i>Catalpa speciosa</i>                        |
| 11 | <i>Acer palmatum</i>                                 | 54 | <i>Celtis laevigata</i>                        |
| 12 | <i>Acer pennsylvanicum</i>                           | 55 | <i>Celtis occidentalis</i>                     |
| 13 | <i>Acer pseudoplatanus</i> 'Atropurpureum'           | 56 | <i>Celtis occidentalis</i> 'Magnifica'         |
| 14 | <i>Acer maximowiczianum</i>                          | 57 | <i>Celtis occidentalis</i> 'Chicagoland'       |
| 15 | <i>Acer miyabe</i> 'State Street'                    | 58 | <i>Celtis occidentalis</i> 'Praire Sentinal'   |
| 16 | <i>Acer x freemanii</i> 'Armstrong'                  | 59 | <i>Cercidiphyllum japonicum</i>                |
| 17 | <i>Acer x freemanii</i> 'Autumn Blaze'               | 60 | <i>Cercis canadensis</i>                       |
| 18 | <i>Acer rubrum</i> 'Bowhall'                         | 61 | <i>Cercis canadensis</i> 'Crosswicks Red'      |
| 19 | <i>Acer rubrum</i> 'Frank Jr.'                       | 62 | <i>Cercis canadensis</i> 'Appalachain Red'     |
| 20 | <i>Acer rubrum</i> 'Franksred'                       | 63 | <i>Cercis canadensis</i> 'Forest Pansy'        |
| 21 | <i>Acer rubrum</i> 'Karpick'                         | 64 | <i>Cercis canadensis</i> 'Hearts of Gold'      |
| 22 | <i>Acer rubrum</i> 'October Glory'                   | 65 | <i>Cercis canadensis</i> 'Royal White'         |
| 23 | <i>Acer rubrum</i> 'Red Sunset'                      | 66 | <i>Cercis canadensis</i> var. Alba             |
| 24 | <i>Acer rubrum</i> 'Redpointe'                       | 67 | <i>Cercis chinensis</i> 'Avondale'             |
| 25 | <i>Acer x freemanii</i> 'Scarsen'                    | 68 | <i>Cercis reniformis</i> 'Oklahoma'            |
| 26 | <i>Acer saccharinum</i>                              | 69 | <i>Chamaecyparis obtusa</i> 'Crippsii'         |
| 27 | <i>Acer tataricum</i> 'Rugged Charm'                 | 70 | <i>Chionanthus retusus</i>                     |
| 28 | <i>Acer tataricum</i> 'Pacific Sunset'               | 71 | <i>Chionanthus virginicus</i>                  |
| 29 | <i>Acer tataricum</i> 'Pattern Perfect'              | 72 | <i>Cladrastis kentukea</i>                     |
| 30 | <i>Acer tataricum</i> 'Hot Wings'                    | 73 | <i>Cladrastis kentukea</i> 'Sweetshade'        |
| 31 | <i>Acer truncatum</i> 'Norwegian Sunset'             | 74 | <i>Cladrastis kentukea</i> 'Perkins Pink'      |
| 32 | <i>Aesculus</i> 'Autumn Splendor'                    | 75 | <i>Cornus</i> 'June Snow'                      |
| 33 | <i>Aesculus glabra</i>                               | 76 | <i>Cornus</i> 'Venus'                          |
| 34 | <i>Aesculus hippocastanum</i> 'Baumanni'             | 77 | <i>Cornus</i> 'Constellation'                  |
| 35 | <i>Aesculus octandra</i>                             | 78 | <i>Cornus florida</i> 'Cherokee Sunset'        |
| 36 | <i>Aesculus x carnea</i> 'Briotii'                   | 79 | <i>Cornus florida</i> 'Cherokee Brave'         |
| 37 | <i>Aesculus x carnea</i> 'Fort McNair'               | 80 | <i>Cornus florida</i> 'Cherokee Princess'      |
| 38 | <i>Amelanchier canadensis</i> 'Robin Hill'           | 81 | <i>Cornus kousa</i> 'Summer Stars'             |
| 39 | <i>Amelanchier laevis</i>                            | 82 | <i>Cornus mas</i>                              |
| 40 | <i>Amelanchier laevis</i> 'Spring Flurry'            | 83 | <i>Cornus mas</i> 'Spring Sun'                 |
| 41 | <i>Amelanchier lamarkii</i>                          | 84 | <i>Corylus colurna</i>                         |
| 42 | <i>Amelanchier x grandiflora</i> 'Autumn Brilliance' | 85 | <i>Cotinus coggygria</i>                       |
| 43 | <i>Amelanchier x grandiflora</i> 'Princess Diana'    | 86 | <i>Cotinus</i> 'Grace'                         |
|    |  | 87 | <i>Crataegus</i> 'Crimson Cloud'               |
|    |  | 88 | <i>Crataegus crusgalli</i> var. <i>inermis</i> |



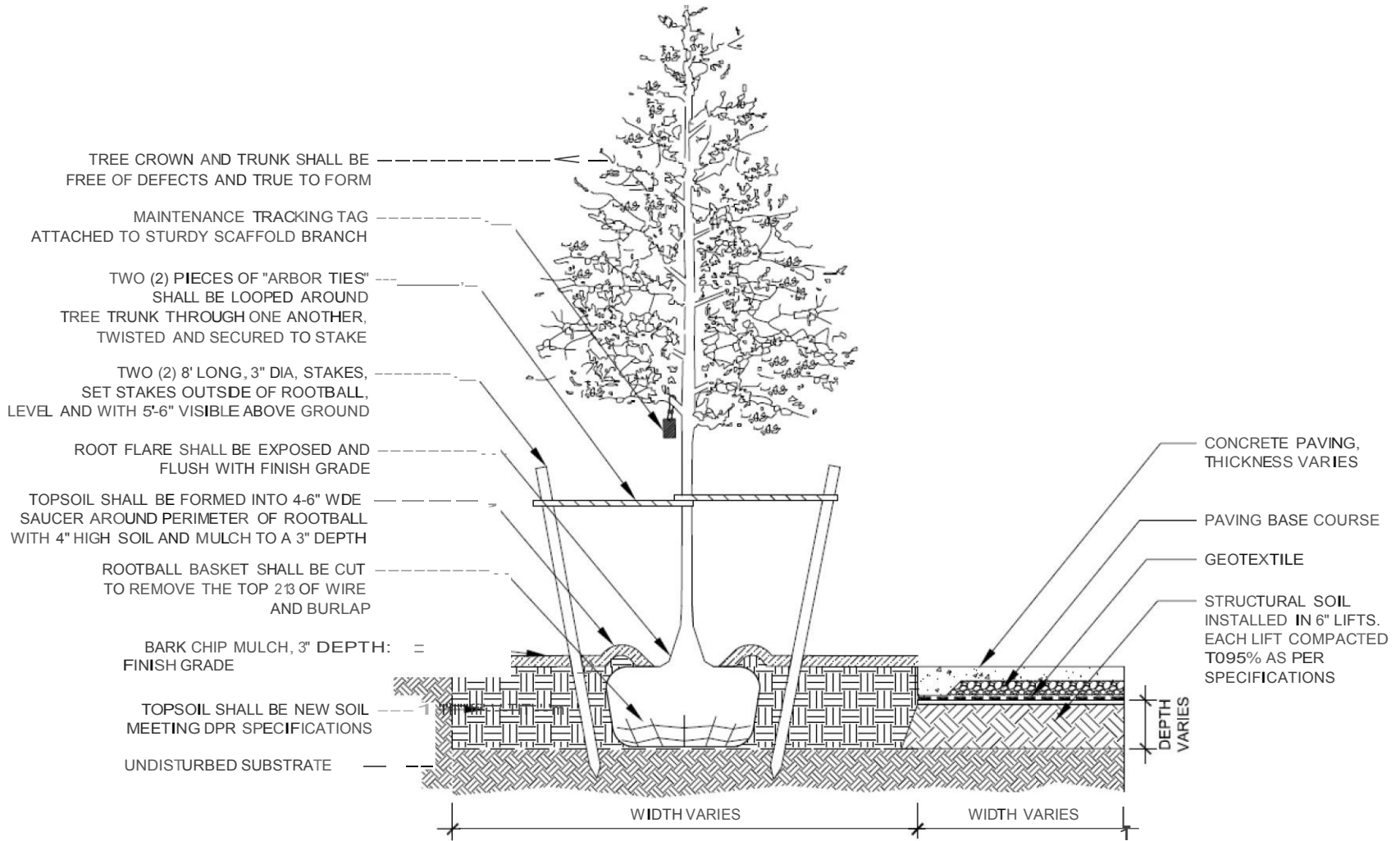
- 89 *Crataegus* 'Lavellus'  
90 *Crataegus phaenopyrum* 'Washington'  
91 *Crataegus viridis* 'Winter King'  
92 *Cryptomeria japonica* 'Angelica'  
93 *Cryptomeria japonica* 'Black Dragon'  
94 *Cryptomeria japonica* 'Yoshino'  
95 *Eucommia ulmoides*  
96 *Eucommia ulmoides* 'Emerald Pointe'  
97 *Eucommia ulmoides* 'Emerald  
Sunshine'  
98 *Fagus sylvatica* 'Dawyckii Purple'  
99 *Fagus sylvatica* 'Riversii'  
100 *Fraxinus americana*  
101 *Fraxinus pennsylvanica* 'Leprechaun'  
102 *Fraxinus pennsylvanica* 'Patmore'  
103 *Ginkgo biloba*  
104 *Ginkgo biloba* 'Autumn Gold'  
105 *Ginkgo biloba* 'Columnaris'  
106 *Ginkgo biloba* 'Fairmont'  
107 *Ginkgo biloba* 'Fastigiata'  
108 *Ginkgo biloba* 'Magyar'  
109 *Ginkgo biloba* 'Princeton Sentry'  
110 *Ginkgo biloba* 'Shangri-la'  
111 *Gleditsia triacanthos* var. *inermis*  
'Draves'  
112 *Gleditsia triacanthos* var. *inermis*  
'Halka'  
113 *Gleditsia triacanthos* var. *inermis*  
'Shademaster'  
114 *Gleditsia triacanthos* var. *inermis*  
'Imperial'  
115 *Gleditsia triacanthos* var. *inermis*  
'Skyline'  
116 *Gleditsia triacanthos* var. *inermis*  
'Streetkeeper'  
117 *Gymnocladus dioicus*  
118 *Gymnocladus dioicus* 'Espresso'  
119 *Gymnocladus dioicus* 'Prairie Titan'  
120 *Halesia carolina*  
121 *Halesia carolina* 'Arnold Pink'  
122 *Halesia diptera* 'Magniflora'  
123 *Halesia* 'Jersey Belle'  
124 *Halesia monticola*  
125 *Juniperus chinensis* 'Hetzii'  
126 *Juniperus chinensis* 'Ketleri'  
127 *Juniperus virginiana*  
128 *Koelreuteria paniculata*  
129 *Koelreuteria paniculata* 'Fastigiata'  
130 *Koelreuteria paniculata* 'Gold Candle'  
131 *Koelreuteria paniculata* 'Rose Lanterns'  
132 *Laburnum x watereri*  
133 *Lagerstroemia* 'Muskogee'  
134 *Lagerstroemia* 'Natchez'  
135 *Lagerstroemia* 'Tuskogee'  
136 *Liquidambar formosana*  
137 *Liquidambar styraciflua*  
138 *Liquidambar styraciflua* 'Cherokee'  
139 *Liquidambar styraciflua* 'Happidaze'  
140 *Liquidambar styraciflua* 'Moraine'  
141 *Liquidambar styraciflua* 'Slender  
Sliouette'  
142 *Liquidambar styraciflua* 'Worplesdon'  
143 *Liriodendron tulipifera* 'Arnold'  
144 *Liriodendron tulipifera* 'Emerald City'  
145 *Maackia amurensis*  
146 *Maackia amurensis* 'Starburst'  
147 *Magnolia* 'Butterflies'  
148 *Magnolia* 'Elizabeth'  
149 *Magnolia macrophylla*  
150 *Magnolia soulangiana*  
151 *Magnolia soulangiana* 'Rustica Rubra'  
152 *Magnolia* 'Wades Memory'  
153 *Malus* 'Adams'  
154 *Malus* 'Cardinal'  
155 *Malus* 'Centurion'  
156 *Malus* 'Coralburst'  
157 *Malus* 'Dolgo'  
158 *Malus* 'Donald Wyman'  
159 *Malus* 'Harvest Gold'  
160 *Malus* 'Sugartyme'  
161 *Malus* 'Prariefire'  
162 *Malus* 'Pink Spire'  
163 *Malus* 'Robinson'  
164 *Malus* 'Spring Snow'  
165 *Malus* 'Sugartyme'  
166 *Metasequoia glyptostroboides*  
167 *Metasequoia glyptostroboides* 'Gold  
Rush'  
168 *Nyssa sylvatica*  
169 *Nyssa sylvatica* 'Forum'  
170 *Nyssa sylvatica* 'Red Rage'  
171 *Nyssa sylvatica* 'Wildfire'  
172 *Ostrya virginiana*  
173 *Parrotia persica*  
174 *Parrotia persica* 'Vanessa'  
175 *Parrotia persica* 'Ruby Vase'  
176 *Pistache chinensis*  
177 *Pistache chinensis* 'Pairs Choice'  
178 *Platanus x acerifolia* 'Bloodgood'  
179 *Platanus x acerifolia* 'Columbia'  
180 *Platanus x acerifolia* 'Exclamation'  
181 *Prunus* 'Amanowagawa'

- 182 *Prunus blireana*  
183 *Prunus cerasifera* 'Crimson Point'  
184 *Prunus cerasifera* 'Krauter Vesuvius'  
185 *Prunus cerasifera* 'Mt. St. Helens'  
186 *Prunus cerasifera* 'Newport'  
187 *Prunus cerasifera* 'Thundercloud'  
188 *Prunus cistena* 'Schmidtcs'  
189 *Prunus* 'Dreamcatcher'  
190 *Prunus* 'Holly Jolivette'  
191 *Prunus* 'Mount St. Helens'  
192 *Prunus* 'Mt Fuji'  
193 *Prunus* 'Okame'  
194 *Prunus padus*  
195 *Prunus padus* 'Merlot'  
196 *Prunus padus* 'Summer Glow'  
197 *Prunus* 'Princeton Snowcloud'  
198 *Prunus* 'Royal Burgundy'  
199 *Prunus sargentii*  
200 *Prunus sargentii* 'Columnaris'  
201 *Prunus sargentii* 'Rancho'  
202 *Prunus serotina*  
203 *Prunus serrulata* 'Kwanzan'  
204 *Prunus serrulata* 'Shirotae'  
205 *Prunus* 'Snow Goose'  
206 *Prunus* 'Snow Goose x copper graft'  
207 *Prunus subhirtella* 'Autumnalis'  
208 *Prunus virginiana* 'Canada Red'  
209 *Prunus x hillieri* 'Spires'  
210 *Prunus x yedoensis*  
211 *Prunus x yedoensis* 'Akebono'  
212 *Prunus x yedoensis* 'Cascade Snow'  
213 *Quercus acutissima*  
214 *Quercus alba*  
215 *Quercus bicolor*  
216 *Quercus coccinea*  
217 *Quercus* 'Crimson Spire'  
218 *Quercus dentata*  
219 *Quercus ellipsodalis*  
220 *Quercus frainetto*  
221 *Quercus garryana*  
222 *Quercus imbricaria*  
223 *Quercus lyrata*  
224 *Quercus macrocarpa*  
225 *Quercus muehlenbergii*  
226 *Quercus nuttali*  
227 *Quercus palustris*  
228 *Quercus palustris* 'Green Pillar'  
229 *Quercus phellos*  
230 *Quercus phellos* 'Hightower'  
231 *Quercus prinus*  
232 *Quercus* 'Regal Prince'  
233 *Quercus robur*  
234 *Quercus robur x bicolor* 'Kindred Spirit'  
235 *Quercus robur* 'Skyrocket'  
236 *Quercus robur* var. *Fastigiata*  
237 *Quercus rubra*  
238 *Quercus x comptoniae*  
239 *Quercus sargentii*  
240 *Quercus shumardii*  
241 *Quercus texana*  
242 *Quercus velutina*  
243 *Robinia pseudoacacia* 'Frisia'  
244 *Robinia pseudoacacia* 'Purple Robe'  
245 *Sequoiadendron giganteum*  
246 *Stewartia pseudocamellia*  
247 *Styphnolobium japonicum* 'Millstone'  
248 *Styphnolobium japonicum* 'Regent'  
249 *Styrax japonica*  
250 *Styrax japonica* 'Emerald Pagoda'  
251 *Styrax japonica* 'Snowcone'  
252 *Styrax obbasia*  
253 *Syringa pekinensis* 'Beijing Gold'  
254 *Syringa pekinensis* 'China Snow'  
255 *Syringa pekinensis* 'Summer charm'  
256 *Syringa reticulata*  
257 *Syringa reticulata* 'Snowcap'  
258 *Syringa reticulata* 'Ivory Silk'  
259 *Taxodium ascendens* 'Nutans'  
260 *Taxodium distichum*  
261 *Taxodium distichum* 'Shawnee Brave'  
262 *Tilia americana* 'Continental Appeal'  
263 *Tilia americana* 'Legend'  
264 *Tilia americana* 'McSentry'  
265 *Tilia americana* 'Redmond'  
266 *Tilia cordata* 'Corinthian'  
267 *Tilia cordata* 'Corizam'  
268 *Tilia cordata* 'Glenlevyn'  
269 *Tilia cordata* 'Greenspire'  
270 *Tilia cordata* 'Prestige'  
271 *Tilia cordata* 'Shamrock'  
272 *Tilia cordata* 'Unizam'  
273 *Tilia mongolica* 'Harvest Gold'  
274 *Tilia tomentosa* 'Green Mountain'  
275 *Tilia tomentosa* 'Satin Shadow'  
276 *Tilia tomentosa* 'Sterling'  
277 *Tilia tomentosa* 'Szeleste'  
278 *Tilia x euchlora*  
279 *Tilia x euchlora* 'Laurelhurst'  
280 *Ulmus* 'Accolade'  
281 *Ulmus americana* 'Princeton'  
282 *Ulmus americana* 'Valley Forge'  
283 *Ulmus* 'Athena'

- 284 *Ulmus* 'Emerald Sunshine'
- 285 *Ulmus* 'Frontier'
- 286 *Ulmus* 'Homestead'
- 287 *Ulmus* 'Jefferson'
- 288 *Ulmus* 'Morton Glossy'
- 289 *Ulmus* 'New Harmony'
- 290 *Ulmus* 'New Horizon'
- 291 *Ulmus parvifolia* 'Everclear'
- 292 *Ulmus parvifolia* 'Allee'
- 293 *Ulmus parvifolia* 'Bosque'
- 294 *Ulmus parvifolia* 'Dynasty'
- 295 *Ulmus* 'Patriot'
- 296 *Ulmus* 'Pioneer'
- 297 *Ulmus* 'Prospector'
- 298 *Ulmus* 'Triumph'
- 299 *Zelkova serrata* 'City Sprite'
- 300 *Zelkova serrata* 'Green Vase'
- 301 *Zelkova serrata* 'Halka'
- 302 *Zelkova serrata* 'Mushashino'
- 303 *Zelkova serrata* 'Variegata'
- 304 *Zelkova serrata* 'Village Green'
- 305 *Zelkova serrata* 'Wireless'

# Appendix B

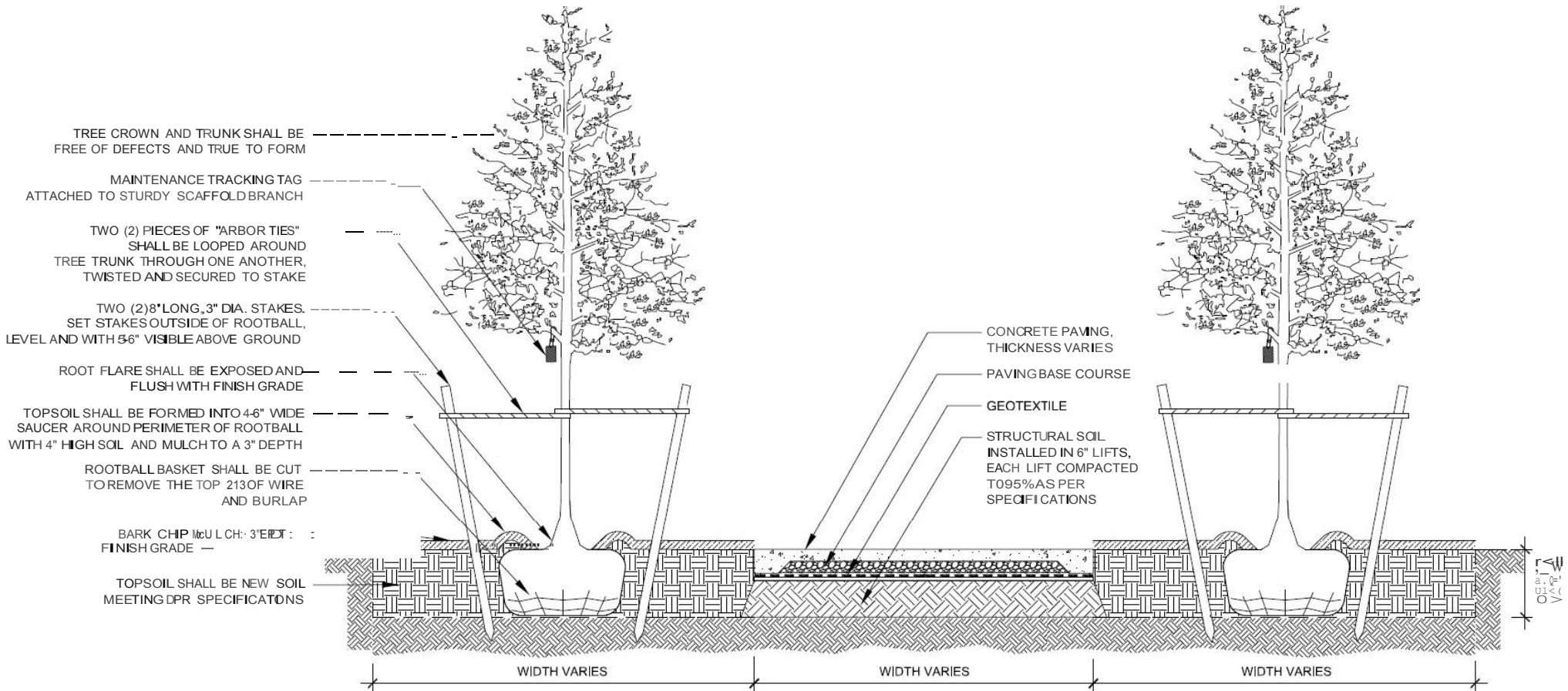
## STRUCTURAL SOIL



### TREE PLANTING & STRUCTURAL SOIL DETAIL

NOT TO SCALE

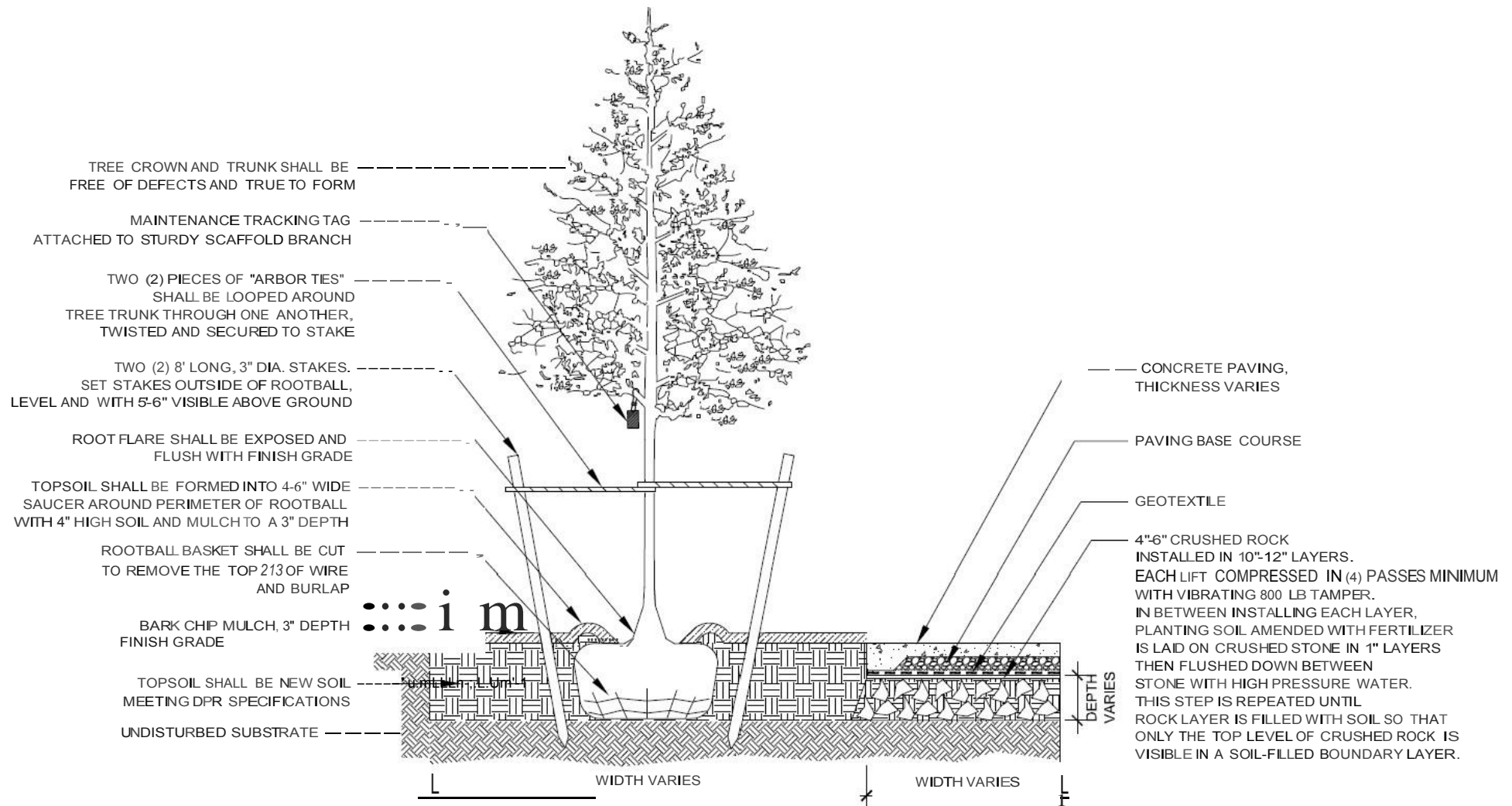
## CONTINUOUS STRUCTURAL SOIL



## TREE PLANTING & CONTINUOUS STRUCTURAL SOIL DETAIL

NOT TO SCALE

## SWEDISH STRUCTURAL SOIL

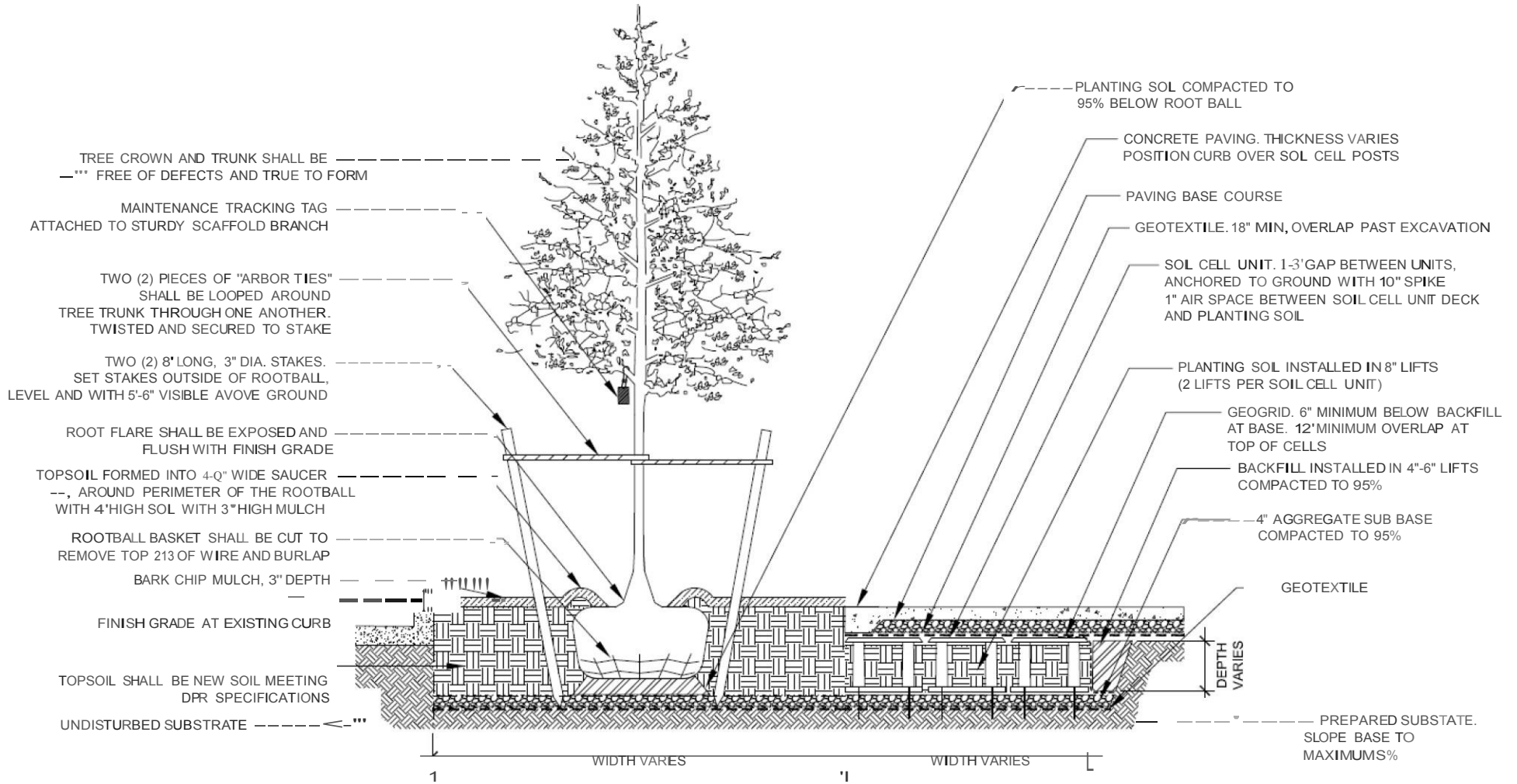


## TREE PLANTING & SWEDISH STRUCTURAL SOIL DETAIL

NOT TO SCALE

# Appendix C

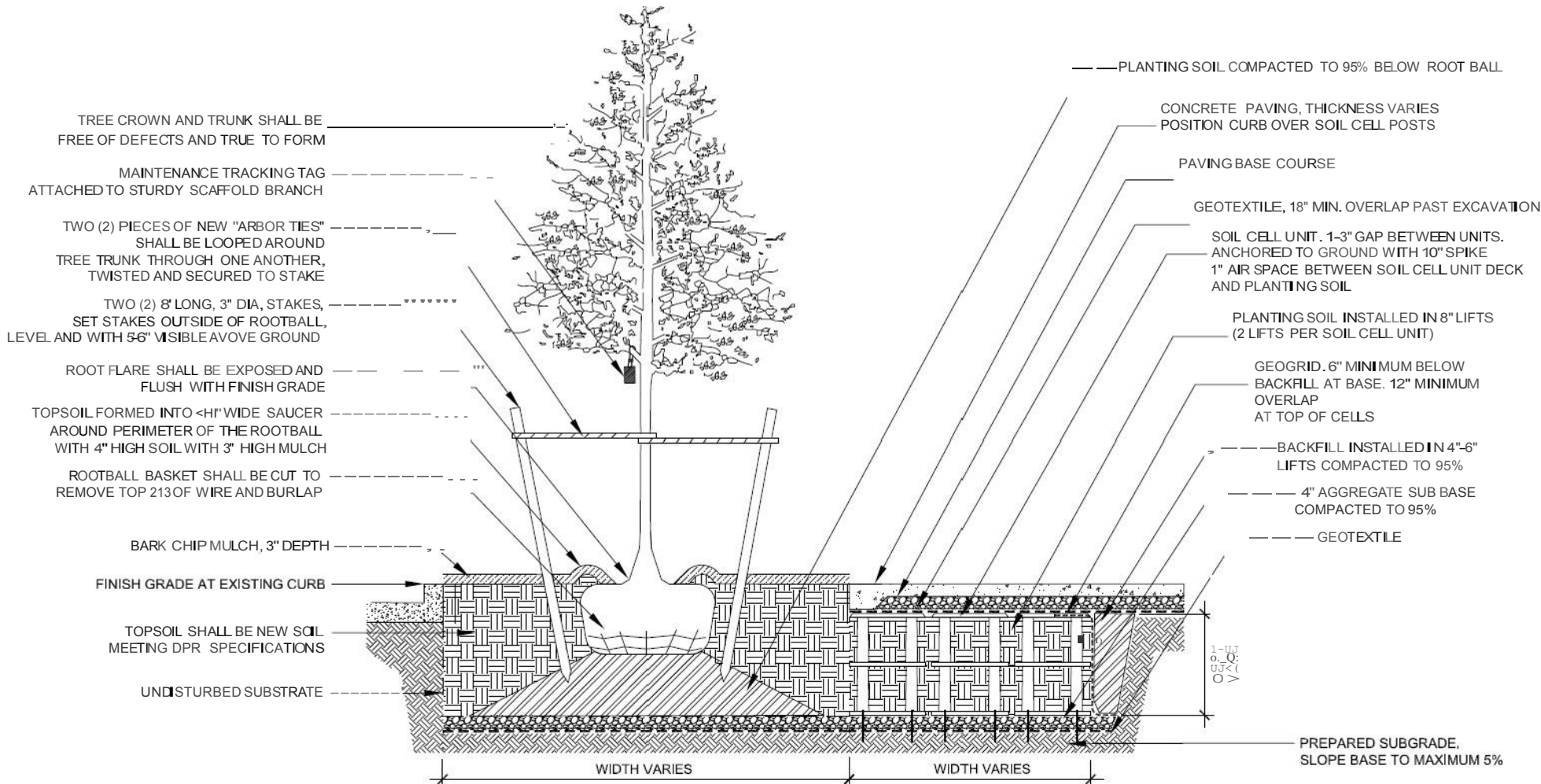
## SOIL CELL UNIT IN SINGLE LAYER



### TREE PLANTING & SOIL CELL UNIT IN SINGLE LAYER DETAIL

NOT TO SCALE

# SOIL CELL UNIT IN DOUBLE LAYER



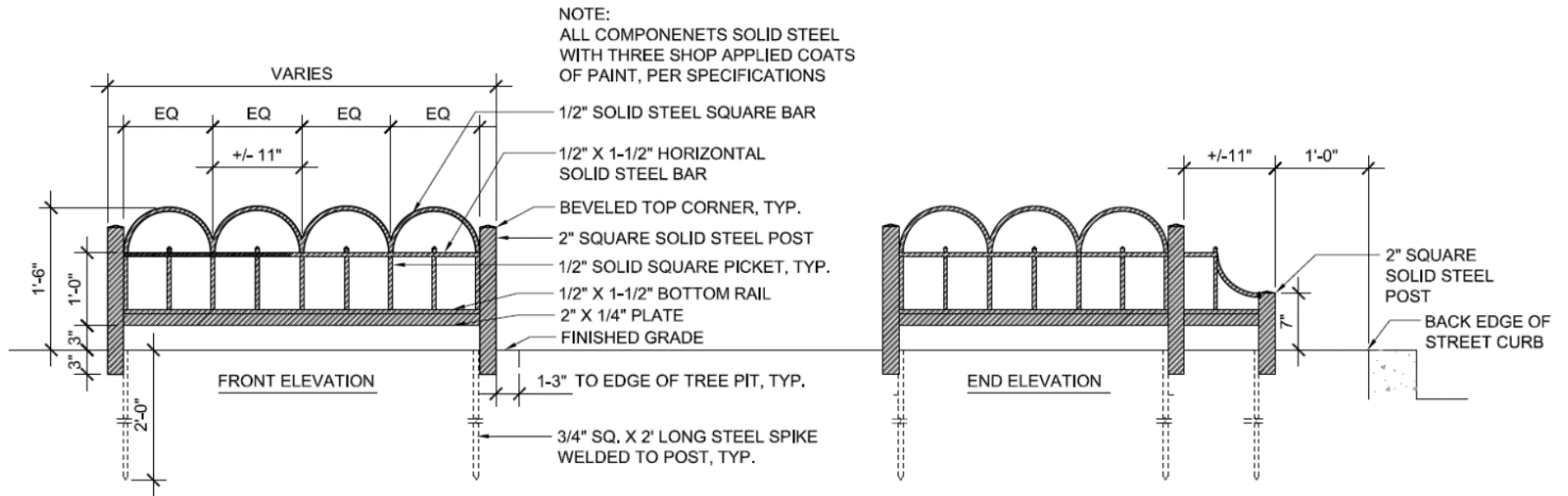
## TREE PLANTING & SOIL CELL UNIT IN DOUBLE LAYER DETAIL

NOT TO SCALE



# Appendix D

## TREE GUARDS

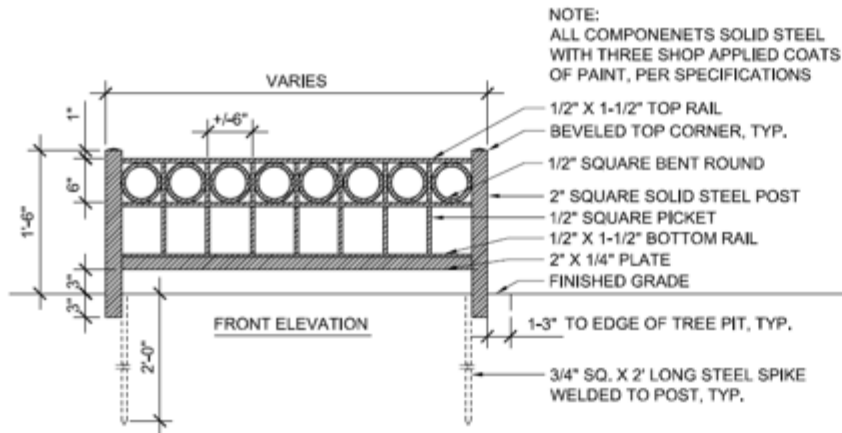


**TREE PIT GUARD TYPE 'A'**

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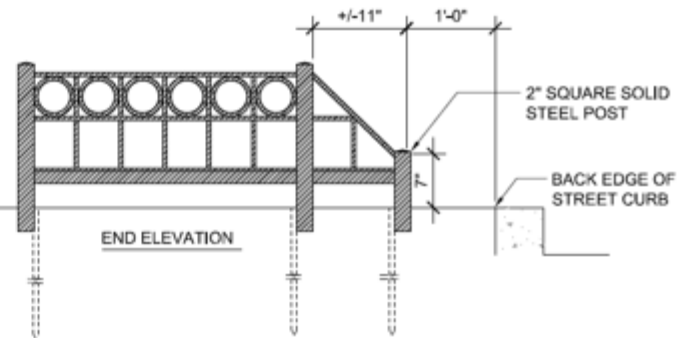
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NOT TO SCALE



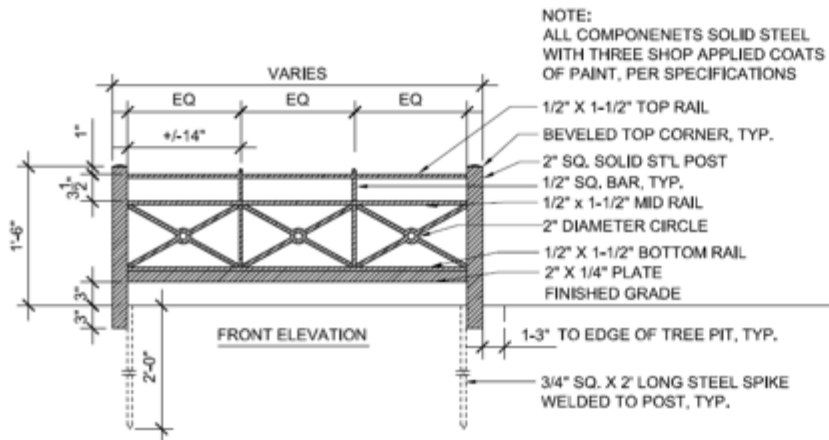
**TREE PIT GUARD TYPE 'B'**

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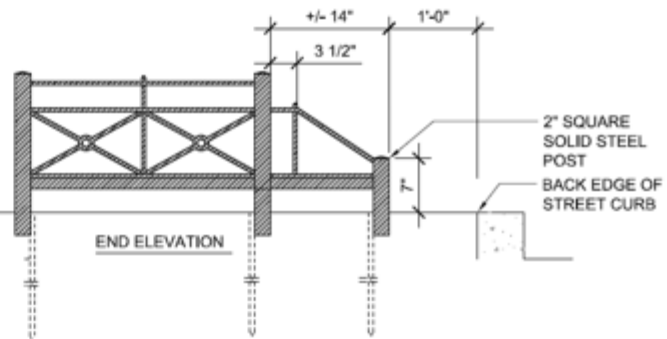
**TYPE 'B' THREE-SIDED DESIGN**

NOT TO SCALE



**TREE PIT GUARD TYPE 'C'**

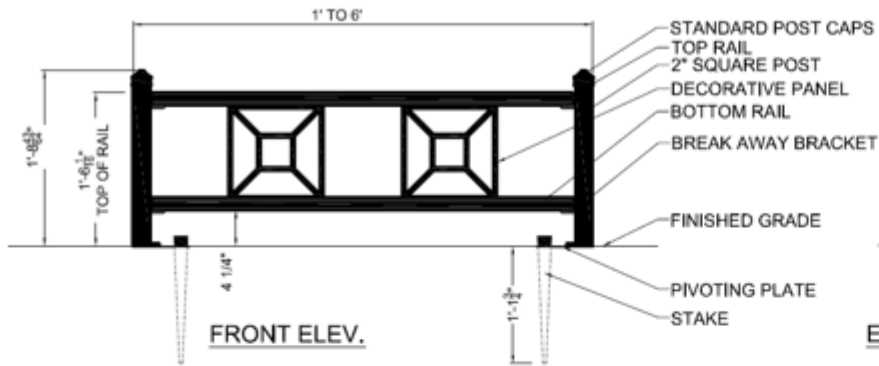
NOT TO SCALE



**TYPE 'C' THREE-SIDED DESIGN**

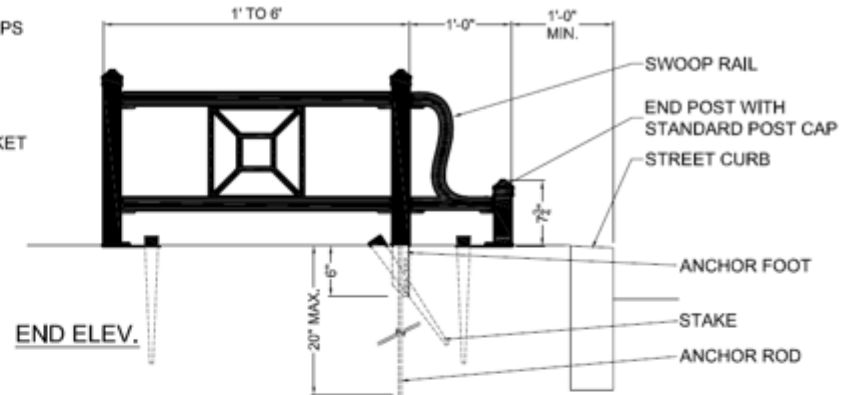
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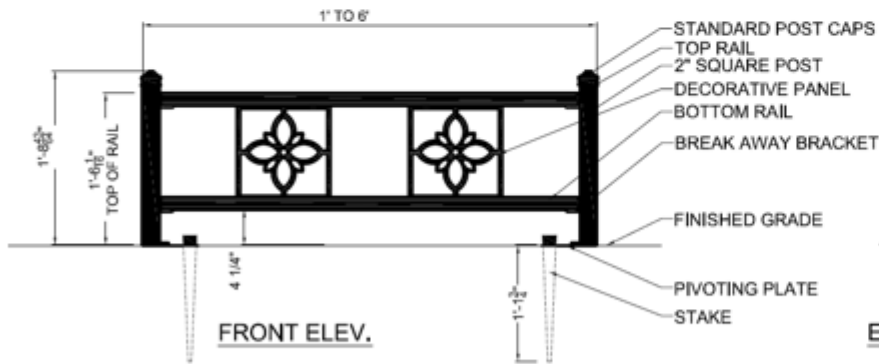


**TREE PIT GUARD TYPE 'F'**

SCALE: NTS

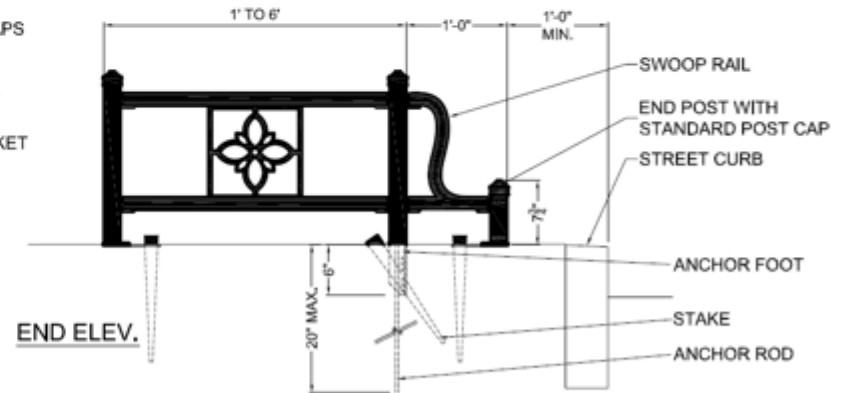


**TYPE 'F' THREE SIDED DESIGN**

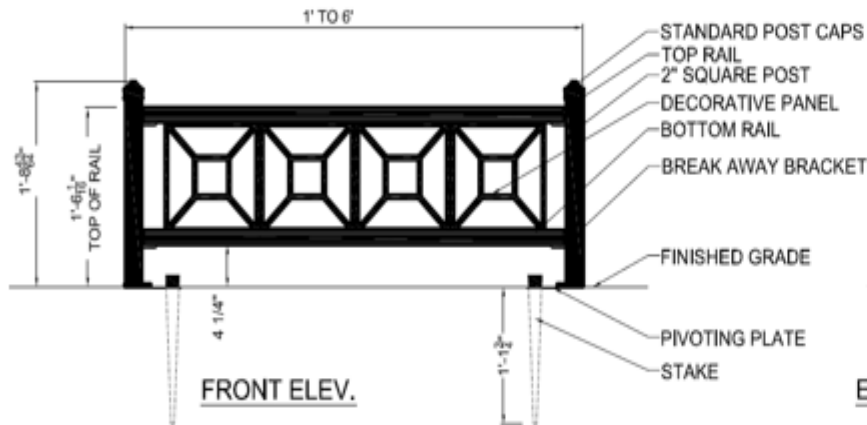


**TREE PIT GUARD TYPE 'G'**

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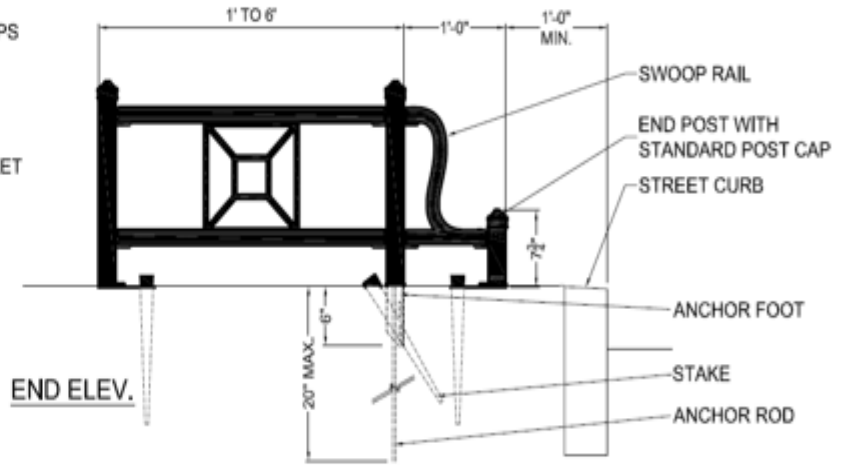


**TYPE 'G' THREE SIDED DESIGN**

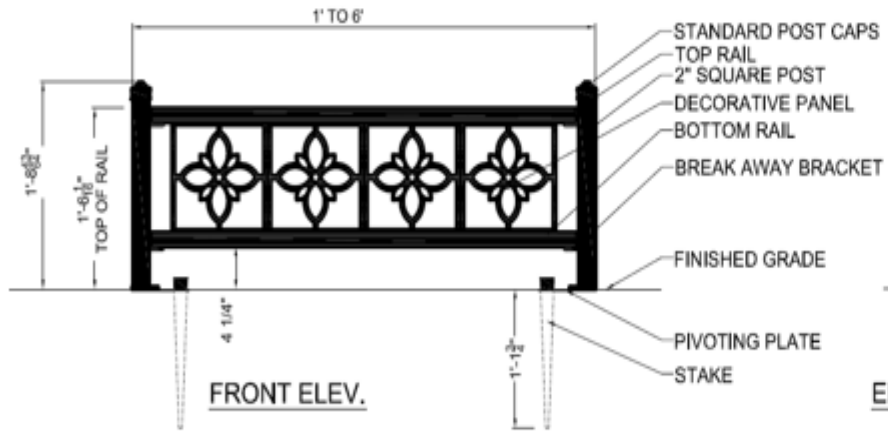


**TREE PIT GUARD TYPE 'H'**

SCALE: NTS

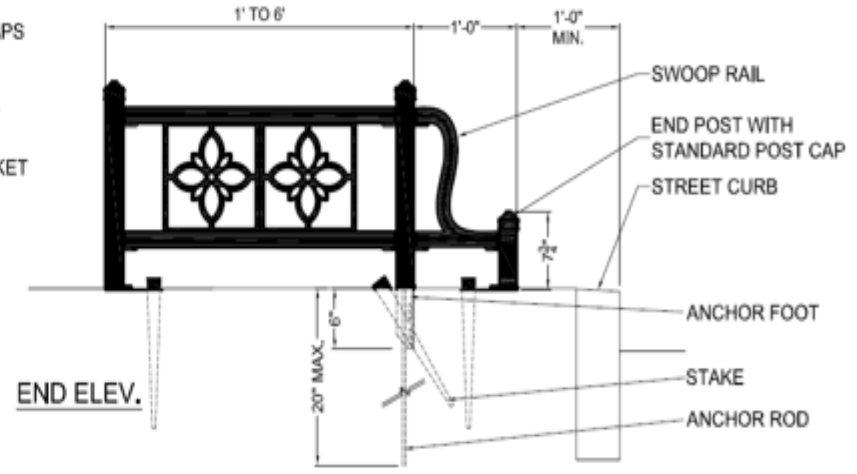


**TYPE 'H' THREE SIDED DESIGN**



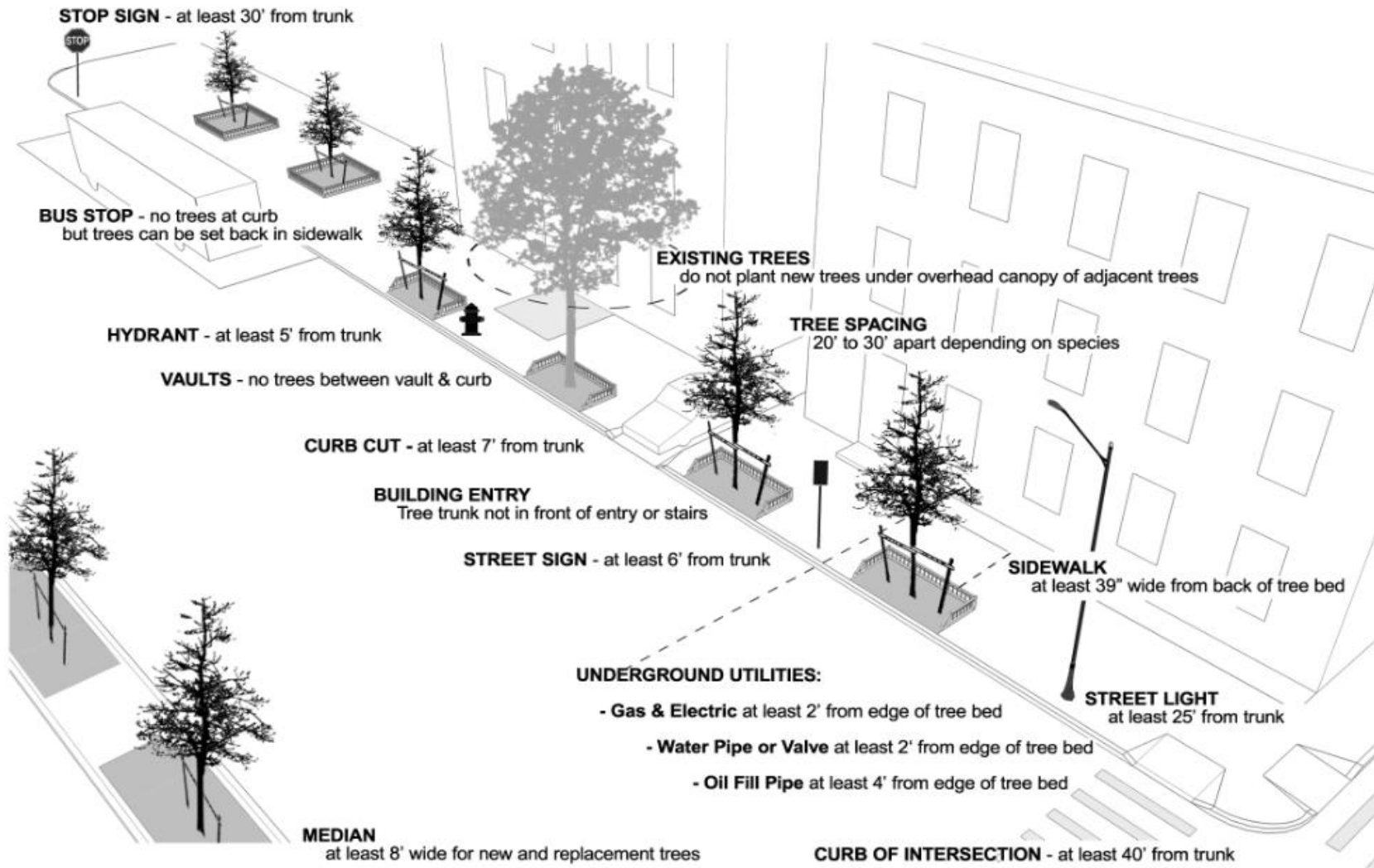
**TREE PIT GUARD TYPE 'J'**

SCALE: NTS

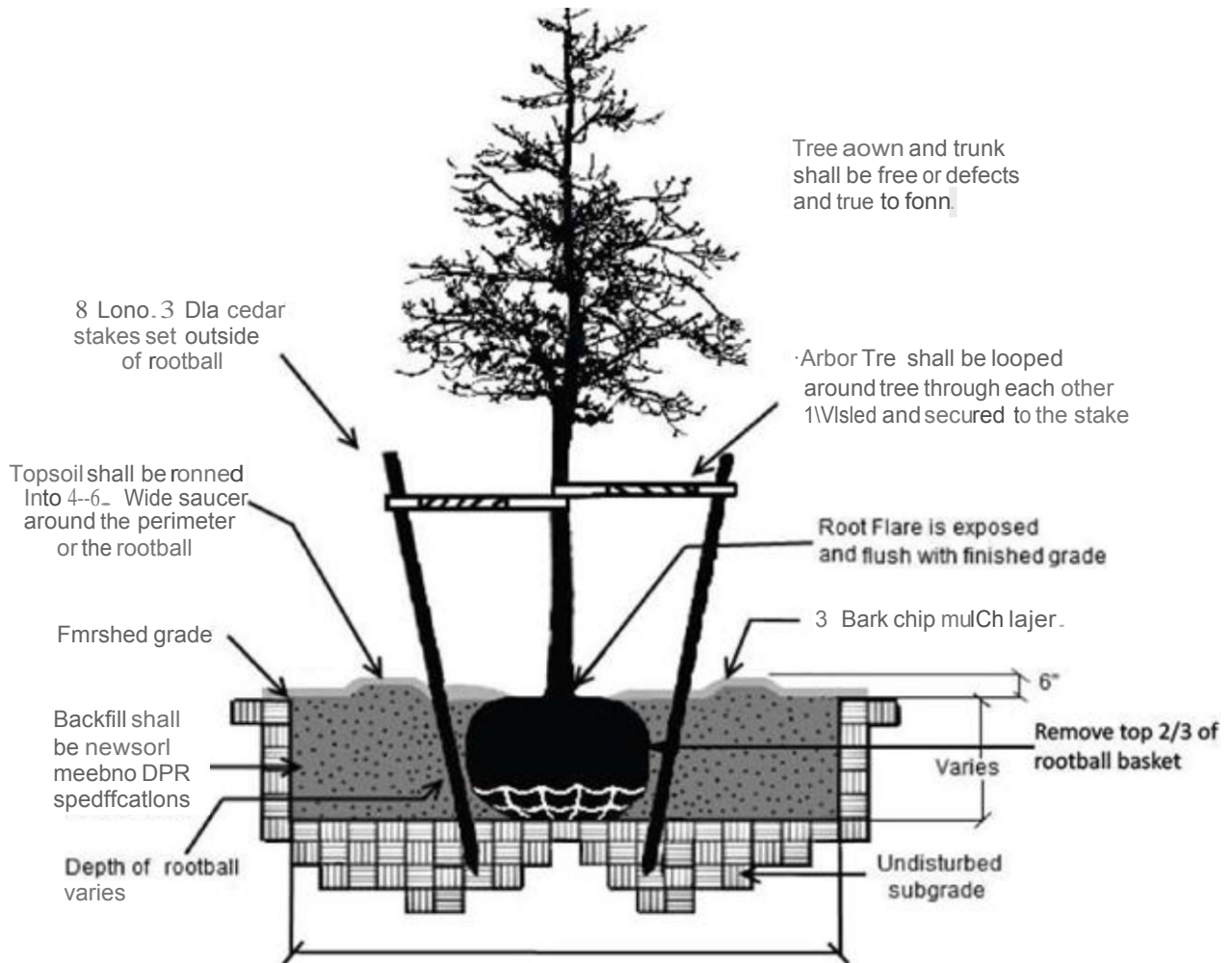


**TYPE 'J' THREE SIDED DESIGN**

# Appendix E



# Appendix F



## Tree Planting & Stake Detail

Not to Scale