



Tree Planting Standards



City of New York Parks & Recreation

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September 2009

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TREE PLANTING GUIDELINES

Street trees are important to our quality of life in the city. They are living elements of our street infrastructure. Located in the public right-of-way, they provide cooling shade, cleaner air, and more beautiful urban streetscapes. Trees confer important esthetic and ecological benefits to City residents as well. Yet plants in the urban landscape 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 approved tree planting permit applicants **must** follow these guidelines. Any tree work improperly performed or otherwise not in accordance with these specifications will be subject to restitution and penalty at the direction of Parks & Recreation and at the expense of the property owner.

1. Design

A. SPACING REQUIREMENTS

The following guidelines shall be observed when citing tree pits along sidewalks. These guidelines generally follow regulations of other agencies with street jurisdictions such as Fire, DOT, and MTA. These requirements are design and species dependent. The Americans with Disabilities Act (ADA) guidelines must be followed.

- a. Do not plant in front of building entrances in order to permit easy access by the Fire Department.
- b. Minimum distance between trees (center to center) ranges from 20' to 30', depending upon the tree species and other local conditions.
- c. Minimum distance from a streetlight is 25' (varies with tree species) to the tree trunk.
- d. Minimum distance from a stop sign is 30' to the tree trunk.
- e. Minimum distance from other traffic signs is 6' to the tree trunk.
- f. Suggested distance from a parking meter is no more than 5' behind the meter to the tree trunk, to allow for the swing of car doors.
- g. Minimum distance from a gas or water valve is 2' from the edge of the pit.
- h. Minimum distance from an oil fill pipe is 4' from the edge of the pit.
- i. Minimum distance from the edge of a coal chute is 2' to the edge of the pit.
- j. Minimum distance from a fire hydrant is 3' from the edge of the pit.
- k. Minimum distance from a curb cut or driveway is 2' to the edge of the pit and 7' from the tree trunk.
- l. Minimum distance from the corner of a street intersection is 40' to the tree trunk.

- m.* Minimum distance from the edge of the pit to any opposite obstruction (building wall, stoop, railing, property line etc) is from 4' to 6', depending upon local conditions and the amount of sidewalk traffic.
- n.* All tree pits must be contiguous to the street curb (except as noted below, or with the permission of the Agency representative).
- o.* 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.
- p.* Do not plant within bus stops.

The locations of all trees shown on plans may be relocated as required by site and as directed by the Agency representative.

B. TREE PIT DIMENSIONS

Tree pits should be as large as possible to allow for ample growing space for tree roots and crown, and to prevent future sidewalk lifting. Optimal tree pit size would be 4 feet by 10 feet or 5 feet by 10 feet. The overall width of a sidewalk can limit the size of a tree pit. Please refer to the Sample Tree Pit Configuration Sheet on page 19 for a range of possible tree pit sizes.

Parks encourages continuous tree pits whenever possible, and designs that call for continuous pits may be given more flexible spacing requirements by the Agency representative.

If the recommended tree pit size does not match the approved site plan, the plan must be revised.

C. GROUPED PLANTINGS

Grouped plantings provide a number of environmental benefits. These benefits include increased shading, reduced evapotranspiration, less 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 as within a plaza or alongside a pedestrian passageway.

D. 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 tree, the mature height and spread shall be considered to ensure that it will not interfere with existing or proposed structures and overhead utilities. Parks will not allow large to be planted under primary wires. The

species characteristics shall be considered to ensure that they will not cause interference with walls, walks, drives, and other paved surfaces, or affect water and sewer lines, underground drainage systems or utilities.

See the attached list of approved street trees for New York City for information on each species shape, growth rate, visual interest, environmental tolerances and sensitivities (including Asian Longhorned beetle hosts), and special needs. Additional species will be considered.

*Final approval of species choice will be made by a New York City Parks & Recreation Representative.

E. CU STRUCTURAL SOIL

Trees are not to be planted directly in CU Structural Soil. CU Structural Soil is only to be used as a base material under impermeable surfaces. Exposed or permeable surfaces should be excavated and replaced with fresh topsoil meeting tree planting specifications.

a. Materials.

Structural Soil Foundation Material. Shall conform with “CU Soil”, as patented by Cornell University, patent #5,849,069. The product shall be obtained from a licensed producer and proof of such licensing shall be submitted to the Forester prior to delivery. Tri-State licensed providers as of this date are East Coast Mines, Quogue, NY, Tully Environmental Co. d/b/a Evergreen Recycling of Corona, NY or Ascape Landscape, New City, NY. For further information on licensed providers or licensing requirements and application, contact Fernando Erazo at Amereq, Inc., New City, NY (patentholder rights granted to Amereq, Inc. by Cornell Research Foundation.) Structural Soil components shall be mixed by the licensed producer to the following proportions:

Component	Unit	of	Weight	(Dry)
Crushed Stone	83%			
Clay Loam	17%			
Hydrogel	1 ounce	per 200 pounds	of stone	

Crushed Stone: Shall be crushed granite or traprock or washed limestone, no sandstone shall be accepted. No recycled material shall be accepted. Stone shall meet the AASHTO/ ASTM C33 requirements for #4 crushed angular stone graded within the following limits:

Passing Sieve (dry analysis)	Percent by Weight
2 inch	100%
1 1/2 inch	90-100%
1 inch	20-55%

3/4 inch	0-15%
3/8 inch	0-5%

Stone shall be clean and certified to meet NYCDOT aggregate soundness requirements for use in road construction. A single sized crushed stone near one-inch (1") will be preferable to a wider size distribution or smaller single size stone fitting the general description.

Clay Loam: Shall be as determined by the USDA Classification System and mechanical analysis, as per ASTM D-422. Clay loam shall be of uniform composition, without admixture of subsoil, and free of stones greater than one-half inch (1/2") diameter, leaves, roots, debris, toxic materials, or lumps or clods over one inch (1") diameter. It shall have been obtained from naturally well drained areas which have never been previously stripped for topsoil and shall have a history of supporting satisfactory vegetative growth. It shall contain not less than two percent (2%) nor more than five percent (5%) organic matter, as determined by loss on ignition of oven-dried samples, dried to a constant weight at a temperature of 230 F, plus or minus 9 F. Mechanical analysis for clay loam shall be as follows:

Textural Class	Percent of Total Weight (Dry)
Gravel	Less than 5%
Sand	20 - 45%
Silt	20 - 50%
Clay	20 - 40%

Clay loam shall meet or be amended to meet the following chemical analysis criteria:

- (1) pH between 5.5 and 6.5
- (2) organic matter 2 - 5 percent by dry weight
- (3) nutrient levels as required by the testing laboratory recommendations for the types of plants to be grown in the structural soil
- (4) toxic elements and compounds below the US EPA Standards for Exceptional Quality Sludge, or local standards, whichever are more stringent
- (5) soluble salts less than 1.0 ml per cm
- (6) cation exchange capacity (CEC) greater than 10
- (7) Carbon/ Nitrogen ratio less than 33:1.

Clay loam shall be the product of a commercial processing facility specializing in production of stripped natural topsoil. No clay loam shall come from USDA classified prime farmland.

Slow Release Fertilizer: Commercial fertilizer shall comply with U.S. and N.Y. State fertilizer laws. Fertilizer shall be delivered in original unopened containers. The fertilizer shall be 15-2-15 liquid slow release (50%), or approved equal, formulated for mixing into the soil and certified by the manufacturer to provide controlled release of nitrogen continuously for a period of no more than twelve (12) months. Fertilizer shall be delivered in original unopened containers, which shall bear the manufacturer's certificate of compliance covering analysis, and shall be furnished to the Parks Forester.

pH Adjustment: To lower the clay loam pH to acceptable levels, commercial granular ferrous sulfate, ninety six percent (96%) pure sulfur may be added to lower soil pH above 6.5. To raise pH levels, the manufacturer may add agricultural limestone containing a minimum of eighty five percent (85%) carbonates. Minimum gradation: 100% passing 10 mesh sieve, 98% passing 20 mesh sieve, 55% passing 60 mesh sieve, and 40% passing 100 mesh sieve.

Hydrogel: Shall be Gelscape®, a potassium propenoate-propenamide copolymer hydrogel, as manufactured by Amereq, Inc., New City, N.Y., or approved tested equal. No substitution is recommended, since small changes in the hydrogel structure greatly change the quality of the structural soil.

d. Soil mixing and quality control testing.

All Structural Soil shall be mixed using appropriate soil measuring, mixing, and shredding equipment of sufficient capacity and capability to assure proper quality control and consistent mix ratios. Structural soil must be mixed in the presence of the licensee, and no soil shall be placed until inspected by the licensee. No mixing of Structural Soil at the project site shall be permitted unless a large paved area is available for mixing and the site has been pre-approved for use by the Parks Forester. No Structural Soil shall be mixed or placed in air temperatures below 40 °F or delivered or placed in frozen, wet, or muddy conditions. Material shall be delivered at or near optimal compaction moisture content, as determined by AASHTO T 99 (ASTM D 698). No material shall be delivered or placed in an excessively moist condition, beyond two percent (2%) above optimal compaction moisture content, as determined by AASHTO T 99 (ASTM D 698).

Warning: Do not mix or transport structural soil when rain is expected. Place pavement immediately after placing and compacting structural soil to prevent excessive hydration.

Structural Soil components and the finished mixture shall be protected from excess water absorption and erosion at all times. Do not store materials unprotected from rainfall, nor allow excess water to enter the site prior to compaction. If water is introduced into the material after grading, allow material

to drain to near optimal compaction moisture content.

The licensed producer shall add soil amendments to alter soil fertility, including fertilizer and pH adjustment at the rates recommended by soil test results. The soil pH shall be adjusted to fall between 5.5 and 6.5 two months after mixing, if the material is stored. The soil component Carbon/ Nitrogen ratio shall be adjusted to be less than 1:33 within two months after mixing.

The Contractor shall mix sufficient quantity in advance of the time the material is needed at the job site to allow adequate time for the required quality control testing. Storage piles shall be protected from rain and erosion by covering with plastic sheeting.

e. Installation:

The Contractor shall notify the Forester of any subsurface conditions which will affect the Contractor's ability to complete the work, and shall locate and confirm the locations of all underground utility lines and structures prior to starting any excavation in the area to receive Structural Soil by calling New York City/Long Island Call One Center, (800) 272-4480. The Contractor shall be liable to repair any damage to underground utilities or structures caused by their activity during the progress of this work, at their own expense. Where tree roots larger than one inch (1") diameter are damaged, the Contractor shall ensure that damaged root sections are cleanly cut with sterilized pruning equipment.

Structural Soil shall only be installed after the installation of all walls, curbs, footings, and utility work in the area has been completed. For site elements dependent on the Structural Soil for foundation support, postpone installation until immediately after the installation of the Structural Soil. The Contractor shall be responsible for any and all damage caused by the installation of structural soil and all disturbed areas shall be restored to their original condition, to the satisfaction of the Forester.

Site Preparation: The Contractor shall excavate and compact the proposed subgrade to the required depths and dimensions indicated on the drawings or as directed in the field. Do not over excavate compacted subgrades of adjacent pavement or structures. Confirm that the subgrade is at the proper elevation and compacted as required. The excavation shall be cleared of all construction debris, trash, rubble, and foreign material.

When planting trees in the Structural Soil, the rootball shall rest on the Structural Soil or the prepared subgrade at such a level that the root flare of the tree is at finished grade. Cut and remove rope or wire from the top fifty percent (50%) of the rootball and pull the burlap back to the edge of the rootball, removing as much burlap and twine as possible. All plastic or synthetic product must be completely removed from the rootball at the time of planting. If soil is covering the crown, it

must be removed so that the crown sits at the proper level. Any wire basket enclosed rootball will need to have at least two-thirds (2/3) of the basket cut away from the sides and top to prevent future root disturbance. Wire must not be galvanized or aluminum wire.

Install the first six inch (6") lift of Structural Soil mix over the prepared subgrade. Install succeeding layers in six inch (6") lifts and compact each lift. Compact all materials to not less than ninety five percent (95%) of peak dry density from a standard AASHTO compaction curve (AASHTO T 99). No compaction shall occur when moisture content exceeds the maximum listed herein. Delay compaction at least twenty four (24) hours if moisture content exceeds the maximum allowable, and protect the Structural Soil during delays in compaction with plastic or plywood, as directed by the Forester.

Prior to placing pavement, the licensed CU-Soil™ provider and the Forester shall check the Structural Soil material for consistency with the color and texture of the approved sample supplied by the Contractor. In the event that the material supplied varies significantly from the approved sample, the Forester may request that the Contractor test the installed Structural Soil. Any mix which varies significantly from the approved testing results, as determined by the Forester, shall be removed and new Structural Soil installed that meets the specifications.

License: You are required to use a licensed CU Structural Soil manufacturer.

2. Plant Pest Control Requirements

You are reminded to comply with Federal and State Department of Agriculture regulations for plant pest control. Full information can be obtained from Federal and State Pest Control personnel.

A. ASIAN LONGHORNED BEETLE

Quarantine zones for the Asian Longhorned Beetle currently cover large areas of Brooklyn, Manhattan, Queens, and part of Staten Island. You 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). You 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. In general, State Department of Agriculture regulations requires contractors operating in infested areas to thoroughly clean all equipment units before moving them to non-infested areas.

Tree species listed as hosts for the Asian Longhorned Beetle are generally prohibited from planting within all of Brooklyn, Manhattan, Queens, and parts of Staten Island. Exceptions will be made on a case-by-case basis with the approval of the Parks Forester.

3. Materials

A. PLANTS

- a. 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 (28”), 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.
- b. 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.
- c. 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 six inches from the ground and no larger than 3.5 inches in caliper unless otherwise authorized by Parks & Recreation.
- d. 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 Department of Agriculture & Markets, Division of Plant Industry, New York State 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.
- e. Species selection.* Species shall be selected from the list of approved Street Trees for New York City. Guidelines on this chart must be followed, as well as any conditions described on the permit. Restrictions may include species recommended for specific planting seasons and locations. Ultimately, it is Parks decision what species of tree will be planted. Take special note of species prohibited from planting in Brooklyn, Manhattan, Queens, and parts of Staten Island due to the Asian Longhorned Beetle.

B. 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 (1) foot, or less if subsoil is encountered. Topsoil shall be of uniform quality, free from hard clods, stiff clay, hardpan, sods, partially disintegrated stone, lime, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, sticks or any other undesirable material. If a truckload of topsoil is considered by the Agency to contain too much undesirable material to be corrected on the site, the entire truck load shall be rejected. No topsoil shall be delivered in a frozen or muddy condition. Topsoil shall comply with the following requirements:

- a. *Organic Matter.* Must be between seven (7) and twelve (12) percent (not to exceed 14 percent) by weight, as determined by the Dry Combustion Method for Total Carbon and Organic Carbon (using a multiplying factor of 2) as described in Methods of Soil Analysis, #9, Part 2, 2nd ed. published by the American Society of Agronomy. The organic content shall not exceed fourteen percent (14%).
- b. pH range. Shall be 6.0 to 7.0 inclusive.
- c. *Sieve Analysis* (by Wash Test, ASTM Designation C-117). Passing 2" sieve (100%); Passing 1" sieve (95% to 100%); Passing #4 sieve (90% to 100%); Passing #100 sieve (30% to 60%).
- d. *Clay.* The test method to measure the clay content of the soil shall be ASTM D 422.

The Parks Forester reserves the right to reject topsoil in which more than 60% of the material passing the No. 100 U.S.S. Mesh sieve consists of clay as determined by the Buoyous Hydrometer or by the decantation method. All percentages are to be based on dry weight of sample. When the topsoil otherwise complies with the requirements of the specification but show a deficiency of not more than one (1) percent in organic matter, it may be incorporated when and as permitted by the Forester. Electrical Conductivity shall be less than 0.5 mhos/cm. A higher level would indicate excessive salt content.

At final inspection if soil does not appear to meet specifications you will not receive a final sign-off of your permit. If directed, topsoil which varies only slightly from the specifications may be made acceptable by such corrections as the Inspector deems necessary.

C. MULCH

Shredded bark mulch shall be a natural forest product of 98% bark containing less than 2% wood or other debris. It shall be of White or Red Fir and/or Pine bark of a uniform grade with no additives or any other treatment. Size of bark shall be from 5/8" to 1-1/4". The pH factor should range from 5.8 to 6.2. Shredded bark may also be used.

D. WATER

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

4. 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 and to the satisfaction of the Parks representative.

If any new tree pits have to be cut, a permit must first be obtained from the Department of Transportation. A permit shall be required for each block where the pavement is broken for a new pit. It is your responsibility 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 Parks & Recreation staff. Once work begins you take full responsibility for the tree pit locations. All excavated materials shall be removed from the site and disposed of. 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 you shall restore the disturbed area to its original condition. If damage is done to an underground obstruction it is the responsibility of the contractor 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 insure 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. You are liable for any damage to property caused by planting operations and related work. **All disturbed areas shall be restored to their original condition.**

You are only permitted to occupy an eight-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 with so far as "No Standing" rules apply for the time limits specified.

A. PLANTING SEASONS

Trees may be planted in the fall from October 1st through December 31st and in the spring from March 1st through May 31st. No planting is permitted in the summer. Please be aware of the DOT Construction Embargo from November 21st thru January 2nd (Street may vary from year to year. See [here](#) for a link.)

B. 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 (see diagram pg. 18 Tree Planting and Stake Detail). For excavation of a tree lawn, excavate an area at least three times the diameter of the root ball in length by the width of the lawn strip (up to three (3) times the diameter of the rootball), to the dimensions listed on the permit. Extreme care shall be taken not to excavate 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.

Place balled and burlapped material in the prepared planting pit by lifting, and carrying it by the rootball 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 rootball is not consistent with this area, soil will be added or removed below the rootball to make it so, and the depth of the planting site adjusted accordingly.

Cut and remove rope and wire from the top fifty percent of the rootball. At least fifty percent 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 six to eight inch intervals. All tree pits are to be filled with topsoil or backfill and made level with existing conditions.

Cultivate and rake over finished planting areas leaving them in an orderly condition. On level ground or slight slopes, a shallow basin a little larger than the diameter of the tree ball shall be left around each tree. At no time should topsoil be mounded to cover the

trunk of the tree. **The trunk flare shall always be visible.** Final soil level, except for the shallow basin, shall be flush with the surrounding sidewalk grade to prevent potential tripping hazard.

C. TREE WRAP

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

D. STAKING

All staking shall be done during planting operation and shall be maintained throughout the first year of the two (2) year guarantee period.

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 two (2) stakes, they shall be eight (8) feet long; the diameter at the middle shall be not less than (2) inches nor more than two and three quarters (2-3/4) inches and the diameter at the butt shall not exceed three (3) inches. Stakes shall be placed outside of the rootball, driven thirty (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.

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 two (2) year guarantee period, unless directed otherwise by the Project Manager. 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.

E. PRUNING

Only crossing, dead, broken or badly bruised branches shall be removed. These shall be pruned with a clean cut. All pruning shall be done with sharp pruning tools. At the time of planting, pruning cuts shall be made at the base of the branch at such a point and angle that neither the branch collar nor the bark of the stem is damaged, and that no branch stub extends from the collar. Crowns of young trees shall not be cut back to compensate for root loss. No leaders shall be cut.

F. WATERING

At the time of planting, the soil around each tree shall be thoroughly saturated with at least twenty gallons of water. Soil shall be firmed at six to eight 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, plant saucers, stakes or adjacent areas. Each plant saucer shall be carefully filled with water in a manner which does not erode the soil or the plant saucer. Watering shall not cause uprooting or exposure of plant's roots to the air.

G. 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 Section 3 C for Mulch specifications).

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

5. Seasonal Maintenance

A. WATERING

Watering shall also take place throughout the two (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 that damages plants, plant saucers, stakes or adjacent areas. Each plant saucer shall be carefully filled with water in a manner that does not erode the soil or the plant saucer. Watering shall not cause uprooting or exposure of plant's roots to the air. Damages resulting from these operations shall be immediately repaired at your expense.

B. OTHER MAINTENANCE ACTIVITIES

All newly planted trees shall be maintained until two (2) years after the final inspection of permitted planting.

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 15th to October 31st, and such cultivating and weeding shall be repeated at least every three (3) weeks. Under no conditions shall weeds be allowed to attain more than six (6) inches of growth.

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

6. Guarantee Period

All trees must be guaranteed for two (2) years. All legitimate contractors and nurseries provide a guarantee for their trees. Make sure to confirm the two (2) year guarantee, and beware of suppliers who claim not to provide this service.

A. TREE REPLACEMENT

Any planted tree that is dead or, in the opinion of the Parks Department, is 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 two (2) year guarantee on trees commencing after the final inspection of the permitted planting. 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. You must submit photos to Parks showing the proper removal of trees. You must then obtain a permit to replant during the planting season.

B. VANDALISM

Where vandalism or related causes are agreed as the cause for tree replacement, you shall be responsible for one replacement during the two (2) year guarantee period after final inspection of the permitted planting. It will be necessary to prove that the tree was vandalized using photo-documentation.

7. Finishing

Paving blocks, installed in the manner described below are required within each sidewalk tree pit when specified by Parks. Exceptions to this requirement are allowed on a case by case basis. Examples include adequate tree pit guards or non-invasive or competitive under plantings. Please note that Parks will take action if the tree guard, under planting, or paving endangers the long-term health and survival of city-owned trees. Parks does not allow tree grates to be installed around newly planted or existing trees.

A. PAVING BLOCKS

a. Materials

Granite Block Pavers: Granite blocks shall be new or used and shall be cut from fine to medium grained sound and durable granite. The granite shall be reasonably uniform in quality and texture throughout and shall be free from an excess of mica and feldspar and from seams, scales or evidence of disintegration. If used blocks are utilized they shall be clean, free from mortar, asphalt, etc.

Blocks shall be fairly rectangular in shape and shall be not less than four (4) inches nor more than twelve (12) inches in length; not less than three (3) nor more than five (5) inches in width; not less than three (3) nor more than five (5) inches in depth. The blocks shall be cut so that opposite faces will be approximately parallel and adjoining faces approximately at right angles to each other. Granite blocks shall be so dressed that they may be laid with one (1) inch joints. All blocks shall have one reasonably smooth split head.

b. Installation

Paving blocks shall be installed using a sand cushion. The sand shall consist of clean, hard, durable, uncoated stone particles, free of lumps of clay and all deleterious substances and shall be so graded when dry, one hundred percent shall pass a ¼ inch square opening sieve; not more than thirty-five percent by weight shall pass a No. 50 sieve. Sand shall conform to ASTM C-33.

Trim and tamp the subgrade to smooth, uniform lines prior to placing the pavers. The pavers shall be laid on a sand cushion with a minimum thickness of one inch. The sand cushion shall be compacted by hand tamping, or as directed by the Forester. Joints between pavers shall be a maximum of one inch and a minimum of three quarters inch in width. All joints (inner and outer) shall be mortared in place with a cement mortar of a wet mixture of one part Portland cement and two parts sand. (see drawing page 21-22)

Care should be taken to leave a maximum amount of tree pit surface area uncovered, without pavers (see drawing pg 20 & 21). The installation of tree guards shall not interfere with the proper grade of the tree; trees cannot be planted deeper to accommodate pavers and root balls cannot be damaged during installation.

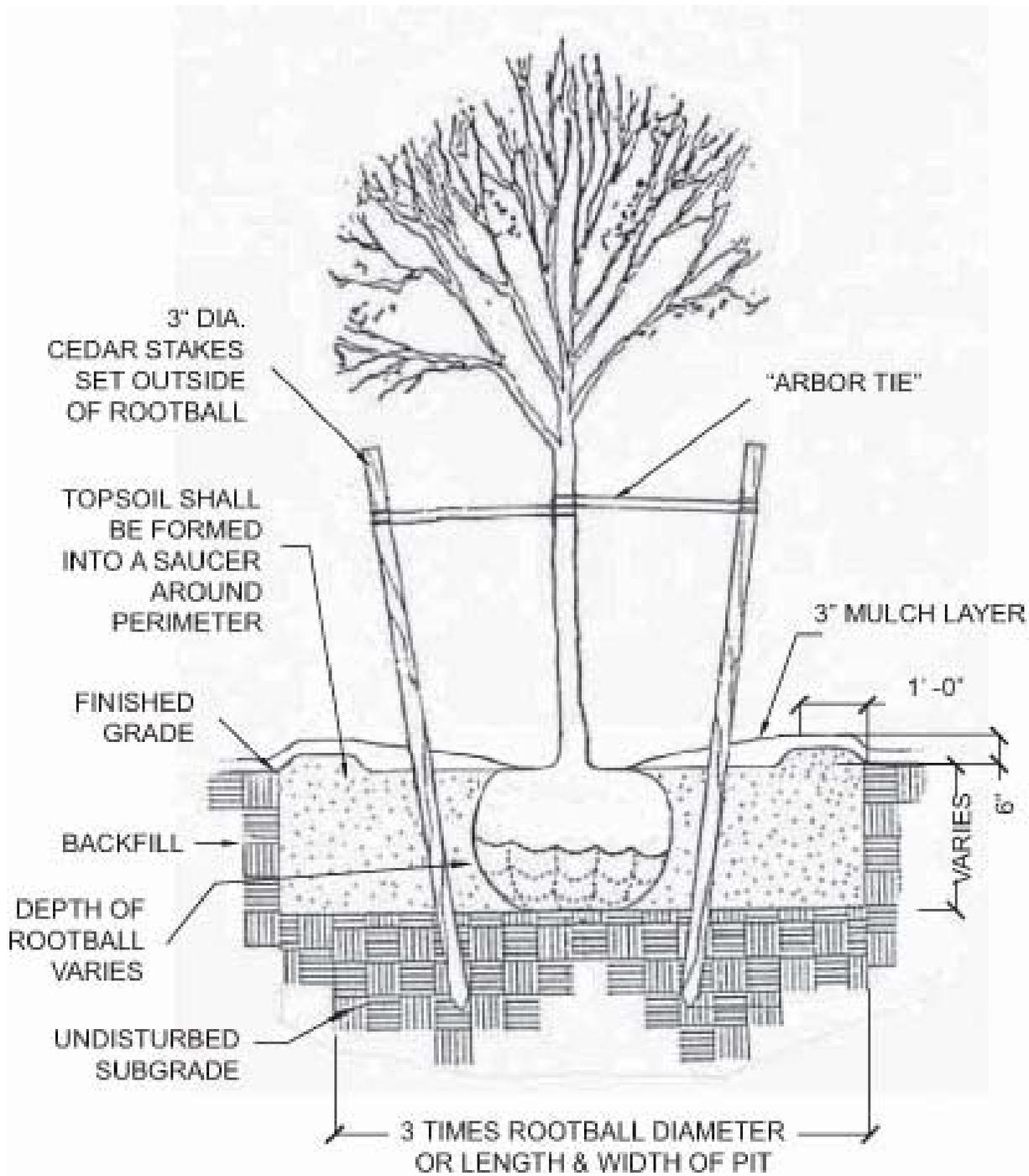
B. TREE PIT GUARDS

Tree pit guards are not required by Parks. A tree pit guard is a device, 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 from 18" to 24" high, around the perimeter of the tree pit. This will protect the tree from dogs and pedestrians and give it enough space to grow for many years to come.

Interested parties should apply for a permit to work on or near a tree before installing a tree guard. The permit is to 'install decorations'. Guards should not be installed close to tree trunks. They strangle the tree as it grows and fail to protect the root zone. Sidewalk-level tree grates are not permitted; granite paving should be used as an alternative. Grates do not protect the tree trunk and the tree will grow into them and die if the openings are not periodically widened. They also serve as receptacles for litter and if raised by the tree's growth will cause a trip hazard.

Do not install brick or concrete walls around the tree pits. The interior space created by the solid wall encourages property owners to add soil over the root zone for plantings, unwittingly suffocating tree roots.

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



**SECTION:
TREE PLANTING & STAKE DETAIL**

NOT TO SCALE

SAMPLE TREE PIT CONFIGURATIONS

TREE PIT DIMENSIONS*			
	Length (ft)	Surface Area (sf)	Soil Volume (cu ft)
Width: 7 ft			
	6	42	84
	7	49	98
	8	56	112
	9	63	126
	10	70	140
	25	175	350
	50	350	700
	100	700	1400
Width: 6 ft			
	6	36	72
	8	48	96
	9	54	108
	10	60	120
	25	150	300
	50	300	600
	100	600	1200
Width: 5 ft			
	6	30	60
	7	35	70
	8	40	80
	9	45	90
	10	50	100
	25	125	250
	50	250	500
	∴	∴	∴
	100	500	1000
Width: 4 ft			
	7	28	56
	8	32	64
	9	36	72
	10	40	80
	25	100	200
	50	200	400
	∴	∴	∴
	100	400	800

Notes:

These dimensions illustrate the variety of tree pit sizes and configurations that are possible. They are not meant to be fixed. Tree pits should always be as large as possible. The larger the soil volume the larger the tree size will be at maturity and the better chance it has for long-term survival.

The longer tree pit lengths on the chart at left show the soil volumes achieved in continuous tree pits, which are underground trenches that are generally treated with structural soil belowground and sidewalk pavement aboveground, except for the area around the tree which resembles the open area of a traditional

General rules for proximity to built infrastructure:

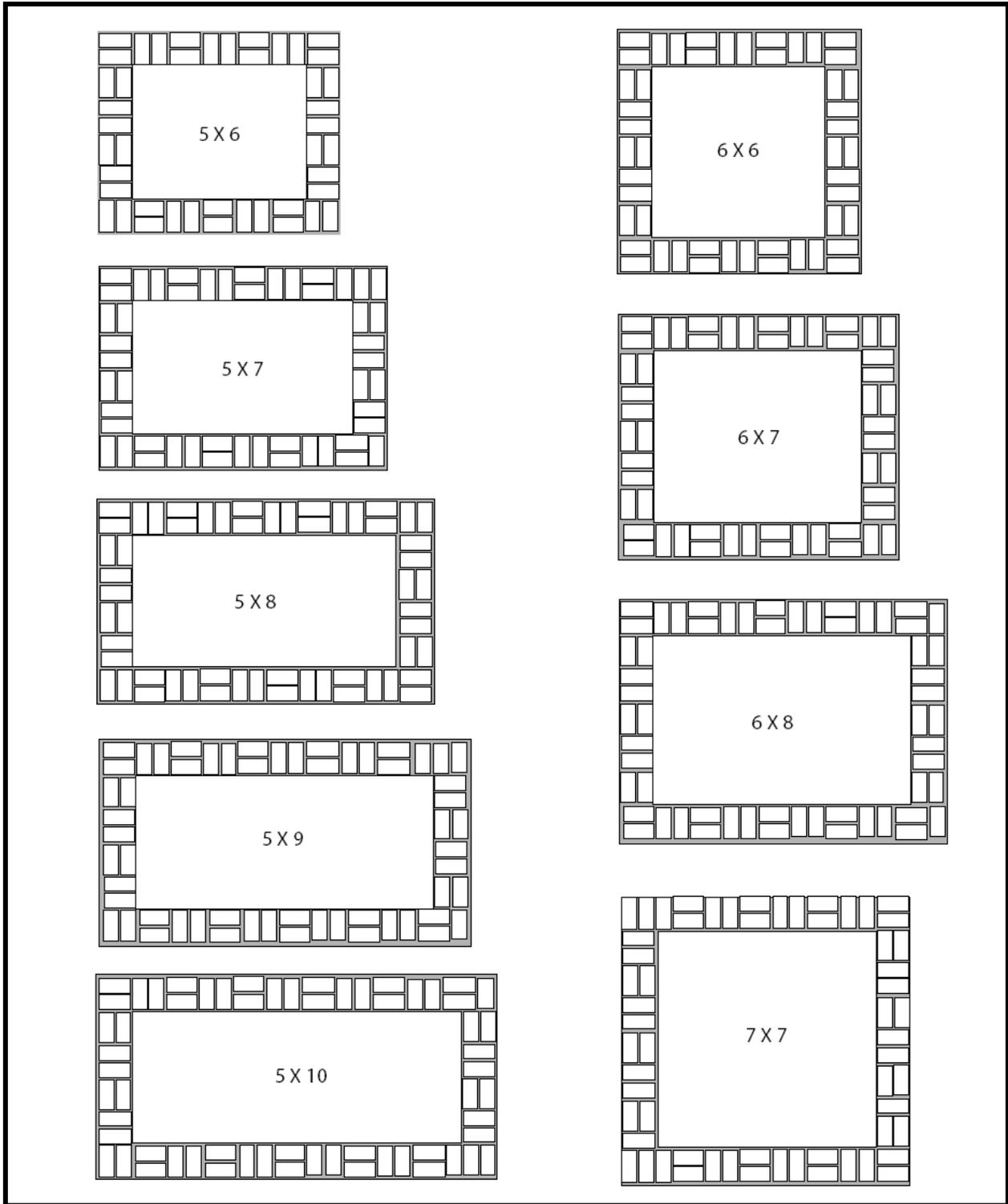
- 20 feet from light poles
- 30 feet from stop signs
- 6 feet from traffic signs
- 5 feet from parking meters
- 2 feet from water drains
- 2 feet from utilities
- 5 feet from hydrants
- 7 feet from driveways
- 39 inches minimum passage for ADA considerations
- 5 feet passage general requirement NYC DOT
- 15 to 25 feet from other trees

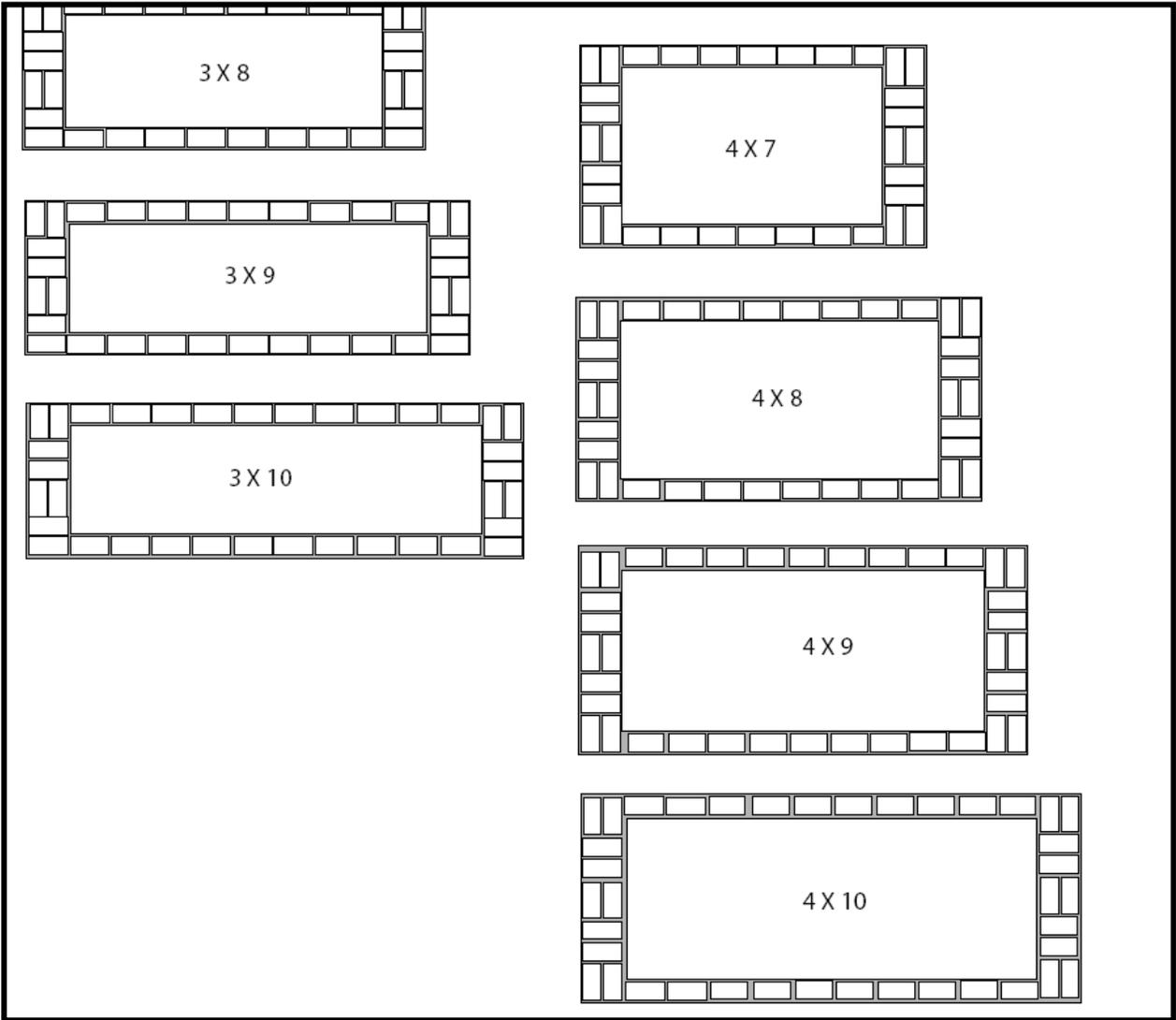
Note: these are general infeasibility criteria meant to guide designers. Specific rules and allowances will be established during the DPR permitting process, since exact tree siting varies by tree species selection, local site conditions, and other agency requirements .

*all calculations based on a tree pit depth of 2 feet. In general, tree pit depth should match root ball height.

In the case of structural soil, pit can be deeper.

NYC Parks & Recreation
Tree Pit Dimensions and Paving Standards





Street Tree Compatibility List

City of New York Parks and Recreation

TREE SPECIES		Form	GROWTH RATE		Fall Color	Wet Site Tolerant	Salt Tolerant	Drought Tolerant	High Wind Tolerant	Pollution Tolerant	Shade Tolerant	High ph Tolerant	Median Trees	Small Tree Pits (< 3 ft)	Narrow Growing Space	NOTES
Scientific Name	Common Name		Slow	Medium												
Large Trees-Mature Height Greater Than 50 Feet																
Ginkgo biloba	Ginkgo	Upright	X		Yellow		X	X	X	X		X	X		X	Autumn Gold' or 'Presidential Gold'
Quercus spp. 'Fastigiata'	Fastigiata Oak	Upright	X		Maroon								X		X	Similar tree is Quercus robur
Liquidambar styraciflua	Sweetgum	Pyramidal		X	Yellow		X									Plant Spring Only, lawn pits only, look for 'Rotundiloba'
Metasequoia glyptostroboides	Dawn Redwood	Pyramidal		X	Orange/ Bown	X		X				X	X		X	Can Grow 2 to 3 Feet per Year
Taxodium distichum	Baldcypress	Pyramidal		X	Orange/Brown	X	X		X				X		X	Ideal For Wet Soils
Tilia cordata	Littleleaf Linden	Pyramidal		X	Yellow					X			X			Greenspire'
Gymnocladus dioicus	Coffeetree	Rounded		X	Yellow			X								Espresso'
Gleditsia triacanthos var. inermis	Honeylocust	Rounded		X	Yellow	X	X	X	X	X		X	X			Halka'
Liriodendron tulipifera	Tulip Tree	Pyramidal		X	Yellow											Rotundiloba'
Quercus rubra	Northern Red Oak	Rounded		X	Maroon		X									Plant Spring Only
Quercus bicolor	Swamp White Oak	Rounded		X	Yellow	X		X					X			Plant Spring Only
Quercus imbricaria	Shingle Oak	Rounded		X	Yellow											Plant Spring Only
Quercus palustris	Pin Oak	Rounded		X	Maroon			X	X	X			X			Needs large tree pit
Quercus phellos	Willow Oak	Rounded	X		Yellow/orange			X		X			X			Plant Spring Only
Tilia americana	American Linden	Rounded		X	Yellow						X	X				Redmond'
Tilia x euchlora	Crimean Linden	Rounded		X	Yellow					X						Pest Resistant
Tilia tomentosa	Silver Linden	Rounded		X	Yellow		X				X					Green Mountain'
Zelkova serrata	Japanese Zelkova	Vase-Like		X	Red / Bronze			X	X	X		X	X	X	X	Halka'
ASIAN LONG HORN BEETLE QUARANTINE SPECIES - PLANTING NOT RECOMMENDED IN BROOKLYN, MANHATTAN, QUEENS, AND STATEN ISLAND																
Celtis occidentalis	Hackberry	Rounded		X	Yellow		X					X				Magnifica'
Fraxinus americana	White Ash	Pyramidal		X	Purple/ Maroon		X	X		X		X	X			Windy City'
Fraxinus pennsylvanica	Green Ash	Pyramidal		X	Yellow		X	X		X		X	X			Patmore'
Platanus x acerifolia	London Plane	Rounded		X	Yellow	X	X	X	X	X		X	X			Tolerates Tough Conditions
Ulmus americana	American Elm	Vase-Like		X	Yellow	X	X	X			X	X	X			Homestead', Pioneer', or 'Accolade'

TREE SPECIES		Form	GROWTH RATE		Fall Color	Wet Site Tolerant	Salt Tolerant	Drought Tolerant	High Wind Tolerant	Pollution Tolerant	Shade Tolerant	High ph Tolerant	Median Trees	Small Tree Pits (< 3 ft)	Narrow Growing Space	NOTES
Scientific Name	Common Name		Slow	Medium												
Medium Trees- Mature Height 35-50 Feet																
<i>Carpinus betulus</i>	European Hornbeam	Upright		X	Yellow		X	X		X	X			X	X	Fastigiata' cultivar is best for narrow spaces
<i>Quercus robur</i>	English Oak	Upright	X		Yellow		X					X		X	X	Plant Spring Only
<i>Cercidiphyllum japonicum</i>	Katsura Tree	Rounded		X	Yellow/ orange	X				X						Tree Does Best In Lawn Pits
<i>Corylus colurna</i>	Turkish Filbert	Pyramidal		X	Yellow			X			X			X		Also known as Turkish Hazelnut
<i>Nyssa sylvatica</i>	Black Gum	Pyramidal		X	Red	X										Should only be planted in extremely wet sites
<i>Ostrya virginiana</i>	American Hophornbeam	Rounded	X		Yellow					X	X			X		Plant Spring Only
<i>Quercus acutissima</i>	Sawtooth Oak	Rounded		X	Yellow		X				X			X		Plant Spring Only
<i>Eucommia ulmoides</i>	Hardy Rubber Tree	Rounded	X		Yellow		X	X						X		Tolerates Tough Conditions
<i>Styphnolobium japonicum</i>	Scholar Tree	Rounded		X	Cream			X	X	X			X	X		Regent'
ASIAN LONG HORN BEETLE QUARANTINE SPECIES - PLANTING NOT RECOMMENDED IN BROOKLYN, MANHATTAN, QUEENS, AND STATEN ISLAND																
<i>Acer rubrum</i>	Red Maple	Rounded		X	Red	X					X					Redpointe' or 'Red Sunset'
<i>Ulmus parvifolia</i>	Chinese Elm	Rounded		X	Yellow		X					X				Allee'
Intermediate Trees- Mature Height 25-35 Feet																
<i>Koeleruteria paniculata</i>	Goldenraintree	Rounded		X	Yellow		X	X		X		X		X		Tolerates tough conditions
<i>Maackia amurensis</i>	Amur Maackia	Rounded	X		Yellow			X				X		X		Fixes Its Own Nitrogen in the Soil, Late Bloomer
<i>Pyrus calleryana</i>	Callery Pear	Rounded		X	Maroon		X	X		X		X		X		Plant sparingly
ASIAN LONG HORN BEETLE QUARANTINE SPECIES - PLANTING NOT RECOMMENDED IN BROOKLYN, MANHATTAN, QUEENS, AND STATEN ISLAND																
<i>Acer truncatum</i>	Shantung Maple	Rounded	X		Yellow						X		X			Spring foliage is purplish-red and changes to green
<i>Acer campestre</i>	Hedge Maple	Rounded	X		Yellow		X					X		X		Queen Elizabeth'
Small Trees- Mature Height Less Than 25 Feet																
<i>Amelanchier sp.</i>	Serviceberry	Rounded	X		Red/ Yellow	X					X			X		Autumn Sunset,' 'Cumulus,' and 'White Pillar'
<i>Cercis canadensis</i>	Eastern Redbud	Rounded		X	Yellow		X				X	X	X	X		Does Best in Lawn Pits
<i>Carpinus caroliniana</i>	American Hornbeam	Rounded	X		Yellow/ orange					X				X		Plant Spring Only
<i>Fraxinus 'Leprechaun'</i>	Leprechaun Green Ash	Rounded	X		Yellow	X	X							X		Good for wet sites under wires
<i>Malus sp.</i>	Crabapple	Rounded	X		Red/ yellow		X	X					X	X		M. zumi , and 'Donald Wyman,' 'Spring Snow' is seedless
<i>Cotinus sp.</i>	Smoke Tree	Rounded	X		Red/ Bronze									X		Royal Purple' or 'Grace'
<i>Crataegus sp.</i>	Hawthorn	Rounded		X	Maroon		X	X					X	X		Winter King,' 'Princeton Sentry,' or 'Crimson Cloud'
<i>Cornus mas</i>	Cornelian Cherry	Rounded		X	Yellow		X							X		One of the first flowering spring trees
<i>Lagerstroemia indica</i>	Crapemyrtle	Rounded	X		Yellow/ Bronze			X		X				X	X	Tolerates Tough Conditions
<i>Prunus virginiana 'Schubert'</i>	Schubert Cherry	Pyramidal		X	Maroon		X	X		X		X	X	X		Tolerates Tough Conditions
<i>Syringa reticulata</i>	Japanese Tree Lilac	Rounded		X	Yellow		X	X			X		X	X	X	Ivory Silk'
<i>Prunus cerasifera</i>	Purpleleaf Plum	Rounded		X	Maroon		X							X		Atropurpurea,' 'Thundercloud'
<i>Prunus 'Okame'</i>	Okame Cherry	Rounded		X	Red/ bronze									X		Earliest Blooming Cherry
<i>Prunus padus</i>	European Birdcherry	Rounded	X		Yellow/ bronze									X		One of the First Trees to Leaf Out in the Spring
<i>Prunus sargentii</i>	Sargent Cherry	Rounded	X		Red/ bronze									X		'Accolade' is Semi-double Flowering;
<i>Prunus serrulata 'Kwanzan'</i>	Japanese Flowering Cherry	Rounded	X		Red/ Orange									X		Double-flowering
<i>Prunus x yedoensis</i>	Yoshino Cherry	Rounded		X	Yellow									X		Tree Does Best in Lawn Pits
ASIAN LONG HORN BEETLE QUARANTINE SPECIES - PLANTING NOT RECOMMENDED IN BROOKLYN, MANHATTAN, QUEENS, AND STATEN ISLAND																
<i>Acer ginnala</i>	Amur Maple	Rounded	X		Red							X		X		Tolerates Tough Conditions